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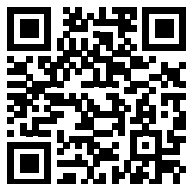
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FIT TO SERVE: A HISTORY OF ARMY PHYSICAL READINESS



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by Whitfield B. East

Fit to Serve: A History of US Army Physical Readiness

Whitfield B. East

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the US Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)



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Foreword

To reinvigorate the Presidential Physical Fitness Test and overall fitness within our public schools, President Ronald Reagan in 1984 said “Attention to physical fitness is one of those things that says something about a Nation and its people. It’s an important indication of America’s level of energy, competitiveness and vigor.” Nearly 40 years later, a societal shift toward sedentary living and poor nutrition threatens US Army recruiting with 39% of America’s youth (ages 17-24) now considered obese and ineligible for US Army service. This continuous downward spiral in national health and fitness can have dire consequences for the national security of the United States. For me personally, when I was commissioned in 1992, it was not uncommon for leaders to say things like “I’ll sleep when I die”, or comment that their high fat diets constituted the “breakfast of champions”. I remember my platoon sergeant smoking cigarettes immediately before and after physical training (PT). We conducted what I thought was okay PT, but it was only focused on pushups, sit-ups and running. It prepared us for the test, but arguably didn’t prepare the US Army for its primary mission-to close with and destroy the enemy in close combat.

Today your US Army is faced with the problem of training and remediating poor health and fitness behaviors after many of our citizens enter the US Army. A process that is both costly and time consuming and only slightly mitigates the larger societal problem our Nation faces. The response to a similar dilemma in 1940 was the formation of the Victory Corps, where high school students across the US participated in a structured fitness and leadership program in preparation for service to the country.

Today, given rising threats in Europe and the Pacific, we can’t afford to sit idle. Initiatives like the current

Future soldier Preparatory Course are designed to help those currently falling short of the Army Accessions standards to get better and achieve it before starting Basic Training-an intent not much different than the Victory Corps of 1940.

For the first time, the US Army has committed to funding a world-class health and fitness system to ensure soldiers can train and execute their wartime missions and return home safely. Our US Army benefits from the bold initiative of Holistic Health and Fitness (H2F) started in 2019 to improve health and fitness readiness of our soldiers across five domains: nutrition, sleep, mental, spiritual and the physical domain. Ini-

tatives like H2F when coupled with a deep understanding of where we've come will better prepare our soldiers for the enemies in the future and for the first time, training for the new Army Combat Fitness Test (ACFT) will ensure soldiers are trained across the entire spectrum of physical fitness. We, the US Army, have spent over a decade bringing these programs to soldiers and Dr. Whitfield "Chip" East has detailed their development and implementation in this book.

Recognizing the importance of education in reversing our Nation's downward health trend and our desire to not repeat history, Dr. East's monograph educates readers through the evolution of our US Army's physical training doctrine over the decades to prepare our soldiers for increasingly more advanced enemies operating in harsh environments. Dr. East also demonstrates how our US Army adjusted through the eras with our increased understanding of health sciences and how this led to soldiers being better prepared for the threat they faced.

All of us need to learn where we've come from and consider how far your US Army has evolved to meet the demands of tomorrow. Those who don't, risk repeating mistakes. Mistakes paid with a currency that is our most valuable and one Americans can't afford to waste- our people.

John D. Kline, Major General, US Army
Commanding, US Army Center for Initial
Military Training
Fort Eustis, Virginia

Author's Introduction

The strength of a nation, therefore, depends upon its material wealth, supported by the character and abilities of the people who compose it-their intelligence, sense of justice and responsibility, physical fitness, and moral stamina. When the people possess these qualities in high degree, they will make the nation, which they compose, a strong one.

(*Studies in Citizenship for the Recruit*, US Army Training Manual No. 1, 1922, p. 116)

The purpose of this publication is to review and analyze the history of physical readiness training and assessment in the United States Army. Although the evolution of US Army physical readiness training (PRT) doctrine begins during the pre-Colonial period in America, in order to fully understand this evolutionary process, we must first understand the development of military physical training in Europe and its role in shaping the philosophy and doctrine of US Army PRT. After a short review of the role of physical training in antiquity, we will review in depth the growth of military “gymnastics” in Europe, especially Prussia, during the 19th century and the pathways of this doctrine and training to the United States and the US Army. A full understanding of the foundations of European military gymnastics is crucial to understanding the evolution of PRT in the US Army since European military gymnastics served as the touchstone for US Army PRT for over 200 years. We will then explore the extrinsic and intrinsic forces that have shaped US Army PRT doctrine since 1700 with particular attention to the influences of a changing economic, social, and political milieu and evolution of warfighter tactics and technology. Lastly, we will explore the transformation of US Army physical readiness training and assessment in the 21st Century with the advent of the Holistic Health and Fitness system and the Army Combat Fitness Test.

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Dedication

I would like to dedicate this book to two professional soldiers who played a significant role in the US Army's history for the past 40-years. The United States Military Academy

West Point has a great slogan, "much of the history we teach was made by the people we taught." This is true for these two soldiers.

Sergeant Major of the Army Michael A. Grinston was sworn in as the 16th Sergeant Major of the Army on 9 August 2019. He has held every enlisted leadership position in artillery, ranging from cannon crewmember to command sergeant major. Sgt. Maj. Army Grinston is a native of Jasper, Alabama, and enlisted in the US Army in October 1987. He attended Basic Training and Advanced Individual Training as an artilleryman at Fort Sill, Oklahoma. Sgt. Maj. Army Grinston's deployments include Operations Desert Storm and Desert Shield, Iraqi Freedom, New Dawn, Inherent Resolve, Enduring Freedom, and Kosovo. As the 1st Infantry Division command sergeant major, Sgt. Maj. Army Grinston served as the senior enlisted leader for the US Army's first deployment of a division headquarters in support of Operation Inherent Resolve. He also served as the I Corps command sergeant major, and as the command sergeant major for US Army Forces Command.

Sgt. Maj. Army Grinston has dedicated his professional career to building better soldiers, building better soldier families and building better "squads." He has worked tirelessly to build cohesion and respect among all soldiers with the "Not in my Squad" efforts. He devotes the majority of his time traveling throughout the US Army to observe training and interact with soldiers and their Families. Sgt. Maj. Army Grinston also worked diligently to develop, promote and improve the Army Combat Fitness Test. He truly believes "we have to be experts as soldiers, no matter what your MOS," and physical fitness is a vital pillar in the development of the professional soldier. Thank you for your service!

General Stephen J. Townsend was commissioned as an US Army infantry officer upon graduating from North Georgia College in 1982. He has led and commanded troops at every level from rifle platoon to infantry division and Army Corps as well as two combined/joint task forces. With 40 years of military service, General Townsend has a long list of military assignments. He served as the Commanding General of United States Africa Command; Commanding General of US Army Training and Doctrine Command; Commanding General of XVIII Airborne Corps and

Commanding General of Operation Inherent Resolve. General Townsend has a long list of combat and operational experience including Operation Urgent Fury, Grenada; Operation Just Cause, Panama; Operation Iraqi Freedom, Afghanistan; and Operation Enduring Freedom, Afghanistan. General Townsend retired from the US Army on 8 August 2022.

General Townsend has dedicated his professional career to leading soldiers, mostly in a time of war. He is a charismatic Officer who leads from the front. He devoted the majority of his career to developing mission-ready and deployable units, capable of accomplishing the US Army's primary mission, to close with and destroy the enemy in close combat. As the Commander, Training and Doctrine Command, General Townsend worked diligently to modify, enhance and promote the Army Combat Fitness Test and the Holistic Health and Fitness system. His commitment to the mission of US Army and defense of the United States and its values are exemplary for all. Thank you for your service!

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Army Combat Basic Training photos from 1967 in Figure 6.8. [original 37].

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Chapter 1

Historical Influences on US Army Physical Readiness Training

When physical training ceased to be a national characteristic, and the men of brawn were succeeded by creatures of luxury, the decadence of national prosperity followed.¹

Antiquity to the Middle Ages

The Spartans were perhaps the most tenacious warriors in the history of mankind. Their entire civilization revolved around the safety and security of the State. In many if not most of their military conflicts the Spartans were significantly outnumbered by their opponents. This was certainly true in their engagements with the Romans and the Persians. The foundation of their military strategy was to leverage physical conditioning and toughness as a force multiplier for combat effectiveness. “Sparta needs no other bulwarks than the bodies of her sons.”²

Although battle-focused physical training can be traced to well before the Greek civilization of the 1st Century BC, the Greeks are most noted for refining and utilizing systematic physical training to prepare Soldiers for war. The Spartans, perhaps more than all others, took the physical training of its citizen soldiers to the most extreme. Around age seven, Spartan males were sent to a military and athletic school where they learned toughness, discipline, endurance of pain, and survival skills. At the age of 20, after 13 years of physical and military training, a Spartan joined the standing Army as an adult citizen warrior.³ The Spartans also trained an elite special force called the *Krypteia*, which was composed of 18 year old males who exhibited exceptional military and physical skills.⁴ By training the elite fighting soldier of their time, Sparta prided itself on fielding a small, mobile, lethal force capable of engaging much larger forces as occurred at the Battle of Thermopylae. In 480 BC a force of approximately 7,000 Spartan soldiers engaged the Persian Army estimated to be in the hundreds of thousands. The small Spartan force held out for seven days.

Rather than conducting simulated assessments of physical readiness, the Greeks chose a more authentic form of assessment—the sport festival. Most events in the ancient Greek Olympic festival such as running, javelin, wrestling, boxing, and riding focused on warrior tasks and battle drills. Two contests were more directly linked to basic combat skills: the pank-

ration—a freestyle combination of boxing and wrestling where victory was secured by knockout, submission, or death, and the 400 to 800m sprint in armor (generally consisting of helmet, shield, and greaves weighing about 50 lbs.). There was little separation in Greek civilization between the physical training required for war and sport. Strength, mobility, speed and stamina were all keys to success on the battlefield and in the stadion. The Greeks also valued the health-related aspects of gymnast exercises as Galen declared “him to the best physician who was the best teacher of gymnastics.”⁵

In peace prepare for war, in war prepare for peace...sweat more in peace, bleed less in war.⁶

During the 1st and 2nd Centuries AD Roman legions carried on the warrior traditions refined by the Greeks. Legionnaires may well be characterized as the first professional soldiers, who were trained and certified to serve in the army. Some of the key physical skills were marching at speed, running, swimming; use of the sword, bow, javelin; lifting/carrying heavy burdens. The Roman historian Vegetius tells us that it was of the utmost importance for a legionnaire to be able to march at speed, especially when moving to contact. Much of the Roman tactical phalanx strategy depended on a swift and precise deployment of forces as an integrated unit. It was inherently problematic to the tactical strategy when soldiers “fell out” of a movement to contact. Therefore “during the summer months the soldiers were to be marched twenty Roman miles, which had to be completed in five hours.”⁷ Soldiers generally trained under full combat load, which weighted approximately 50-60 lbs. A further part of basic military training was organized physical exercise...running, long jump, high jump and carrying heavy packs.”⁸ Physical readiness was an integral part of the training and development of Roman soldiers.

Every soldier is every day exercised...with great diligence, as if it were in time of war, which is the reason why they bear the fatigue of battles so easily...nor would he be mistaken that should call those their exercises unbloody battles, and their battles bloody exercises.⁹

During the Middle Ages, the “soldier” class was primarily filled by lower class nobility called knights. Knights served in a variety of capacities, as home guard, policemen, enforcers, and soldiers. As part of the “melee,” knights often fought from a mounted or standing position, using heavy armor to protect themselves from the sword, mace, and lance. Thought to weigh between 40-60 pounds, a knight’s armor required him

to possess great strength, power, and agility. The scholar, clergyman, and teacher Johannes Rothe sought to capture the essence of the late middle age knight's education in his work *Der Ritterspiegel* (The Knight's Mirror).¹⁰ As opposed to the broad-based studies in the *septem artes liberales* (seven liberal arts), Rothe described the knight's educational curriculum as the *septem artes probitates* (the seven knightly arts / skills).¹¹ The seven knightly skills were: horseback riding—fast in and out of the saddle; swimming; shooting—cross-, arm-, and handbows; climbing—especially ladders, ropes, and poles; mounted fighting—jousting; ground fighting—wrestling and fencing; and socializing with dance and courtly manners. “From a practical point of view, the nobleman's life depended on his physical skills and endurance.”¹² As Europe moved inexorably into the Modern Age, significant changes in technology such as the refinement of the arbalest and introduction of gunpowder made heavy body armor a liability and so ended the era of knighthood.¹³

The Renaissance and Physical Culture

Throughout the Middle Ages there were relatively negligible changes in the essence of warfare and the physical training of soldiers. With changes in technology, which accompanied the dawning of the Renaissance, mobility and endurance regained increased significance in combat readiness. At the same time educators, philosophers and theologians sought to reestablish the contribution of physical development to the Greek tripartite of mind-body-spirit, primarily as a way of improving physical health and vigor. One of the more impactful Renaissance writers relative to the application to exercise to combat skills was the French monk and physician François Rabelais. Rabelais used two novels *Pantagruel* and *Gargantua*, published in 1533 and 1535 respectively, to espouse the physical nature of the human spirit and the physical needs of war. The protagonist, Gargantua, was provided with an apt tutor, “a young man from Touraine, named “Esquire Gymnast”, who provided training in vaulting, hand to hand combat, running, swimming, gymnastics, and lifting “leaden” weights.”¹⁴ Gargautua's physical exercises epitomized Rabelais's ideal of physical culture through his extensive recitation of nearly all known gymnastic exercises.¹⁵ All of Gargautua's physical training was in preparation for the “gentleman's occupation”—war.¹⁶

Approximately 20 years later the Italian writer Hieronymus Mercurialis, made significant contributions to the development and application of gymnastic exercises. Mercurialis was a physician and philosopher, who became the first to document the benefits and application of physical ex-

ercise when he published “De Arte Gymnastica” in 1569. Mercurialis divided exercises into three categories: legitimate (used for general health), military and athletic (dangerous).¹⁷ He was the first Renaissance writer to directly address the hygienic and medical benefits of exercise and the application of exercise in preparation for war. Indulging in a bit of hyperbole, Mercurialis selected the name “medicine ball” for the weighted balls used for gymnastic exercise.

In the early 18th Century, Dr. George Turnbull (1698–1748), the Scottish philosopher, was well known for incorporating exercise and sport into his holistic educational model. Significantly influenced by the work of John Locke, Turnbull advocated the “necessity of corporal exercise to invigorate the soul as well as the body...to produce courage, firmness, and manly vigour in the latter.” He also linked the benefits of physical exercise to successful for military service:

Hardy exercises were reckoned by the ancients...in the formation of a liberal character...no doubt, the better adapted the exercises of youth are to this end [preparation for war], the better will they serve the general purpose of exercises, with the additional advantage of fitting youth for the arts and toils of warfare...young men were...not only initiated in warlike discipline, and trained to arms, but likewise accustomed to watch and keep guard.¹⁸

In 1762, another of Locke’s protégés, Jean Jacques Rousseau, published his seminal work *Emile* (On Education). Rousseau wrote “Give his body constant exercise...everyone who has considered the manner of life among the ancients, attributes the strength of body and mind by which they are distinguished from the men of our own day to their gymnastic exercises.”¹⁹ Rousseau was influential in developing the scheme of modern gymnastics. “The body must be vigorous to obey the soul...the weaker the body, the more it commands; the stronger the body, the more it obeys.”²⁰

The first practical application of Rousseau’s theories on exercise came to fruition a decade later. In 1774 Johann Bernhard Basedow created an educational institution in the town of Dessau called the Philanthropin.²¹ Although its primary mission was to educate the children of well-to-do Prussian families, it was in the Philanthropin where Basedow formally realized Rousseau and Locke’s dream of integrating the education of the mind and the body. In his 1774 prospectus outlining the educational opportunities at the Philanthropin, Basedow promised “that if the numbers are sufficient and the ages suitable there will be drill in military positions and

movements, and frequent marches on foot.”²² It was in Dessau that physical education and the modern gymnastic (exercise) movement came to life. During the early years of the Philanthropin one of Basedow’s instructors was Christian Gothilf Saltzman. In 1784 Salzmann left the Dessau Philanthropin to start a new school in Schnepfenthal. Although Salzmann did little to advance the causes of gymnastic education, in 1785 he hired a young instructor named Johann GutsMuths, “and to him confided the direction for gymnastics.”²³ Perhaps the singular most defining change in physical training for soldiers began with the emergence of GutsMuths. His seminal work “*Gymnastik für die Jugend*” (Gymnastics for the Youth), published in 1793, laid the foundation for the refined gymnastics systems of Franz Nachtegall, Pehr Ling, and Frederick Jahn.²⁴ Following in Saltzman’s footsteps, “as early as 1804 he [GutsMuths] urged the introduction of gymnastic training into the schools as a means of increasing the military efficiency of future recruits.”²⁵

Emergence of Military Gymnastics in Europe

By the dawn of the 19th century, the recognition of health-related and performance benefits of German gymnastics was spreading throughout Europe. “The great importance and even absolute necessity of a regular and systematic course of exercise for the preservation of health and confirming and rendering virtuous the constitution, I presume, must be evident to the most superficial observer.”²⁶ In Denmark Franz Nachtegall, a strident disciple of GutsMuths was profoundly influenced by “Gymnastics for the Young.” In 1798 he started a gymnastics club in Copenhagen and a year later founded a private gymnasium. As his reputation grew, Nachtegall’s efforts came to the attention of the Crown Prince of Denmark. Believing that gymnastics would be useful for military training, on 25 August, 1804 the Crown Prince created the Institute of Military Gymnastics.²⁷ Nachtegall was named the director of the institute where officers and NCOs were trained in the art of military gymnastics. These officers/NCOs became gymnastics subject matter experts (SMEs) for their units. By 1828 Denmark passed a law requiring the introduction of physical training in all Danish elementary schools.²⁸

Pehr Henrik Ling, the Father of Swedish Gymnastics, began his journey to prominence in the gymnastics world as a young man traveling through Europe. During his travels he worked with Nachtegall at his gymnastics school in Copenhagen, where he was introduced to GutsMuth’s system of gymnastics. Ling also learned to fence at the local university. He was impressed with the physical benefits of gymnastics training, but

was particularly take with the health-related benefits. When Ling returned to Sweden around 1804, he had a “broken constitution and a suggestion of the usefulness of physical training.”²⁹ Using his fledgling knowledge of gymnastics, Ling “secured his own recovery to health.” Shortly thereafter he was appointed the fencing master at the University of Lund, where he continued to study physiologic health and pathology of disease.

Around 1813 Ling convinced the Swedish Board of Education on the idea of teaching gymnastics in schools. His program received such positive attention that in 1814 the King commissioned the “Royal Central Institute of Gymnastics” to serve both the public education and the military.³⁰ “Not only is great care taken with the physical education of the army at large, but non-commissioned officers displaying especial aptitude receive particular attention to qualify them for service as instructor, while cadets at the Royal Military School who displayed exceptional expertness are made assistant instructors at the school, in order to train them for special duty in connection with physical training upon receiving their commissions.”³¹ The Swedish military also utilized the ‘train the trainer’ model to provide additional trained gymnastic instructors for army units.

Don Francisco Amoros et Ondeano (Father of Physical Training in France) began his military career as a soldier in the Spanish army, where he acquired extensive combat experience. In 1806 he was named the director of the Pestalozzian Institute in Madrid. Through war, rebellion, and political intrigue Amoros was forced to immigrate to France, where he became a naturalized citizen in 1816. With little more than his military and gymnastics background to trade upon, he opened a gymnasium, which came to the attention of the French Minister of War in 1819. In 1820 the “gymnase normal militaire” opened and Amoros was promptly named the director.³² The chief objective of the military gymnastic school was to train teachers of gymnastics for the Army and secondarily to provide individual training to the infantry regiments of the Royal Guard. Amoros later published the *Manuel d’Education Physique, Gymnastique et Moral* in 1830. As a result of his profound effect on the physical training practices of French Army, Amoros was memorialized in the foundation of the Ecole de Joinville (school for military training with gymnastics) in 1852.³³

While GutsMuths laid the foundation for the renaissance of gymnastic education throughout Europe, Frederick Ludwig Jahn took the science and art of gymnastics to the next level for the Prussian Army. Jahn studied theology and philosophy during the early 1800’s at Halle University, where he was introduced to the works of Nachtgall and GutsMuths. Upon graduation from the University, Jahn’s fledgling career as a teacher

was forestalled when Napoleon I invaded Prussia. Following the decisive defeat of the Prussian Army at the Battle of Jena 14 October, 1806, Jahn, the enthusiastic nationalist, enlisted in the Prussian Army where he fought for three years. In 1809 Jahn left the army and moved to Berlin where he began a career as a teacher. One of his additional duties was to “supervise” his male students two afternoons a week following academic classes. Finding it difficult to maintain the level of attention and discipline to which he was accustomed in the army, Jahn introduced a myriad of the exercises and games to the afternoon program. In an attempt to find a constructive use for their energy he took the boys to a nearby empty field where they practiced jumping, climbing, vaulting, and throwing and played chasing and “war” games.³⁴

Following the crushing defeat by the French at Jena (1806) the task of rebuilding the Prussian army fell to General Gerhard von Scharnhorst. In some ways von Scharnhorst reflected the nationalistic views of Jahn as it pertained to the composition and development of the army. He opened the officer’s ranks to the common people and utilized performance based standards for promotion. Scharnhorst believed that the only way to revitalize the Prussian Army was to open higher military ranks to the middle class and establish universal conscription.³⁵ If every citizen was to be considered for service in the army, it was incumbent upon the nation to educate and train the populace. To develop the physical skills and level of fitness required for military service, Scharnhorst “strongly advised secondary schools to introduce physical education according to the teaching of Johann Christopher Friedrich GutsMuths.”³⁶ In 1808 Chief of Staff von Scharnhorst urged that fencing, swimming, leaping, etc be taught in schools as a means of building a national army with the physical capacity to defend the nation.³⁷

In an attempt to combat the demoralization influence of Napoleon’s victory at Jena and in keeping with von Scharnhorst’s physical training plan, Jahn developed a new physical training program called “turnen” (gymnastics), ostensibly to revitalize the German national “spirit.”³⁸ Rather than focusing on elite performance, *Turnen* focused on the whole body, to improve the fitness level of young males in preparation for war.³⁹ Often known as the Turnvater, the father of modern gymnastics, Jahn opened the first open-air Turnplatz in Berlin in 1811 and initiated a society of gymnastics called the Turnvereine. The Turnvereine movement was a “modern revival of the Greek ideal of building manhood in a harmonious development of body, mind and character.”⁴⁰ When Napoleon once again invaded Prussia, Jahn joined the famous Lutzow Jager Freikorps of the Prussian

Army as a battalion commander and served from about 1813–1815.⁴¹ Many of his “students” from the Turnplatz followed him into the Lutzow Freikorps. After numerous engagements his unit received national and international recognition for their physical prowess and discipline in battle. Jahn attributed his unit’s military success to the utilization of turnen as a physical training model.⁴² Almost 15,000 Turners fought in combat during the Franco-Prussian War. Following his military successes, Jahn became consumed by the need “to develop the ‘perfect German’, physically prepared for life and war.”⁴³ Following the final defeat of Napoleon at the Battle of Waterloo (June, 1815) that resulted in Germany’s independence, Jahn turned his attention to the publication of his most important work

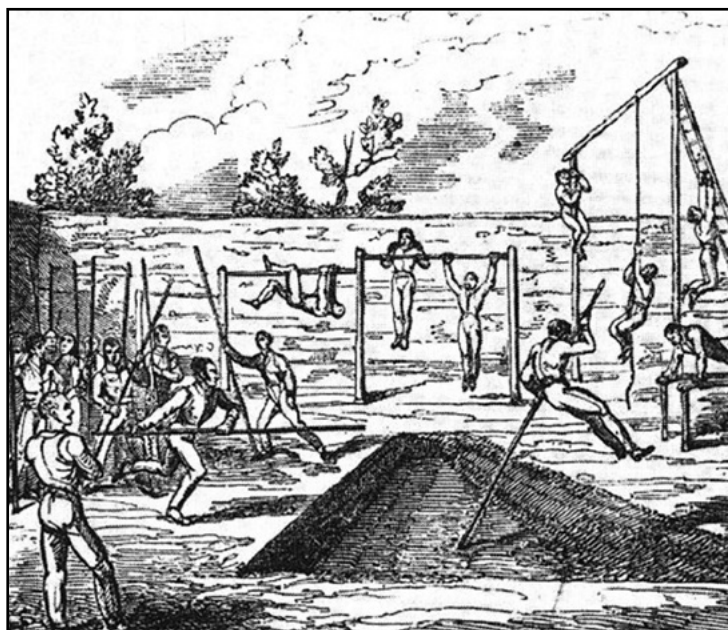


Figure 1.1. Jahn’s Turnplatz.

Source: This drawing shows one of the earliest Turnplatz in Germany (1811), public domain per Mr. Ed Thomas, <http://www.ihpra.org>.

“Die Deutsche Turnkunst” (German Gymnastics).⁴⁴

While Prussia, Denmark, and Sweden were in the process of militarizing gymnastic training during the early 19th Century, around 1791 an

American-born Swiss immigrant, Phokion H. Clias, left his native Boston with his father (a former officer in the Continental Army) to be educated in Holland. After tiring of school Clias spent nearly 10 years traveling throughout Europe where he was introduced to the benefits of gymnastic exercises. Following the death of his wife in 1809, Clias returned to Bern, Switzerland where he joined the Swiss Army. While serving as an Artillery Officer in 1814, Clias found it difficult to keep his troops occupied and “out of mischief.” His solution was to introduce various physical exercises such as vaulting, swimming, and wrestling to his soldiers.⁴⁵ His exercises were so popular that Clias was appointed the “Government Professor of Gymnastics” at the Academy of Bern, where in 1816 he published a treatise entitled *Elements of Gymnastics*.⁴⁶ From 1817-1819 Clias traveled to Paris and enrolled in the “Gymnase Normal Militaire” where he studied gymnastics under Amoros.⁴⁷ In 1819 Clias returned to Bern and introduced a variety of “medical” gymnastic exercises to the public and to the military. In a remarkable occasion of serendipity, Clias’s gymnastic instruction came to the attention of a group of visiting British Army officers, who upon returning to Britain, made his program of instruction know to the minister of war.

In 1822, about two years after the chance meeting with British officers in Switzerland, Clias was summoned to England where the King conferred upon him the rank of Captain in the British Army and he was appointed Professor of Gymnastics (Superintendent of Physical Training) with responsibility for all physical training for the Army and Navy and the Royal Military College at Sandhurst, Royal Military Academy at Woolwich, the Royal Military Asylum at Chelsea, and the Royal Naval Asylum at Greenwich.⁴⁸ In 1825 Clias published a seminal work *Elementary Course of Gymnastics Exercises*, which from a classical Swedish or German gymnastics perspective was rather unsophisticated; however from a military physical training perspective it was quite remarkable. Clias wrote that “modern Gymnastic Exercises, as well as mutual instruction, is one of the improvements of the present age.”⁴⁹ He placed into clear context the principle of exercise “progression” and its benefits to injury prevention.

As the continuation and the rapidity of running depend absolutely on the power of the lungs, the suppleness of the hips, and the agility and strength of the thighs, legs, and feet...before undertaking things too difficult...when the powers are once well developed, young persons may make, without inconvenience, many violent exercises, which would be injurious to them, if they were allowed to practice them too soon.⁵⁰

Of particular note in the gymnastic exercise treatise was his discourse on “running”. Clias use “balancing” drills as a precursor to running drills to promote proper running form. He described five levels of running drills: (1) low intensity runs at a 9:00-10:00 minute pace for sedentary students; (2) running games and drills like circle, square, and sinuous running; (3) Running Moderately (pace runs), where students run a mile in 9:00 minutes and continue to double that distance while lowering the pace until young scholars “can run the distance of six miles in 50 minutes”; (4) Prompt Running, which cover distances up to 1000 yards in 2 minutes; and (5) Precipitate Running—high intensity interval runs (for adults a distance of 400 yards was recommended).⁵¹ Clias also provided a rather detailed discussion of wrestling and swimming and their application to the military arts.

Of all Gymnastic exercises...walking easily and erectly, running, and jumping deserve the preference; because they are the most natural movements of man, and those which he has most frequently occasion to use. If we consider the physical qualities of military life, where the success of the greatest enterprises depends oftener on the rapidity with which they are executed, than the quality of force employed, we shall be convinced that walking, running and jumping, carried to a certain degree of perfection, must overcome many obstacles in military expeditions.⁵²

Efflorescence of Military Gymnastics in Europe

History shows that among communities where physical education has been either neglected or misused, a general enervation has prevailed, causing even the ruin of the nation itself.⁵³

The nascent works by GutsMuths, Amoros, Jahn, and Clias, establishing the foundations of gymnastic education and their application to physical training in the military, set the stage for a dramatic surge in the militarization of gymnastic education throughout Europe during the mid-19th century. As a result of the ensuing civil unrest that followed the murder of the German official August von Kotzebue by Karl Sand (a known Turner and member of the Burschenschaft) on 23 March 1819, in January 1820, the Prussian government banned Turning and closed many of the primary gymnastic schools particularly in cities like Berlin. These actions triggered the first migration of Prussian Turners to the United States. By the mid 1830's the adverse effects on health and fitness due to the loss of gymnastic education were felt throughout Germany. In 1836 a Germany physician, Dr. Karl Lorinser published a pamphlet entitled “For the Pro-

tection of Health in Schools.”⁵⁴ Lorinser attributed the significant decline in personal hygiene in German schools to the lack of physical activity. In 1842 the German Minister of Education, supported by the ministers from the Departments of War and Interior, recommended that physical training in the form of “turnen” be required for all high school boys. In June of 1842, King Friedrich Wilhelm IV decreed that “bodily exercises” should be recognized as an integral and indispensable part of a male’s education. The King also formalized gymnastic training in Brigade and Division Schools in the army. These two actions elevated military gymnastics to a place of prominence in Prussia and the Prussian military.⁵⁵

With “turnen” once again approved as a system of physical training, the Prussian Army immediately “pushed their system of military physical training to a high degree of efficiency.”⁵⁶ In Berlin and Hannover hundreds of company-grade officer and NCOs were annually qualified as instructors in gymnastic exercises. In the infantry alone over 230,000 officers and soldiers were “under constant instruction” in physical training. Dissatisfied with interruptions in training due to weather the Germans initiated the construction of large buildings so training could continue throughout all seasons. In the program of instruction the infantry were trained on five basic exercises: “exercises without apparatus, gymnastics with weapons, gymnastics with apparatus, and applied gymnastics.” New recruits, from the German peasantry, soon filled the barracks “with figures that would put to shame the most exaggerated cartoons of the comic papers. The awkward fellows, whose neglected carriage makes them look like a set of botched-up images, try hard, but in vain, to stand erect...So, before teaching them a single movement of the military drill...they are taught gymnastic exercises, advancing progressively and gently from the easier to the more advanced, until finally they have command over their muscles and joints.”⁵⁷ Exercises for new recruits began at the lowest level of effort and skill and progressed as the recruit developed mastery over his “muscles and joints.” The results of the military gymnastic training were so remarkable as to cause Prince Hohenlobe to remark “the recruit acquires a more symmetrical development, a natural and erect carriage, and a methodical gait; he has learned to subordinate his muscles to his will, and at the same time he has insensibly learned to submit his will to the word of command.”⁵⁸

Meanwhile, following the leadership of Francisco Amoros, the French incorporated gymnastic training into military training in 1847. In 1852 the Central School of Gymnastics at Vincennes was established to support the needs of the military. The initial focus of the French system was on basic callisthenic exercises designed to give the soldier control

over his muscles. Once “control” was mastered at a satisfactory level, the soldier would move on to applied exercises like gymnastics, boxing, wrestling, and swimming. However, their system was “essentially Gallic in character, gratifying the national taste for graceful recreation.”⁵⁹

As was so often the case when a charismatic leader gives up the reins of physical training leadership, interest in gymnastics training at the Royal Military Academies dwindled following the Superintendency of Phokion Clias. It was not until the late 1850’s that interest in military physical training was revitalized when after action reviews of the Crimean War revealed a serious lack of fitness among British soldiers.⁶⁰ In 1858 a Scottish gymnastics teacher named Archibald Maclaren opened a private gymnasium in Oxford, England and at the same time began teaching classes at Oxford University. “Some progressive mind in the War Office came to the conclusion that the physical welfare of the soldier—even some form of physical fitness training—should be introduced into the military curriculum.”⁶¹ Twelve hand-picked NCO’s under the leadership of Major Frederick Hammersley were selected to attend a 6-month course in gymnastics at Oxford University taught by Archibald Maclaren.

Simultaneously several officers were sent abroad to study the gymnastic systems employed by other armies in Europe. In 1860 Maclaren was asked to develop a system of military gymnastics for the British Army, which resulted in the publication of *A Military System of Gymnastics Exercises for the Use of Instructors* (1868).⁶² The success of the Hammersley cohort and positive reports on the contributions of military gymnastics in Europe stimulated the construction of the gymnastic training school at Aldershot in 1861.⁶³ Maclaren was named the director of the Army Gymnastics Staff (which later became the Army Physical Training Corps) and Hammersley was named the first “Superintendent of Gymnasia”. A cadre of non-commissioned officers trained by Maclaren were selected as instructors of gymnastics at the military gym at Aldershot. Maclaren later published the *System of Physical Education* (1869), in which he stated that although “systemized exercise is valuable to all...the power of the man and the serviceability of the soldier are inseparable conditions.”⁶⁴ When you physically train a soldier “you endow him with the power to overcome all difficulties against which such qualities can be brought to bear, against all difficulties requiring strength, activity, energy, dexterity, presence of mind, tenacity, and endurance.”⁶⁵ “There is no change in any art or branch of science...common to ancient or modern times, so great as in these systems of bodily Exercise.”⁶⁶ “It is found that no other form of drill [other than gymnastics] so rapidly converts the recruit into the trained soldier”.⁶⁷

Maclaren goes on to laud the benefits of gymnastic training to the Prussian Army; “since the soldiers’ period of service is so short (three years), that every agent to hasten his efficiency must be seized.”⁶⁸



Figure 1.2. Maclaren’s 12 Apostles—Aldershot Gymnasium, Oxford, April 1861.

Source: Photo was taken in 1861—later published in Oldfield, E.A.L, *History of the Army Physical Training Corps* (Aldershot: Gale & Polden LTD, 1955), 2. In 1971 The Aldershot News (owned G/P) was acquired by the Surrey Advertiser Group, which later became part of the Guardian Group of newspapers. Robert Maxwell gained control of BPC and Gale & Polden with it in 1981, naming his new Company Maxwell Communications. In November 1981 Gale & Polden finally closed. Robert Maxwell died in 1991 and in 1992 Maxwell Communications collapsed, abandoning © privileges.

Maclaren was one of the few 19th century practitioners who focused on progressive physical development.⁶⁹ Relative to training soldiers, he contrasted the exercise focus of the “ancients”—make the strong stronger (the cultivation of individual energy, strength and courage) to that of the 18th century gymnasts—“do them good” (effortless precision of a well-directed machine). Maclaren proposed that a military system of physical de-

velopment should: (1) cultivate the body to the highest attainable capacity, and (2) apply this physical power to 'professional purposes' (i.e., occupational fitness). "A military system of bodily training should be so comprehensive that it should be adapted to all stages of professional career of the soldier."⁷⁰ Physical training should be gradual, uniform, and progressive giving rise to "elasticity to his limbs, strength to his muscles, mobility to his joints,...and stimulate to healthy activity those organs of the body... under all circumstances of trial, privation, or toil...to strengthen the man in order to perfect the soldier...military authorities have been the first to recognize the importance of systematized bodily training...And thus will every soldier in depot, camp, or garrison, be provided with the means of bodily exercise, in the most complete form."⁷¹ "By getting soldiers out of the barracks, canteens and brothels and into the gymnasium and onto the games field, officers believed that they could improve the fighting capabilities of their men while also improving their minds, morale and moral fiber."⁷²

Following the initial gymnastics training of Maclaren's "twelve apostles", the British Army used the training academies to develop cohorts of military gymnastics instructors for the Army. "After undergoing this selection process, would-be gymnastics instructors attended a six-month course of gymnastics and physical training, including long distance cross-country running, fencing, boxing, and various conditioning drills involving rope-climbing, trapeze work, and the negotiation of obstacles while carrying packs and rifles."⁷³ Gymnastic training for all new soldiers lasted for the first three months and generally took precedence over all other training. Instructors were trained and certified at Aldershot and were under the supervision of a senior officer who was also a trained instructor.

Leading up to the Franco-Prussian War in 1870 the conceptualization of and doctrine for physical readiness training took quantum leaps forward in the Prussian Army. As found in the *Die Vorschriften uber das Turnen fur der Infanterie* (Gymnastic Instructions for the Infantry), published in 1876, the Prussian Army fully inculcated military gymnastic exercises into their military training programs. "Gymnastic exercises constitute an essential factor in the military training of the individual man. They should not only increase the strength, agility, and endurance of the body, but should strengthen his will power, resolution, self-confidence and courage, and call forth a health spirit of emulation."⁷⁴ Exercises in the Prussian physical training program were divided into three categories: (1) free- and weapon exercises, (2) exercises with gymnastic machines, and (3) exercises in applied gymnastics. Balance was a key principle of Prussian physical

training; “In the course of every hour devoted to gymnastics, all parts of the body are...to be brought equally into play.”⁷⁵ They considered the free movements to be the foundation of bodily training for soldiers and should be arranged in groups, “so that head, arms, back, legs, and feet shall be exercised in equal measure.”⁷⁶

During his travels throughout Europe, Dr. Edward Hartwell, the American academician, established further evidence of the use of military gymnastics in the training and development of German soldiers and officers. “Gymnastic exercises constitute a considerable and important part of the preliminary training of officers in the cadet and war schools, and of the drill to which recruits and soldiers in the Army are subjected.”⁷⁷ Most of the gymnastics training of Prussian recruits and soldiers was done by “under-officers” who were trained and supervised by officers. Much of the success of the gymnastic training was attributed to the extensive training of the officer corps. All infantry officers were required to be familiar with the principles of military gymnastics and a select cadre of approximately 200 infantry officer attended a 5-month course at the *Militarturnanstalt* in Berlin each year. Medical officers provided lectures in anatomy and physiology. “Practical instruction is given in free gymnastics, heavy gymnastics, jumping, sword-play, bayonet exercise, and in ‘applied military gymnastics’ (*Hindernissturnen*)”, which were squad-level exercises related to clearing ditches and scaling walls and spiked fences.⁷⁸

When Napoleon III of France attacked Prussia in 1870, the Prussian Army was prepared for war. In less than two months the Prussian Army routed the French Army and captured Napoleon III. Many historians attribute the Prussian victory to superior rail transportation and the introduction of breech-loading artillery and rifles.⁷⁹ However, others give much of the credit for victory to the physical training and discipline of the Prussian soldiers, which was generally attributed to the rise of physical and gymnastics education (*Turnen*) in German schools. The application and benefits of physical readiness training to combat was made clearly evident during the Franco-Prussian War (1870 War). “When the superior physical training of one of the parties to so great a contest as the Franco-Prussian War is known to have been the force that turned the tide of victory in its favor, the United States cannot afford to reject it.”⁸⁰

Notes

1. James E. Pilcher, "The Building of the Soldier." *The United Service* 7:4 (April, 1892): 322; Note: Pilcher's comments were in reference to the fall of the Roman Empire.
2. Pilcher, "The Building of the Soldier", 322.
3. J.T. Hooker. *The Ancient Spartans*. (London: J.M. Dent, 1980), 137; Paul Cartledge, *Spartan Reflections*. (Los Angeles: University of California Press, 2001), 85-88.
4. Cartledge, *Spartan Reflections*, 88.
5. J.C. Boykin, "Physical Training," in *Report of the Commissioner of Education for The Year 1891-1892* (Washington: Government Printing Office, 1894), 459.
6. Note: Quote was originally attributed to Sun Tzu, *The Art of War*.
7. Note: 20 Roman miles is equivalent to 18.4 miles; 18.4 miles in 300 minutes equals a 16:18/mile pace.
8. www.roman-empire-net/army/training.html (accessed February 2, 2011).
9. Josephus Flavius, *The War of the Jews* (78 AD), Book 3 (From Vespasian's Coming to Subdue the Jews to the Taking of Gamala), Chapter 5 (A Description of the Roman Armies and Roman Camps and of Other Particulars for Which the Romans Are Commended), 1; available at: <http://www.sacred-texts.com/jud/josephus/index.htm> (accessed 11 April 2012).
10. Jan Broekoff, "Chivalric Education in the Middle Ages." *Quest* 11 (1968): 27.
11. Note: the seven liberal arts are: rhetoric, grammar, dialectics, arithmetic, geometry, astronomy, and music.
12. Broekoff, "Chivalric Education in the Middle Ages", 28.
13. Note: in the Battle of Agincourt of 1415, marching through muddy terrain in heavy armor so severely fatigued the French army that they lost the battle to a much smaller and lighter armored English force.
14. Gustave Dore, trans., *The Works of Rabelais (with notes and illustrations)—Book 1: Gargantua and His Son Pantagruel*, (Derby: The Moray Press, 1894), Book 1, Chapter 1.23, unnumbered; later translated into English by Sir Thomas Urquhart of Cromarty and Peter A. Motteux.
15. Boykin, "Physical Training", 473.
16. Fred E. Leonard, *History of Physical Education*. (Philadelphia: Lea & Febiger, 1923), 52.
17. Edward Ford, "The "de Arte de Gymnastica" of Mercuriale, *Australian Journal of Physiotherapy* 1:1 (October 1954): 32; Note: the complete analysis of "De Arte Gymnastica" by Hieronymus Mercurialis (1569).
18. George Turnbull, *Observations upon Liberal Education*, In All Its Branches. (London: A Milar, 1742), 295-6.
19. Foxley, Barbara, trans., *Emile (On Education) by Rousseau, Jean-Jacques* (The Project Gutenberg EBook Series, 18 July 2002), 64.

20. Foxley, Barbara, trans., *Emile (On Education)*, 16; Boykin, "Physical Training", 482.
21. Fred E. Leonard, "The Beginning of Modern Physical Training in Europe," *American Physical Education Review* 9:2 (1904): 90.
22. Leonard, *History of Physical Education*, 68.
23. Boykin, "Physical Training", 483; Note: Johann GutsMuths is widely acknowledged to be the father of modern physical education.
24. Gertrud Pfister, "Cultural Confrontations: German Turnen, Swedish Gymnastics and English Sport—European Diversity in Physical Activity from a Historical Perspective," *Culture, Sport, Society* 6:1 (2003): 65.
25. Pilcher, "The Building of the Soldier", 325.
26. Alden Partridge, "Lecture on Education," in *The Art of Epistolary Composition and Discourse on Education*, ed. Francois Peyre-Ferry's (Middletown, Conn.: E & H. Clark, 1826), 265.
27. Fred E. Leonard, *Pioneers of Modern Physical Training*. (New York: Association Press, 1915), 23-24.
28. Leonard, "The Beginning of Modern Physical Training in Europe" 98; Leonard, *Pioneers of Modern Physical Training*, 25-26.
29. Pilcher, "The Building of the Soldier", 324.
30. Leonard, "The Beginning of Modern Physical Training in Europe", 99; Fred E. Leonard, "Per Heinrich Ling, and His Successors at the Stockholm School of Gymnastics," *American Physical Education Review* 9:4 (1904): 226; Leonard, *Pioneers of Modern Physical Training*, 27.
31. Pilcher, "The Building of the Soldier", 324.
32. Leonard, "The Beginning of Modern Physical Training in Europe," 99-102.
33. Leonard, "The Beginning of Modern Physical Training in Europe," 100; Pfister, "Cultural Confrontations". 80.
34. Pfister, "Cultural Confrontations", 65.
35. Michael Schoy, *General Gerhard Von Scharnhorst: Mentor of Clausewitz and Father of the Prussian-German General Staff*, (unpublished, March, 1809): 1.
36. Ulrich Hesse-Lichtenberger, *Tor! The Story of German Football*. (London: WSC Books Ltd, 2003), 16.
37. Edward Hartwell, "Physical Training in American Colleges and Universities," in *Report to the Commission of the US Stated Bureau of Education, No. 5-1885*, (Washington: Government Publishing Office, 1886), 158.
38. Gunars Cazars, and Glenn A. Miller, "The German Contribution to American Physical Education: A Historical Perspective," *The Journal of Physical Education, Recreation & Dance* 71:6 (2000): 344.
39. Pfister, "Cultural Confrontations", 65; Gertrud Pfister, "The Role of German Turners in American Physical Education," *International Journal of the History of Sport* 26:13 (2009): 1896.
40. Ralph D. Paine, "The Gospel of the Turn Verein," *Outing* 46:2 (May, 1905): 174.

41. Note: The Lutzow Freikorps were well known as the “*Schwarze Jäger*”, the black hunters. As an all-voluntary unit, the men were required to provide their own uniforms. Due to the myriad of coat colors volunteers brought to the unit, it was decided they would all die their coats ‘black’, hence the term *schwarze jäger*.

42. Charles Henry Schaible, *An Essay on the Systematic Training of the Body* (London: Trubner and Co., Ludgate Hill, 1878), xvi.

43. Hesse-Lichtenberger, *Tor! The Story of German Football*, 17.

44. Fredrik Jahn and Ernst Eiselen, *Die Deutsche Turnkunst* (Berlin: Preis and Thaler, 1816); Schaible, *An Essay on the Systematic Training of the Body*, xvi, 57; Pfister, “Cultural Confrontations”, 66.

45. Schaible, *An Essay on the Systematic Training of the Body*, 58; Hartwell, “Physical Training in American Colleges and Universities”, 94.

46. Schaible, *An Essay on the Systematic Training of the Body*, 59.

47. Leonard, “The Beginning of Modern Physical Training in Europe”, 102.

48. Hartwell, “Physical Training in American Colleges and Universities”, 94.

49. Phokion H. Clias, Captain, *An Elementary Course of Gymnastic Exercises*, 4th ed. (London: Sherwood, Gilbert, And Piper, 1825), vii; Leonard, “The Beginning of Modern Physical Training in Europe”, 103; Leonard, *Pioneers of Modern Physical Training*, 50.

50. Clias, *An Elementary Course of Gymnastic Exercises*, 52-3.

51. Clias, *An Elementary Course of Gymnastic Exercises*, 54-56.

52. Clias, *An Elementary Course of Gymnastic Exercises*, 19.

53. Schaible, *An Essay on the Systematic Training of the Body*, 3.

54. Hartwell, Hartwell, “Physical Training in American Colleges and Universities”, 161-2; Schaible, *An Essay on the Systematic Training of the Body*, 63.

55. Hartwell, Hartwell, “Physical Training in American Colleges and Universities”, 161-3; Pilcher, “The Building of the Soldier”, 325; Schaible, *An Essay on the Systematic Training of the Body*, 64.

56. Pilcher, “The Building of the Soldier”, 325.

57. Pilcher, “The Building of the Soldier”, 325-326.

58. Pilcher, “The Building of the Soldier”, 326.

59. Pilcher, “The Building of the Soldier”, 326.

60. Pilcher, “The Building of the Soldier”, 327.

61. E.A.L. Oldfield, *History of the Army Physical Training Corps*, (Alder-shot: Gale & Polden LTD, 1955): 1.

62. Fred E. Leonard, and George B. Affleck, *A Guide to the History of Physical Education*, (Philadelphia: Lea & Febiger, 1947), 206; Oldfield, *History of the Army Physical Training Corps*, 1-2; J.D. Campbell, “Training for Sport Is Training for War: Sport and the Transformation of the British Army, 1860-1914,” *International Journal of the History of Sport* 17: 4 (2000): 27.

63. Hartwell, Hartwell, “Physical Training in American Colleges and Universities”, 94.

64. Archibald Maclaren, *A System of Physical Education—Theoretical and Practical*, (Oxford: Clarendon Press Series, 1869), 75.
65. Maclaren, *A System of Physical Education*, 75-76.
66. Maclaren, *A System of Physical Education*, 79-80.
67. Maclaren, *A System of Physical Education*, 80.
68. Maclaren, *A System of Physical Education*, 80.
69. Archibald Maclaren, *A Military System of Gymnastic Exercises, and a System of Fencing, for the Use of Instructors*, (London: Her Majesty's Stationary Office, 1868), 33.
70. Maclaren, *A Military System of Gymnastic Exercises*, 90.
71. Maclaren, *A System of Physical Education*, 90-93.
72. Campbell, "Training for Sport Is Training for War", 27.
73. Oldfield, *History of the Army Physical Training Corps*, 2; Campbell, "Training for Sport Is Training for War", 29.
74. *Die Vorschriften über das Trunen der Infanterie*, 1876 (direct translation in Hartwell, 1886), 179.
75. *Die Vorschriften über das Trunen der Infanterie*, 179.
76. *Die Vorschriften über das Trunen der Infanterie*, 180.
77. Hartwell, "Physical Training in American Colleges and Universities", 178.
78. Hartwell, "Physical Training in American Colleges and Universities", 179.
79. Jonathan House, *Toward Combined Arms Warfare: A Survey of 20th-Century Tactics, Doctrine, and Organization*, (FT Leavenworth, KS: US Army Command and General Staff College, 1984), 16.
80. Pilcher, "The Building of the Soldier", 336.

Chapter 2

The Naissance of Army Physical Readiness Training

Colonial and Revolutionary War Periods in America

As the colonization of America progressed into the 18th Century, settlers were mostly preoccupied with providing the basic needs of food, shelter, and security. Physical exercise was limited to the strenuous manual labor required to provide these basic needs and to defend the often small, remote settlements. Most colonial settlements adopted the European “militia model” of self-defense. As early as 1692 the Massachusetts Bay Colony sent a fully formed and equipped militia on the Salem expedition.¹ These constabularies were used to fend off attacks from Indians and marauders and to protect crops and hunting grounds. Those who joined the local militia were often the strongest, most fit citizens who were most capable of defending the settlement. Speed, strength, and stamina were among the most beneficial physical characteristics of colonial militiamen.

During the early 1700’s a myriad of émigrés and American-born citizens initiated a national discussion concerning the structure and function of public education and how education informs the national ethos. Benjamin Franklin was a significant figure in the early development of public education and was the first American to propose that physical training be a part of the curriculum of an educational institution. In the early 1740’s Franklin traveled frequently to England where he was introduced to the works of Renaissance writers such as Milton, Locke, and Turnbull. Franklin’s perceptions of universal education were further influenced by his love for swimming and participation in a variety of other physical activities. Significantly influenced by Turnbull’s “Observations on a Liberal Education” (1742), Franklin penned his own theories of education entitled *Proposals Relating to the Education of Youth in Pensilvania* (1747). In this treatise Franklin outlined the need for an “academy” in which the youth of Pennsylvania might “receive the Accomplishments of a regular education.” Along with the three “R’s”, Franklin recommended “That to keep them in Health, and to strengthen and render active their Bodies, they be frequently exercis’d in Running, Leaping, Wrestling, and Swimming, &c.”² As a national political figure, Franklin’s treatise would find broader application to the training of soldiers in the national interest.

Throughout the colonial period militia and armies of the United States primarily utilized the military and training strategies appropriated from Europe. “The Continental Army was the product of European

military science, but like all [American] institutions..., its origins were modified by the particular conditions of American experience.”³ Although improvements in rates of fire and the mobility of artillery had begun to change the training and deployment of infantry, there was no real effort to physically train soldiers during the colonial period in the United States. With the outbreak of the American Revolutionary War, it was readily apparent to colonial military leaders that the militias could not match up with the British Army with respect to—arms, tactics, manning, or discipline. Initially the Colonial Army resorted to guerilla style tactics, which increased the need for speed, mobility, and stamina. On 26 October 1774 the Massachusetts Provincial Congress adopted a comprehensive military program based upon the militia format. With little knowledge of or predilection for physical readiness training, rather than developing a systematic physical training program designed to prepare Soldiers for combat, military leaders chose to assign Soldiers to special units based upon preexisting physical skills and abilities. Military leaders divided their militia into “regular” units (about 75% of the force) and “minute men” units (about 25% of the force). The “minute men” companies were rapid response units composed of about 50 men who could turn out fully armed “in a minute’s notice.”⁴

Minutemen were a small hand-picked elite force, which were required to be highly mobile and able to assemble quickly... typically 25 years of age or younger, they were chosen for their enthusiasm, reliability, and physical strength.⁵

An extension of the “minutemen” concept was the “hit and run” guerrilla tactics used by many smaller Continental forces. Through his strategic vision as a gifted administrator and logistician, Georgia Statesman and Revolutionary War General William Few (1748-1828) utilized these small force tactics in his defense of the South. “Experience and innate common sense enabled him to develop patience, preserve his forces for key attacks, and then pick his time and place to defeat small enemy parties without unduly risking the safety of his men. Most important, he displayed the raw physical stamina required to survive the serious hardships of guerrilla warfare.”⁶

A singularly important event relative to future physical training in the US Army was marked by the arrival of Frederick von Steuben at Valley Forge in February 1778. Impressed with von Steuben’s credentials, General George Washington directed him to prepare a system of “discipline, maneuvers, and evolutions, regulations for guards.”⁷ During the summer of 1778 Von Steuben took a demoralized and defeated colonial army and turned it into an effective fighting force. He utilized a variety of lessons

(to include the “train the trainer” model) he learned at Prussian Military College. He instilled a sense of order and discipline into a sick, cold, and hungry cabal. More important than the training protocols themselves, was the historical implications of adopting training strategies from more experienced European countries—especially Prussia.

Following in the footsteps of his longtime friend Benjamin Franklin, Thomas Jefferson became an influential force in the development of the mind-body-spirit continuum in the United States. Jefferson was an avid outdoorsman, traveled extensively, and promoted education of the mind and body through physical activity and exercise. While serving as the minister to France from 1784-1789, Jefferson had an extended opportunity to study European physical culture.⁸ Demonstrating his commitment to health and physical activity, two of Jefferson’s more pertinent pronouncements were: “If the body be feeble, the mind will not be strong. The sovereign invigorator of the body is exercise, and of all the exercises walking is best.... Not less than two hours a day should be devoted to exercise, and the weather should be little regarded.”⁹ “Dispositions of the mind, like limbs of the body, acquire strength by exercise.”¹⁰

In 1790, during the post-Revolutionary war review, Secretary of War Henry Knox developed a staffing proposal for a “national system of defense”. His plan required all able-bodied men to serve in the defense of the nation. Knox proposed three service “corps”, the advanced corps (soldiers in training; ages 18-20), the main corps (ages 21-46) and the reserve corps (ages 46-60). In outlining an initial training program Knox proposed that: “No amusements should be admitted in camp but those which correspond with war: the swimming of men and horses, running, wrestling, and such other exercises as should render the body flexible and vigorous.”¹¹ Although Congress failed to adopt Knox’s plan for a defense force, “the need of a well-trained militia had been sharply and abundantly emphasized by the events of the revolutionary war.”¹²

Over the next 10 years military and political leaders debated the need for a trained and educated officer corps. Following an extensive report filed by Secretary of War James McHenry, on 16 March 1802 President Thomas Jefferson signed the Military Peace and Establishment Act directing the establishment of the US Military Academy at West Point. The primary mission of the Academy was to establish a professional officer training program that would develop army officers in the academic, military and physical domains.¹³ During his first year as USMA Superintendent, Jonathan Williams undertook the development of the first organized physical education/training program.¹⁴ “Physical training held a notional position

in the curriculum of the United States Military Academy at West Point soon after its 1802 inception, reflecting some awareness of emerging European practices.”¹⁵ Williams’ appreciation of the importance of physical education and athletics to combat readiness was demonstrated in an 1802 letter to President Jefferson requesting that a sword master and head-riding instructor be added to the US MA academic faculty.¹⁶ That request was not fulfilled until 1816 when Alden Partridge (US MA Superintendent 1815-1817) bestowed the title of “Master of the Sword” on West Point’s first fencing instructor, Pierre Thomas.¹⁷

The United States Military Academy was generally under resourced and little more than a token organization until the War of 1812 galvanized US Army and political leaders to make better use of the Academy. This evolutionary period coincided with the appointment of Captain Alden Partridge as Superintendent in 1815. He was the first Superintendent to advocate a comprehensive officer training program, which placed significantly greater emphases on physical development. In his paper *Lecture on Education* (1826), Partridge declared that “Another defect in the present system is the entire neglect, in all our principle seminaries, of physical education. The great importance or even absolute necessity of a regular and systematic course of exercise for the preservation of health and confirming and rendering vigorous the constitution, must be evident to the most superficial observer.”¹⁸ As a vigorous proponent of physical education, Partridge developed and implemented a systematic program of physical training for military officers. He promoted a myriad of physical activities to include fencing, swimming, skating, hiking and marches, boxing, rowing and football.¹⁹ Although Partridge resigned his commission in 1818 and left the Academy under somewhat dubious circumstances, he moved back to his native Northfield, Vermont to found the American Literary, Scientific, and Military Academy (known today as Norwich University). Following in the footsteps of Benjamin Franklin, Partridge was one of America’s first exercise enthusiasts and strident proponent of physical education as an integral part of a multidisciplinary educational curriculum. “That a youth may, by means of a regular system of exercise, preserve all his bodily activity and vigor, and at the same time apply himself most assiduously to study, I have never had any doubts; but if I had, the facts developed since the establishment of this seminary, would have dispelled them.”²⁰ As part of his “academy” curriculum, Partridge often led his cadets on hiking expeditions in the local mountains of New England. On one excursion during the summer of 1822, over eight days (no physical activity was allowed on the “Sabbath”) Partridge and a group of cadets hiked 145 miles from 14-22

June, averaging over 18 miles per day.²¹ “Many of my pupils...walk with facility forty miles per day. In the summer of 1823, several of them left Norwich at day-break in the morning, walked to the summit of Ascutney mountain, and returned to Norwich about 9 o’clock in the evening of the same day—the whole distance forty-six miles: which considering the fatigue and difficulty of ascending and descending the mountain, (upwards of 3,000 feet high,) may reasonable be estimated as equivalent to sixty miles on the usual roads of the country.”²²

But, my fellow citizens, be not deceived by the syren song of peace, peace, when in reality, there is no peace, except in a due and constant preparation for war...so long as mankind possess the dispositions which they now possess, and which they ever have possess, so long they will fight.²³

From 1817 to 1833 the United States Military Academy was marked by significant grow in the academic programs resulting from the leadership of Sylvania Thayer. Academic departments were formed with the intent of “perfecting and broadening its scope,” to the general exclusion of military drill and physical education.²⁴ The singular focus on academic work did not escape the attention of the 1826 USMA Board of Visitors (BOV): “the undersigned are persuaded, that a Riding-School and Gymnastic Exercises are much wanted here; and they recommend that a building be erected, fitted for these purposes”.²⁵ The BOV later stated that “Gymnastic Exercises, too, or a thorough physical education, seem to the undersigned to be of great importance in an Institution like this, destined to furnish officers and engineers to the civil as well as military service, to whom a hard constitution and the easy and dexterous use of all their physical powers is indispensable for professional success.”²⁶ “A thorough and careful physical education is more important to a military officer than to any other person...and is indispensable for professional success.”²⁷

Civil War Period in America

Despite the efforts of military leaders such as Alden Partridge and Winfield Scott to establish a standardized physical training program for the Military Academy and for the Army, throughout of the early 1800’s the Army’s physical training doctrine for recruits and soldiers remained disordered and decentralized. Recruits were often transported to military posts directly from recruiting depots with no physical or military training and little knowledge of their future duties and responsibilities. From 1837-1841 Joel Roberts Poinsett, Secretary of War in the Van Buren administration, attempted to remedy this training problem. In the early 1800’s Poin-

sett had traveled extensively in Europe where he was introduced to the organization and regime of the French army under Napoleon, to include the constitution and duties of the general staff and improvements in artillery.²⁸ Poinsett instituted a program of initial military training by turning recruit depots into initial training centers. The first organized recruit training began in 1837 when the "War Department ordered all infantry recruits to Fortress Monroe (the name was soon changed to Fort Columbus) on Governor's Island for training and, in 1838, dragoon recruits were ordered to Carlisle Barracks for daily instruction and drills."²⁹ Although these early "drills" generally consisted of practicing facing movements, order of arms, and marching, during some drill periods recruits participated in what was known as "fatigue drill" or "fatigue duty".³⁰ These duties included hard manual labor such as clearing fields, digging pits or trenches, building enforcements, and loading/unloading supplies. Although the duty day for US Army soldiers was generally dawn to dark, there were some free periods where soldiers were permitted to read, play games, swim, wrestle and box.³¹

While the science and application of gymnastic exercises were steadily evolving throughout England and Europe, from the late 1820's through the late 1840's the advancement of gymnastics, physical education, and sport developed exponentially in the United States due primarily to the influx of immigrants from Germany, Sweden, and England. In 1848, following the failure of a relatively bloody revolution designed to formalize the democratic nation of Germany, many of the more liberal Turners found it expedient to leave Germany. Many Turners immigrated to the United States where they quickly re-established the Turnen gymnastics model. Turnverein were established throughout the central United States from Ohio to Wisconsin. "The Turn Verein movement...is a modern revival of the Greek ideal of building manhood in a harmonious development of body, mind and character. It tries to do what organized athletics have partly failed to do...because the eagerness to win...have put into the background the benefits to be derived from the exercise."³² One of the more successful Turnverein was established by George Brosius in Milwaukee, Wisconsin, who directly and indirectly played a crucial role in the development of US Army physical training doctrine shortly following the Civil War.

Meanwhile, following a significant period of neglect primarily as a result of the academic predilection of Superintendent Silvanus Thayer (1817-1833), physical education at West Point had degenerated into a program of simple military drill; even recreational sports were viewed as nuisance activities.³³ As early as 1842 acting Surgeon-General Henry

Heiskell recommended to the Secretary of War-John Spencer that a regular course in “gymnastics” be established at West Point.³⁴ The first significant change to the physical training program at West Point since the Partridge Superintendence occurred on 2 November 1847 when Superintendent Henry Brewerton (1845-1852) issued Special Orders, No. 120. He directed cadets to form cricket clubs “as highly conducive to physical development...as another means of recreation during the winter, it is intended to arrange the riding and fencing halls for gymnastics and other exercise...”³⁵ This small step set the stage for a significantly more progressive period in the West Point physical program, which was marked with the reappointment of Richard Delafield in 1856 as the 11th Superintendent of the United States Military Academy.

From April 1855 until mid-1856 Major Delafield traveled extensively throughout Europe under orders from the Secretary of War (Jefferson Davis-1853-1857) to study changes in military operations during the Crimean War.³⁶ Per the Secretary of War’s orders, Majors Delafield and Mordecai, and Captain George McClellan traveled to Russia by way of Prussia, Austria, France and England. The product of this year-long venture was two reports: (1) *The Art of War in Europe* in which Major Delafield mostly outlined changes in European military tactics, armament, and fortification; and (2) *The Seat of War in Europe* by Captain McClellan.³⁷ Although they spent most of their time reviewing fortifications and maneuvers, Delafield and McClellan had numerous opportunities to view training, especially in France. McClellan described the French manual of gymnastics (*The System of Gymnastics*-1847) and training sessions at the gymnastic school near Vincennes, “to which one sergeant or corporal is sent from every regiment and independent battalion” for six months of training. The six month course contained instruction in gymnastics, scaling walls, swimming, fencing, etc. “The agility and skill exhibited by the pupils was really wonderful. The efficiency of the French infantry is in no small degree attributable to the great attention paid to these points throughout the army.”³⁸

Over a 20-year period Congress and US Army leaders attempted to gain “control” over the curriculum at West Point. Finally in October 1858, Secretary of War John Buchanan Floyd appointed a board of officers to review the entire West Point curriculum to include physical training. Based upon his observations of the benefits of the military gymnastics programs in France and Germany, Superintendent Richard Delafield was receptive to a reformation of the physical training curriculum. He appointed Lieutenant John C. Kelton, who was currently an instructor of gymnastics in

the Department of Tactics, to review the physical education program as part of Secretary Floyd's mandated curriculum review. To expand the scope of the physical program review, Delafield sent Kelton to Europe from 15 June 1859 to 24 April 1861 to "acquire by observation a knowledge of the progress and condition of this [gymnastics] and other field of professional usefulness."³⁹

John Kelton conducted a thorough, professional review and recommended comprehensive changes in the physical education program. He proposed a curriculum that included instruction in gymnastics, calisthenics, swimming, and fencing. Kelton also recommend specific physical standards for cadets and officers including the ability to: scale a fifteen foot wall without instruments, vault a horse fifteen hands high, leap a ditch ten feet wide, run a mile in eight minutes or two miles in eighteen minutes, walk four and one half miles in one hour, and walk three miles in one hour carrying a knapsack weighing twenty pounds with arms and equipment.⁴⁰ Kelton also recommended that each cadet be able to swim a mile and repeat, dive and remain three-quarters of a minute under water swimming, dive head foremost from a height of eight feet, and to leap into the water from a height of twenty feet. He additional recommended requirements for use of the foil, sword, and bayonet. Kelton designed and implemented the first professional physical education curriculum at West Point.⁴¹

With the failed reelection bid by Franklin Pierce in 1857, Jefferson Davis, resigned as Secretary of War and returned to his native Mississippi to run for Congress. He was elected and began his term of service in 1858. In an attempt to follow-through on his initial efforts to revise military training for the US Army, Davis requested the creation of a Congressional "Commission on the US Military Academy". Davis served as the president of the commission, which conducted another extensive review of the entire USMA curriculum. During the review, which was published on 13 December 1860, John Kelton again had the opportunity to promote his "new" physical education program to the Commission. As presented in Appendix B1, Kelton recommended that a standardized course in "military gymnastic exercises" be offered as instruction to the 5th and 4th Class cadets. When properly executed, these exercises would develop the "physique", aid in the skillful use of military weapons, develop self-reliance and confidence, learn to estimate the exertion men are capable of enduring, and to "fit" him for the hardships of military service.⁴²

Unfortunately, Kelton's extensive work to develop and implement an innovative physical education curriculum at West Point was abruptly interrupted by the start of the Civil War. As with all wars the Civil War

brought new technology and military tactics to the battlefield with improvements in the accuracy and rate of fire for rifles and artillery. The increased lethality of breech-loading firearms, such as the Spencer and the Gatling gun, triggered the need for changes in infantry tactics and ultimately changes in physical readiness training. One of the most poignant examples of the benefits of physical fitness to maneuver and fire came through the command of Confederate General Stonewall Jackson. Jackson trained his men to be the fastest, toughest marchers in the US Army, “and time after time surprised Union troops who did not believe he was anywhere within miles of them.”⁴³ “Within four weeks this army has made long and rapid marches, fought six combats and two battles... the severe exertions to which the commanding general called the army... is now given, in the victory of yesterday.”⁴⁴ The physical work required to move great distances at fast paces, to provide cover and concealment, to dig entrenchments and fortifications, etc. significantly increased the work capacity needs of infantrymen.

Civil War commanders witnessed the futility of frontal assaults against linear defensive positions, such as Pickett’s Charge during the Battle of Gettysburg. With over 200,000 combat deaths and almost 300,000 non-combat deaths, the United States Army was forced to reflect on ways to improve soldier health, fitness, and survivability on the battlefield. In several after action reports, military leaders discussed the poor physical condition of their soldiers and what affects that had on combat and non-combat casualties.⁴⁵ Although West Point had served as the nexus for physical training and doctrine development for the US Army, with the start of the Civil War, virtually all efforts to enhance physical readiness training doctrine were lost.

Ironically, in comparison to the US Army the post-Civil War period was a time of dynamic growth in the science of physical exercise and physical training for schools, communities, and colleges throughout the United States. This movement was fueled in part by the failure of the popular revolt in Germany (1848) and the immigration of large number of German Turners to the United States. By the 1860’s the Turnverein movement was firmly rooted into the physical culture of the United States as witnessed by the development of “Normal Schools” from Pennsylvania to Wisconsin. Although Turners were not particularly interested in American values or political goals, they wisely understand the need to contribute to the development of their new nation. As such the Turners set about to systematically introduce their physical culture (*Turnen*) into the American educational and military training systems. It was estimated that approxi-

mately 6,000 Turners joined the Union Army at the start of the Civil War (almost 2/3 of the entire Turner population in the US). Publications such as S.W. Mason's *Gymnastic Exercises for Schools and Families* (1863), J. Madison Watson's *Manual of Calisthenics* (1864), William Wood's *Manual of Physical Exercises* (1867), and J. Laughlin Hughes' *Manual of Drill and Calisthenics* (1879) demonstrated the Turner influence on exercise and sport in the United States and Canada.⁴⁶

From 1861-1882 organized physical training in the form of gymnastic exercises were discontinued at West Point.⁴⁷ There were small resurgences of military doctrine through this period like the 3 February 1866 publication in the *Army and Navy Journal*, *Manual of Military Gymnastics*. This short article offered "to officers who needed some discipline of this kind", proposed exercises to work muscles that were not exercised during drill and manual labor. The unknown author suggested that these exercises, which were "being used in a number of army units...will be found of essential assistance in forming an athletic, well balanced, physically developed soldier."⁴⁸ The exercises were comprised of callisthenic and gymnastic exercises such as toe raises, stretching lunges, arm/shoulder exercises, knee bends, and ballistic jumps.

During the superintendency of Maj. Gen. John M. Schofield, the West Point physical program embarked upon a 50-year renaissance that would change the nature of physical readiness training at United States Military Academy and in the Army. In 1877 Schofield began a reformation of the USMA curriculum. Among the many changes was the revitalization of systematic instruction in gymnastic exercises and swimming. On 20 January 1881 Maj. Gen. Oliver O. Howard was appointed the 20th Superintendent of the United States Military Academy. Over concerns with the performance of the current Master of the Sword (Antone Lorentz) during academic year 1881, Howard related in his annual report (1881) that since "these [gymnastic] exercises and those of the fencing and sword exercise...did not prove this year to be as creditable as other performances of the cadets, the commandant has now placed [them] under the more direct and immediate control of one of his skillful tactical officers."⁴⁹ The skillful tactical officer was a young infantryman named Edward Samuel Farrow—a Class of 1876 Academy graduate. After several deployments to the "frontier" and multiple commendations for his leadership and bravery fighting Indians, Second Lieutenant Farrow returned to USMA in February, 1881 where he was assigned as an instructor in the Department of Tactics. Farrow was a prolific writer and had already published a book on marksmanship in 1879. During his first year at USMA as an instructor in

infantry tactics, Superintendent Howard directed Farrow to prepare a “system of gymnastic exercises” and formal instruction for the “swimming baths.”⁵⁰ On 4 November 1881, Farrow published *A System of Military Gymnastic Exercises and a System of Swimming* (1881). Much of his work was creatively influenced by the works of Ravenstein and Hulley (English citizens of German descent who published *A Handbook on Gymnastics and Athletics*—1867) and Donald Walker (who published *British Manly Exercises*—London, 1834). However, much of Farrow’s “inspiration” came directly from Archibald Maclaren’s 1869 publication—*A System of Physical Education*. Farrow continued to serve in the Department of Tactics until the spring of 1882. Although Antonio Lorentz (1858-1884) retained the title of Master of the Sword, Farrow served as the defacto Master of the Sword from 1882-1884 when he was reassigned. Based upon the strides made by Farrow and subsequent death of Antone Lorentz in 1884, USMA initiated a comprehensive search for a new Master of the Sword with a pedagogical and performance background in gymnastics.

Notes

1. Robert K. Wright, *The Continental Army* (Washington, DC: Center for Military History, 1983), 11.

2. Benjamin Franklin, *Proposals Relating to the Education of Youth in Pensilvania*, (National Humanities Center Resource Toolbox, *Becoming American: The British Atlantic Colonies, 1690-1763, 1774*), 3; J.C. Boykin, "Physical Training," in *Report of the Commissioner of Education for The Year 1891-1892*, (Washington: Government Printing Office, 1894), 496.

3. Wright, *The Continental Army*, 3.

4. Gregory J.W. Urwin, *United States Infantry: An Illustrated History 1775-1918*, (New York: Sterling Publishing Company, 1988), 13.

5. <https://www.ushistory.org> (accessed 22 June 2010).

6. <https://www.constitutionday.com/constitution-founding-fathers.html> (accessed 27 April 2011).

7. Note: Von Stueben was actually retired from the Prussian Army as a Captain, however Benjamin Franklin felt Von Stueben would not be taken seriously as a company grade officer; Franklin "manufactured" credentials for Von Steuben that identified him as a lieutenant general (Wright, *The Continental Army*, 140); John Laurens wrote: "I have since had several long conversations with the Baron Steuben, who appears to me a man profound in the science of war, and well disposed to render his best services to the United States." John Laurens, *The Army Correspondence of Colonel John Laurens in the Years 1777-8* (New York: Bradford Club, 1867), 130. Laurens, *The Army Correspondence of Colonel John Laurens in the Years 1777-8*, 134-41; Wright, *The Continental Army*, 141; Note: Von Steuben's document of discipline and order was commonly known as "The Blue Book".

8. Note: Jefferson followed his friend and mentor Benjamin Franklin as the Minister to France in 1884

9. Letter from Thomas Jefferson to Thomas Mann Randolph, 27 August 1786; www.monticello.org (accessed 12 October 2011).

10. Letter from Thomas Jefferson to Robert Skipwith, 3 August 1771; www.monticello.org (accessed 12 October 2011).

11. Edward Hartwell, "Physical Training in American Colleges and Universities," in *Report to the Commission of the US Stated Bureau of Education, No. 5-1885*, (Washington: Government Publishing Office, 1886), 96.

12. Hartwell, "Physical Training in American Colleges and Universities", 96.

13. Hartwell, "Physical Training in American Colleges and Universities", 97.

14. Note: Jonathon Williams was the grandnephew of Benjamin Franklin and served with Franklin in France from 1776-1785; due to his relationship with Franklin Williams no doubt came in contact with Thomas Jefferson, who replaced Franklin as the US Minister to France; back in the United States Wil-

liams again come to the attention of Jefferson while serving in the Philadelphia judicial system; Jefferson would ultimately appoint him as the first Superintendent of the US Military Academy.

15. Jeffery A. Charlston, "Disorganized and Quasi-Official but Eventually Successful: Sport in the US Military, 1814-1914," *International Journal of the History of Sport* 19:4 (2002): 71.

16. Robert Degen, *The Evolution of Physical Education at the United States Military Academy* (Master thesis, University of Wisconsin, Madison, 1967), 18.

17. Michael J. Reagor, "Herman J. Koehler: The Father of West Point Physical Education, 1885-1923." *Assembly*, 51:3 (Jan 1993): 3.

18. Alden Partridge, "Lecture on Education," in *The Art of Epistolary Composition and Discourse on Education*, ed. Francois Peyre-Ferry's (Middletown, Conn.: E & H. Clark, 1826), 265.

19. Charlston, "Disorganized and Quasi-Official but Eventually Successful", 71; Degen, *The Evolution of Physical Education at the United States Military Academy*, 18-19; Webb, 1965, p. 199; McClary, 2001, p. 18

20. "American Literary, Scientific, and Military Academy," *The American Journal of Education* 7:82 (1872): 860; Note: this document contained significant portions of Alden Partridge's direct personal reflections, which clearly pre-dated the publication.

21. "American Literary, Scientific, and Military Academy": 860; Note: most of Partridge's cadets were 12-18 years of age.

22. Alden Partridge, *A Journal of an Excursion Made by the Corps of Cadets of the American Literary, Scientific and Military Academy* (Concord: Hill and Moore, June, 1822), 34-35.

23. Partridge, "Lecture on Education", 271-2.

24. Herman J. Koehler, "The Physical Training of Cadets," in *The Centennial of the United States Military Academy at West Point, New York-1802-1902* (Washington: Government Printing House, Volume I, 1904): 896.

25. *Annual Report of the Board of Visitors to the United States Military Academy*, (Washington: Government Printing Office, 1826), 13; Koehler, "The Physical Training of Cadets", 896.

26. *Annual Report of the Board of Visitors* (1826), 13.

27. Koehler, "The Physical Training of Cadets", 896.

28. Charles J. Stille, "The Life and Services Of Joel R. Poinsett, The Confidential Agent in South Carolina of President Jackson during the Nullification Troubles of 1832." Reprinted from *The Pennsylvania Magazine of History and Biography* (1888): 1,4,8,17; Edward Coffman, *The Old Army: A Portrait of the American Army in Peacetime, 1784-1898*, (New York: Oxford University Press, 1986), 156.

29. Coffman, *The Old Army*, 156.

30. Coffman, *The Old Army*, 157.

31. Coffman, *The Old Army*, 157.

32. Ralph D. Paine, "The Gospel of the Turn Verein," *Outing* 46:2 (May, 1905): 174.

33. Reagor, "Herman J. Koehler", 5-6.
34. James E. Pilcher, "The Building of the Soldier." *The United Service - A Monthly Review of Military and Naval Affairs*, Volume 7:4 (April, 1892): 327.
35. Charlston, "Disorganized and Quasi-Official but Eventually Successful", 72.
36. *Annual Report of the Association of Graduates* (1858), 184.
37. Richard Delafield, *Report on the Art of War in Europe in 1854, 1855, 1856*, (Washington: George W. Bowman, Printer, 1860), v.
38. George B. McClellan, *The Seat of War in Europe* (Report to the Secretary of War), (Washington: A.O.P Nicholson, Printer, 1857), 44.
39. *Annual Reunion of the Association of Graduates*, 1894, p. 12; Charlston, "Disorganized and Quasi-Official but Eventually Successful", 73; David J. Yebra, *Colonel Herman J. Koehler: The Father of Physical Education at West Point*, (Paper written for LD 720: American Military History, United States Military Academy, 1998), 5-6.
40. Kelton, USMA Curriculum Committee Report, 1858-59
41. Yebra, *Colonel Herman J. Koehler*, 3-5; Reports of a Curriculum Study-USMA, 1858-1895; *Annual Reunion of the Association of Graduates*, 1894, p. 10.
42. *Report of the Commission*, Appointed under the eighth section of the act of Congress of June 21, 1860, to Examine into the Organization, System of Discipline, and Course of Instruction, West Point: United States Military Academy, 13 December 1860, 217-219.
43. Will Lang, "Lucian Truscott," *Life Magazine* (2 October 1944): 106.
44. "General Order, No. 53," *The American Annual Cyclopedia and Register of Important Events of the Year 1862, Volume II* (by order of Maj.-Gen Jackson on 28 May 1862), (New York: D. Appleton & Company), 107.
45. Reagor, "Herman J. Koehler", 7.
46. Gertrud Pfister, "The Role of German Turners in American Physical Education," *International Journal of the History of Sport* 26:13 (2009): 2-3.
47. Koehler, "The Physical Training of Cadets", 898.
48. *Manual of Military Gymnastics*, 1866, p. 376-7
49. *Annual Report of the Superintendent of the United States Military Academy*, (Washington: Government Printing Office, 1881), 160.
50. *Annual Report of the Superintendent* (1881), 160.

Chapter 3

The Koehler Era

The germ of such physical training as exists at present in many of our colleges came from abroad, and was planted by German exiles in New England soil.¹

After the Civil War the Turner's influence grew steadily in the United States and culminated in 1880 with a first place finish at the 5th General German Turnfest (25-28 July, 1880) in Frankfort, Germany. The US team featured a young 2nd generation German-American named Herman John Koehler, who took 2nd prize. Koehler studied under George Heintz (later hired to teach physical education and military gymnastics at the United States Naval Academy) at the Normal School of the Turnerbund of Milwaukee, where his uncle George Brosius was the headmaster. Shortly after their return from Frankfort, the Milwaukee Turners were "big news" throughout the country, but especially in the northeast. This attention did not escape the notice of the US Army leadership, who thanks to the work of Edward Hartwell were well aware of the growing popularity of "gymnastic" training in universities and colleges throughout the United States and armies throughout Europe.



Figure 3.1. US Turnverein Team-Frankfort 1880.²

Source: Published in 1880—public domain.

he United States Military Academy began the revitalization of the physical education program under the leadership of Lieutenant Edward Farrow (1881–1884). Farrow developed and maintained a system of instruction in gymnastic exercises and swimming, which he published as a text entitled *A Military System Of Gymnastic Exercises And A System Of Swimming*. This systematic program of instruction revolutionized physical training at USMA. Although Farrow engaged his duties with significant ardor, he was a “rotating” military faculty only temporarily assigned to USMA. Recognizing the need for long-term continuity in the physical education program in the *1884 Annual Report of the Superintendent Superintendent* Wesley Merritt wrote: “A permanent assistant instructor from civil life, will be a lasting benefit to this important part of the training of cadets”.³

The military and health-related benefits of physical training had garnered new attention in the US following the Franco-Prussian War (1870). Many countries sent educators and scientists to Germany to study the use of gymnastics in military training. In 1884 the Commissioner of the United States Bureau of Education tasked Dr. Edward Hartwell, M.D. to develop a report on the status of physical training at American colleges and universities. Hartwell was one of the most powerful and influential scholars of the late 19th Century. He was broadly educated (M.D. from Cincinnati’s Miami Medical College and Ph.D. in biology from Baltimore’s Johns Hopkins University) and widely traveled. “His extensive formal education was enhanced by several visits to Europe to investigate medicine and, especially, physical training.”⁴ At every turn Hartwell touted the benefits of physical exercise and education. Gerber declared that he “should be considered one of the forefathers of physical education in the United States”.⁵

In 1885 Hartwell travelled to Germany, Austria, and Sweden where he was introduced to the Swedish gymnastic system of Pehr Ling and the German gymnastic system of Friedrich Jahn. Hartwell was deeply impressed by the “German system” and believed that the European systems of physical training were far superior to physical education in the United States.⁶ “Prussia’s commanding position in science and politics is due to the perfection of her educational and military systems.”⁷ Hartwell was convinced that military superiority was predicated on the physical fitness of the individual soldier and that soldier fitness began at an early age through public school physical education and training. In his review of “Physical Training in Germany”, Hartwell quoted an extract from a circular on the teaching of gymnastics in the elementary schools, addressed

to the superintendents and inspectors of schools in the District of Lieguitz, Province of Silesia (1871):

It is acknowledged everywhere by soldiers and civilians that the astonishing accomplishments of our armies in the late [Franco-Prussian] war, especially their thorough discipline, exhibited in the most cheerful and self-sacrificing manner, their skill in overcoming natural and artificial obstacles in the enemy's country, their courage and calmness in battle, the resolution with which they bore pain and privation, must, in a large measure, be attributed to the gymnastic training of the rank and file.⁸

Hartwell concluded that the progress achieved between Jena and Sedan, Prussia "demonstrated most clearly and strikingly the power and worth of comprehensive and scientific [physical] training."⁹

The US Army was clearly aware that European countries had made significant progress in the physical readiness training of soldiers through the incorporation of gymnastic training.¹⁰ When Antone Lorentz died in late 1884 (he had served as the Master of the Sword for 24 years) the US Army leadership acknowledged the need for a trained "professor" of physical education at the United States Military Academy. US Army leaders met with George Brosius (former Civil War Officer and "coach" of the 1880 American Turnfest team) and offered him the position of "Master of the Sword".¹¹ Although tempted, Brosius felt USMA needed a younger instructor with more experience in fencing (someone comparable to George Heintz, another Brosius protégé, who had recently been hired by the United States Naval Academy). He recommended another of his protégés and nephew, Herman John Koehler for the position of Master of the Sword to further the development of a professional gymnastics curriculum that was started by John Kelton and Edward Farrow.¹²

On 1 February 1885 the United States Military Academy hired Herman Koehler as the 11th "Master of the Sword."¹³ Koehler was USMA's first pedagogically trained physical educator.¹⁴ He was a graduate of the Milwaukee Normal School of Physical Training (1880) and had previously served as the Director-School of Gymnastics in Oshkosh, Wisconsin. Koehler wasted little time implementing the gymnastics exercises from his Turner roots, which had an immediate and profound impact on the physical development of cadets and therefore the US Army. Koehler was a gifted athlete and trained physical educator who understood how strength, speed, agility and endurance enhanced a soldier's effectiveness and survivability on the battlefield.¹⁵ He also used his position at West Point to further the

growing national efforts in physical education. As reported by William G. Anderson, M.D., the recording secretary of the newly formed American Association for the Advancement of Physical Education (AAAPE), the relatively young Herman Koehler attend the inaugural meeting of American Association for the Advancement of Physical Education (AAAPE) held on 16 November 1885 at Adelphi Academy in Brooklyn, New York. Although he had only completed his studies a few short years before, and was in the presents of such early physical education pioneers as Dudley Allen “D. A.” Sargent, M.D., Reverend Edward Thwing Ph.D., Edward Hitchcock, M.D., and Dio Lewis, Koehler was named to the Council of Officers at this first meeting. 1st Lt Henry Kirby also attended from West Point representing the Department of Tactics.¹⁶

Despite the fact that the military profession has not hesitated to impress almost every known science into its service, in an effort to successfully overcome man’s endurance...the trained man has demonstrated his ability to hold his own against these almost unbelievable odds, and in the end it will be discovered that it is the carefully trained and conditioned man who alone can make victory possible.¹⁷

By 1887 Koehler had published the first of many military training manuals for USMA and the US Army: *A System of Callisthenic Exercises: for use in School of the Soldier*. A few years later, Koehler morphed his “system of callisthenic exercises” into the US Army’s first army-wide manual on physical training. In an attempt to codify combat physical training and provide guidance on developing physical fitness, the US Army published the *Manual of Callisthenic Exercises* (1892) written by Herman Koehler. This manual stressed the use of classical “Jahnian” gymnastics as the proper exercises to develop combat soldiers. Koehler stated that the West Point “system of training should be composed of exercises that will promote health, and at the same time develop strength, grace, agility, precision, self-reliance, courage and endurance.”¹⁸ Perhaps one of the more understated, yet critical, events in the rise of physical fitness training in the US Army occurred in 1889. In recognition of the quality and scope of Koehler’s work at West Point, he was commissioned as a 1st Lieutenant–Army Infantry, Master of the Sword, Instructor of Gymnastics and Swimming. Koehler’s commissioning significantly increased his credibility with regular US Army officers and soldiers. In 1892, after formalizing the USMA physical education curriculum and after years of persistent effort, Koehler convinced USMA leaders to appropriate funds for the construction of a new physical development center. The new facility contained a large

gymnasium, running track, fencing rooms, dressing rooms, bowling alley, office, and a swimming tank. Koehler argued that the USMA gymnastics equipment was “superior to any in the world.”¹⁹

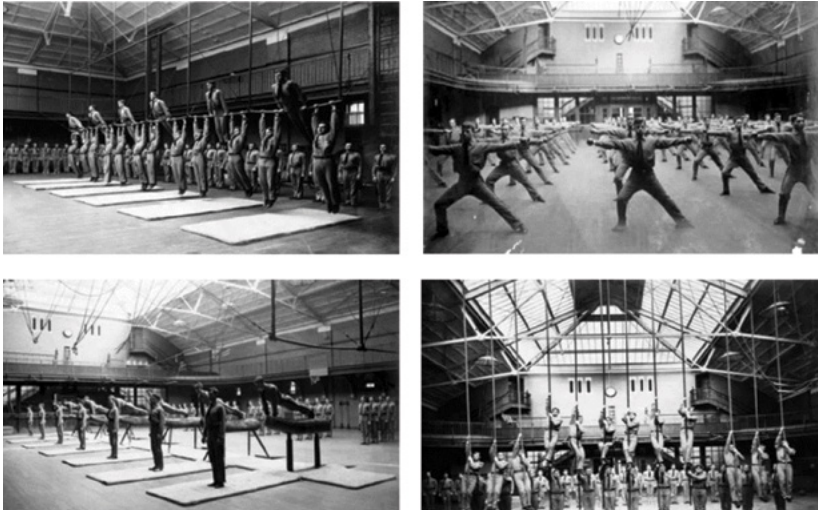


Figure 3.2. US Military Academy Physical Education under Herman Koehler.

Source: Property of US Military Academy–public domain.

During the 1890’s the full effect of Koehler’s influence on physical training in the US Army came to fruition. With US Army physical training gaining momentum Lt. Col. Alfred A. Woodhull, US Army Department of Medicine published *Notes on Military Hygiene for Officers of the Line* in 1890 (a revised edition was published in 1898). Woodhull concluded that “The whole military fabric rests upon the physical character of the individuals composing it. The recruits must be trustworthy in physique before the military character can be developed.”²⁰ In 1890, bringing somewhat to fruition the work started by Secretary of War Poinsette in 1841, the US Army initiated a program to build gymnasiums and provide the instruction of gymnastic exercises at recruit depots, specifically at David’s Island, NY, Columbus, OH, and Jefferson Barracks, MO. In 1892 Captain James E. Pilcher, MD, PhD (US Army Medical Department) published a seminal history of physical readiness training entitled “The Building of the Soldier.”²¹ His treatise outlined the last 100 years of gymnastic development in Europe and provided insight for the way ahead for the US Army.

The object of judiciously-directed physical training could not have been more cleverly stated. It aims to induce harmonious growth in the entire muscular system, to increase the mobility of the joints, to render the extremities more sensitive to the influence of the intelligence, to strengthen and facilitate all the organic functions, to remove the tendencies to irritability and discontent almost always due to physical weakness, and finally, by eliminating all the obstacles to its action occasioned by physical depression, to strengthen the mind itself. (Captain James E. Pilcher, 1892.)

Through Koehler's influence Capt. Constantine Chase, 4th Artillery, wrote a manual on *Physical Drill for Foot Troops*, which was published by the US Army in 1897. Chase proposed specific training in close order drills with weapons, bayonet, and Indian clubs. Finally in 1898 Maj. Edmund J. Butts published the *Manual of Physical Drill, United States Army*.²² This extensive 175 page manual presented materials on rifle drills, dumb bell and barbell drills, calisthenics, gymnastics, and athletic games and contests.

Shortly after the turn of the century US Army physical readiness training experienced the perfect storm. First, Koehler and his physical training programs were rapidly gaining traction throughout the US Army.²³ His publications allowed large numbers of officers to learn how to develop and execute physical training/gymnastics programs. Second, the United States was in the process of implementing the lessons learned from the Spanish American War, which ended with the Treaty of Paris in 1898. Third, Theodore Roosevelt was elected President in 1901 and brought his commitment to physical fitness and exercise and combat leadership experiences to the White House. Fourth, J. Franklin Bell was appointed as the Army Chief of Staff in July 1906 and brought his pedagogical training in exercise and sport and combat leadership experiences to US Army physical readiness training. These four events served to move physical readiness training into the mainstream of individual and unit training for the US Army.

As the US Army entered the 20th Century, Koehler continued his efforts to develop a US Army school designed to train officers in the proper techniques and procedures of physical training. In an article published in the *Infantry Journal* ("Physical Training in the Army") and reprinted in the preface of Koehler's third *Manual of Exercises—Prepared for Use in Service Gymnasiums* (1904), Koehler reiterated his position on physical training:

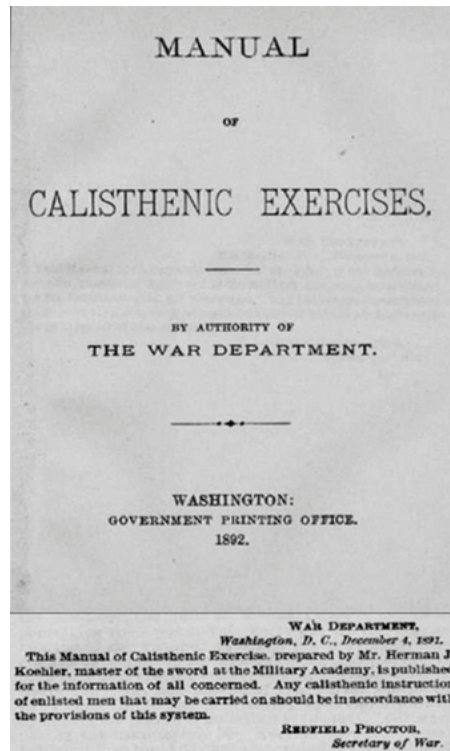


Figure 3.3. Kohler's First Manual for the Army, 1892.

Source: Public Domain, Government Publication.

What the service requires is a system of training based upon proper educational principles, the chief object of which is to raise the physical standard of all. Physical training has been adopted by all the large armies of the world chiefly on account of economy...they have found that the efficiency of an army was directly dependent upon the physical fitness of all of its members...the physical training of the soldier is considered paramount to everything else in his development.²⁴

He went on to identify the two major issues with US Army-wide physical training: proper facilities and proper instruction.

During the early 1900's the US Army provided funds to construct gymnasias on most installations, although mostly for recreational and personal use. With a partial solution to the "facility" problem, Koehler proposed a solution to the "instructional" problem: "detail a number of

specially fitted young officers to West Point from June 15 to September 1 to receive special instruction which will fit them to take charge of the service gymnasiums. This course of instruction to embrace the practice and theory of military and educational gymnastics, swimming, fencing, athletics, physiology, anatomy, and the physiology of exercise and anthropometry.”²⁵ Koehler succinctly outlined what would become the resident “master fitness trainer” course and curriculum that would not come to fruition until 1983. There is no evidence that Koehler’s “train the trainer” program, which had been so popular among armies throughout Europe during the 19th Century, gained support from the US Army.

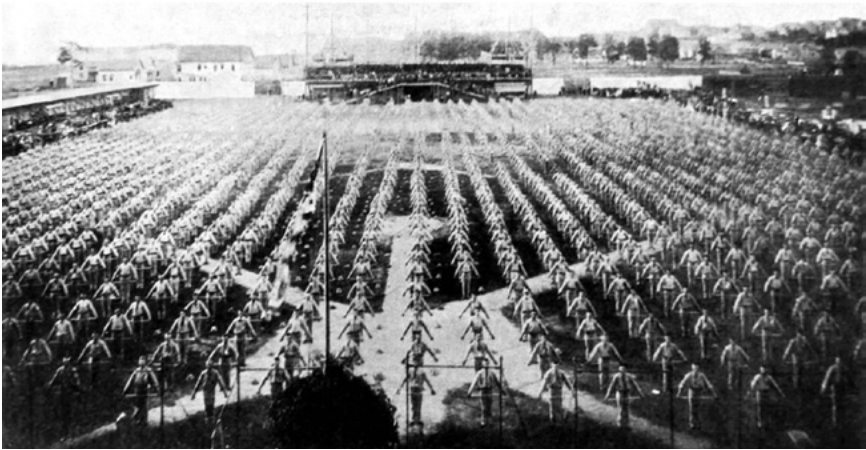


Figure 3.4. Milwaukee Bundesturnfest, 1893.

Source: George Brosius, *Fifty Years Devoted to the Cause of Physical Culture, 1864-1914* (Milwaukee: Germania Publishing, 1914), p. 39.

With the recognition that war is a tough, physical business, where illness and deprivation were often more deadly than bullets, the United States Army renewed its attention to the importance of physical fitness.²⁶ Based upon his combat experiences during the Indian Wars and the Spanish-American War, J. Franklin Bell (West Point Class of 1878) emerged as a strong advocate for rigorous, realistic physical training.²⁷ Although born in Kentucky, Bell was exposed to “turner” gymnastics during his days at West Point and as the instructor of military science at Southern Illinois University from 1886-1889. During the summer of 1887, Bell seized the opportunity to study physical culture and training at Harvard

University under the direction of Professor Dudley Sargent (M.D., Ph.D.), arguably the foremost authority in the field of physical culture in the United States at that time.²⁸ In 1905, while serving as Commandant of the General Staff College—Fort Leavenworth, Brigadier General Bell visited France to observe first-hand French maneuvers and training. “He was impressed with the physical fitness and rapid movement of the French infantrymen, reinforcing his determination to establish similar standards in the US Army.”²⁹ His combined educational experiences at Harvard, combat experience during the Indian and Spanish-American Wars, and observations of the French Army maneuvers ingrained in Bell the inexorable relationship between physical fitness and combat readiness/survivability. On 6 March 1906 General Orders No. 44 was published. Although signed by J.C. Bates, Lieutenant General, Chief of Staff, most credit the text of General Order No. 44 to Bell and he was clearly the driving force behind its implementation. As the incoming Chief of Staff, Bell was widely noted for confronting organizational and fitness issues in the US Army as was noted in the 24 May 1908 New York Times article where he was quoted as saying: “we have not an army fit to go to war with a first-class nation.”

General Order No. 44 established the first systematic program of unit physical training for the US Army and specified requirements for garrison and non-garrison training programs. “Garrison training will include gymnastics and outdoor athletics, bayonet and kindred exercises...the hygiene care of the person...swimming, and generally all needful instruction.”³⁰ In addition, troops were required to conduct weekly marches of 12 miles for the infantry and 18 miles for the horse-mounted artillery and cavalry. A three-day 90-mile riding test (on horseback) for artillery/cavalry and 45-mile marching test for infantry was initiated to assess the benefits of the new physical training program. There was much opposition to Bell’s efforts to physically transform the US Army due to the poor physical condition of many US Army senior leaders.³¹

Based upon his personal predilection for physical fitness and combat experiences as an officer during the Spanish-American War, President Theodore Roosevelt understood the importance of physical fitness as a force multiplier in combat. After several illnesses as a youth, Roosevelt became obsessed with physical fitness and “became a leading proponent of a philosophy that became known as the ‘cult of strenuousness.’”³² “Throughout his life he [Roosevelt] was surrounded by the paraphernalia of bodybuilding: boxing gloves, weights, dumbbells, and horizontal bars.”³³ Working with then Secretary of War Elihu Root, Roosevelt directed the armed services to develop and challenge the physical stamina of its sol-

diers. On 9 December 1908 President Theodore Roosevelt issued Executive Order 989, "Prescribing Regulations for Physical Examinations for Marine Corps Officers." Executive Order 989 required all Marine officers to march 50 miles in three days (in not greater than 20 hours marching time).³⁴ Company-grade officers were required, during one of the marching periods, to double-time 200 yards, rest 30 seconds, double time 300 yards, rest 30 seconds and sprint the last 200 yards as proof of their physical fitness. As directed earlier that year all field officers were required to ride 90 miles over a 3-day period as a measure of physical stamina and cavalry skills.

Ever one to lead from the front, Roosevelt, with Franklin Bell by his side, set the fitness standard for US Army officers. He firmly believed that soldiers must be fit and prepared to engage the enemy in combat at all times. In February 1908 Bell challenged the President to the Muldoon 15-mile test (8 mile walk and a 7 mile jog).³⁵ Although Bell won this contest, Roosevelt vowed to prevail in their next physical encounter. In November 1908 Roosevelt and Bell addressed the general staff and officers at the Army War College. President Roosevelt presented his views on the "desirability of officers keeping in fit condition at all times". Following General Bell's address the President "invited" the General Staff and War College students to "join him in a stroll". Everyone who knew the President knew that a "stroll" meant vigorous exercise at a pace more rapid than US Army "double-time". Departing from Boulder Bridge at 1500 that afternoon Roosevelt, Bell, Secretary Garfield and 58 officers trekked through dense forest, forded deep streams, and free-climbed a 200 foot pitch. While Roosevelt thought it was a "bully walk", many officers were left "nursing their tired muscles...and wondering if they will escape pneumonia."³⁶ "The President's activity in regards to physical exercise for the army officers is in line with a movement...to establish a physical culture institution like Muldoon's at the army school at Fort Leavenworth."³⁷

Notes

1. Edward Hartwell, "Physical Training in American Colleges and Universities," in *Report to the Commission of the US Stated Bureau of Education, No. 5-1885*, (Washington: Government Publishing Office, 1886), 17.
2. Note: this is a photograph of the US Turnverein team that competed in the "Fifth General Frankfort Turn Festival (Germany) in 1880; Professor George Brosius (head coach) is seated in the center and Mr. Herman Koehler is standing 3rd from the right; Herman Koehler placed 2nd overall in the Turnfest. George Brosius, *Fifty Years Devoted to the Cause of Physical Culture, 1864-1914* (Milwaukee: Germania Publishing, 1914), 28.
3. *Annual Report of the Superintendent of the United States Military Academy*, (Washington: Government Printing Office, 1884), 140.
4. Roberta J. Park, "Research Note: Edward M. Hartwell and Physical Training at the Johns Hopkins University, 1879-1890." *Journal of Sport History* 14:1 (1987): 108.
5. Ellen Gerber, *Innovators and Institutions in Physical Education* (Philadelphia: Lea & Febiger, 1971), 318; Park, "Research Note: Edward M. Hartwell and Physical Training", 108.
6. Gertrud Pfister, "The Role of German Turners in American Physical Education," *International Journal of the History of Sport* 26:13 (2009): 1906.
7. Hartwell, "Physical Training in American Colleges and Universities," 158.
8. Hartwell, "Physical Training in American Colleges and Universities," 180.
9. Hartwell, "Physical Training in American Colleges and Universities," 180.
10. Richard Delafield, *Report on the Art of War in Europe in 1854, 1855, 1856*, (Washington: George W. Bowman, Printer, 1860), v; Hartwell, "Physical Training in American Colleges and Universities", 17; George B. McClellan, *The Seat of War in Europe* (Report to the Secretary of War), (Washington: A.O.P Nicholson, Printer, 1857), 44.
11. Brosius, *Fifty Years Devoted to the Cause of Physical Culture*, 27.
12. Brosius, *Fifty Years Devoted to the Cause of Physical Culture*, 27.
13. Note: The Master of the Sword was initially established as a civilian position in the Department of Tactics to bring gymnastic expertise to West Point. Over the 70 years prior to the selection of Herman Koehler as the 11th Master of the Sword, there were various times when a military officer assumed this position as a temporary appointee.
14. *Annual Report of the Superintendent of the United States Military Academy*, (Washington: Government Printing Office, 1885), 191; Jeffery A. Charlston, "Disorganized and Quasi-Official but Eventually Successful: Sport in the US Military, 1814-1914," *International Journal of the History of Sport* 19:4 (2002): 77.

15. Department of the US Army, *Physical Readiness Training (FM 21-20)* (Washington, DC: US Government Printing Office, 1957), 8; Charlston, "Disorganized and Quasi-Official but Eventually Successful," 77; Robert Degen, *The Evolution of Physical Education at the United States Military Academy*, Master thesis, University of Wisconsin, Madison, 1967, 32; Herman J. Koehler, "The Physical Training of Cadets," in *The Centennial of the United States Military Academy at West Point, New York, 1802-1902* (Washington: Government Printing House, Volume I, 1904): 898; David J. Yebra, *Colonel Herman J. Koehler: The Father of Physical Education at West Point*, (Paper written for LD 720: American Military History, United States Military Academy, 1998), 7-8.

16. William G. Anderson, "The Early History of the American Association for HPER then Called the AAPE. *Journal of Health and Physical Education* 12(1) (1941): 61

17. Herman J. Koehler, *Koehler's West Point Manual of Disciplinary Training*, New York: E. P. Dutton & Company, 1919, 2.

18. Koehler, "The Physical Training of Cadets," 899.

19. Koehler, "The Physical Training of Cadets," 901.

20. Alfred A. Woodhull, *Notes on Military Hygiene for Officers of the Line* (New York: John Wiley & Sons, 1898), 1.

21. James F. Pilcher, *The Building of the Soldier*, *The United Service—A Monthly Review of Military and Naval Affairs*, Volume 7:4, (April, 1892), p. 321-337.

22. Note: Maj. Edmund Butts graduated in the West Point Class of 1890, which would have made him a Plebe (freshman) during Herman Koehler's second year as the Master of the Sword. Koehler's influence is self-evident throughout Butts' drill manual.

23. Note: Koehler was promoted to the rank of Captain in 1906 (*Official Register of the Officers and Cadets of the United States Military Academy*, 1905, p.5; *Official Register of the Officers and Cadets of the United States Military Academy*, 1906, p.9).

24. Herman J. Koehler, *Manual of Gymnastic Exercises: Prepared for Use in Service Gymnasiums* (Washington DC: Government Printing Office, 1904), 10-12.

25. Koehler, *Manual of Gymnastic Exercises*, 14.

26. Note: Leland & Oboroceanu reported for the US Army there were 2,446 casualties during the Spanish-American War: 385 combat casualties and 2,061 casualties from accidents and disease; Anne Leland, and Mari-Jana Oboroceanu, "American War and Military Operations Casualties: Lists and Statistics," *Congressional Research Service* 7-5700, RL32492 (26 February 2010): 2.

27. Michael D. Krause, "History of US Army Soldier Physical Fitness," in *National Conference on Military Physical Fitness-Proceedings Report*, ed. Lois A. Hale (Washington, DC: National Defense University, (1990), 21; Note: Maj. Gen. Franklin Bell had extensive combat experience to include the Indian Campaigns of early 1880's, specifically the 1890 Battle of Wounded Knee; he fought in the Spanish American War, to include the attack on Manila 1898 where

he received the Congressional Medal of Honor for actions during the Luzon Campaign; "Medal of Honor for Col. Bell," *New York Times*, 29 November 1899; "General Bell's Career," *New York Times*, 26 March, 1917.

28. Krause, "History of US Army Soldier Physical Fitness", 21.

29. Krause, "History of US Army Soldier Physical Fitness", 21.

30. War Department. *General Orders and Circulars—1906* (Washington: Government Printing Office, 1907), 251 (page 1 of General Order No. 44).

31. Krause, "History of US Army Soldier Physical Fitness", 21.

32. Monys Hagen, "Sport, Domestic Strength, and National Security," in *Work, Recreation, and Culture*, ed. Martin H. Blatt and Martha K. Norkunas (New York: Garland Publishing Inc., 1996), 73.

33. Nathan Miller, *Theodore Roosevelt: A Life* (New York: Quill—William Morrow, 1992), 50

34. Note: A 50-mile march in 20 hours equals a mile time of 2.5mph and approximately 16 2/3 miles per day for 3 days.

35. "Bell Beats Roosevelt," *New York Times*, 5 February 1908.

36. "Roosevelt Led 60 on a Bully Tramp," *New York Times*, 8 November 1908.

37. "Roosevelt Led 60 on a Bully Tramp", 5 February 1908; Note: William Muldoon was a professional wrestler who competed in the late 19th Century. He retired to White Plains, NY and opened a training camp and "sanitarium" to develop physical fitness and treat health issues. Secretary of State Elihu Root and Gen. Franklin Bell spent several weeks at "Muldoon's" to "cure" physical exhaustion from overwork. Muldoon's treatment "prescribed...a big glass of warm water on rising, practice with the medicine ball, then breakfast, which was followed by a long horseback ride. The afternoon was spent reading the sports pages...taking gymnastics and other exercises"; in an interview describing Root's treatment at Muldoon's, Mr. Muldoon stated that we "rode 18 miles on horseback, walked three more miles, and then boxed for fifteen minutes," "Muldoon Curing Gen. Bell," *New York Times*, 14 October 1907.

Chapter 4

World War I-The Princeton Years

In 1912 Woodrow Wilson was elected the 28th President of the United States. During his formative and college years Wilson was reasonably athletic and committed to a physically active lifestyle.¹ After college Wilson worked in a myriad of public administration jobs. From 1902-1910 he served as the 13th President of Princeton University and from 1910 to 1912 he served one term as the Governor of New Jersey. His athletic lifestyle and experiences at Princeton clearly informed his philosophy as president that good athletes make good soldiers. When Wilson assumed the Executive Office of the President on 4 March 1913, hostilities between Germany and other European countries were fomenting throughout Europe. As a liberal Democrat, Wilson took an unambiguously neutral stance relative to the United States' involvement in a European conflict.

As part of a two-phase process to improve the "preparedness" of the US Army, on 20 February 1914 the US Army published a new doctrinal manual entitled *US Army Manual of Physical Training*. The manual replaced Koehler's prior two physical readiness training (PRT) manuals published in 1892 and 1904. When addressing the importance of physical training, Major General Wood wrote in the preface: "there is nothing in the education of the soldier of more vital importance than this [physical fitness]."² The new manual clearly espoused the Turner model of physical training and was produced by a working group of three officers including Lt. Col. Fred W. Sladen, Capt. Herman Koehler, and 1st Lt. Philip Mathews. As outlined in the preface, physical training should develop the physical attributes of every soldier to the fullest extent possible. The objectives, in order of importance, should be: (a) general health and bodily vigor, (b) muscular strength and endurance, (c) self-reliance, and (d) smartness, activity, and precision. Through the 1914 manual, Koehler's exercise and gymnastics programs quickly permeated the US Army and served as the basis for physical readiness training in the lead-up to World War I.³ As the Master of the Sword of the United States Military Academy from 1885 to 1923, Koehler established and/or significantly influenced all physical training in the US Army through WWI.⁴

Woodrow Wilson's isolationist position was decidedly not the position of members of the "preparedness movement", which consisted of a vocal group of current and former US leaders including former President Theodore Roosevelt, former Secretaries of War Elihu Root and Henry Stimson, and the Chief of Staff-Army, Major General Leonard Wood.⁵

As part of phase two of Wood's war plan, the "preparedness movement" pressed forward with the development of military training camps throughout the United States. As early as 1913 these training camps provided physical, military, and disciplinary training for potential soldiers and officers. From 1913 to 1915, with little support from the US Army, the charismatic Wood personally supervised the staffing and training in numerous "summer training camps," primarily designed to give college students and business men "a taste of army life," in the pursuit of officership."⁶ He was unabashedly supported by President Roosevelt, who, as early as 1915, used his "bully pulpit" as the 26th President to call for aggressive and comprehensive preparation for war. Considering his penchant for personal fitness, Roosevelt believed that "Every officer and man should be kept to the highest standard of physical and moral fitness. The unfit should be ruthlessly weeded out."⁷ Although President Wilson was still reticent about involving the United States in a foreign conflict, he did maintain that the camps would be "enormously beneficial to the United States because of the physical upbuilding and habits of discipline that would accrue to the attendants."⁸ With the sinking of the *Lusitania* in May 1915 and continuing U-boat activity throughout the Atlantic Ocean, US neutrality was a continuing problem for Wilson. In the summer of 1915, with Wilson's failure to act in any preemptive manner vice military readiness, the "preparedness movement" seized the initiative by expanding the military-style training camp at Plattsburgh, NY where soldiering became a strenuous form of recreation.

In addition to the issues with his "isolationist" platform and the conflict in Europe, Wilson had growing problems on the border with Mexico. With the financial support of German agents, who gave millions of dollars to the Mexican "rebels," on 9 March 1916 hostilities escalated when Francisco "Pancho" Villa crossed the Rio Grande and attacked the US Army garrison at Columbus, New Mexico.⁹ Although the garrison was quickly secured, during the summer of 1916 Soldiers from the National Guard were deployed to assist regular US Army troops in patrolling the border with Mexico between Texas and Arizona.¹⁰ Following this mobilization, "complaints began to pour into Washington about the evil and demoralizing conditions surrounding the camps. The newspapers carried lurid stories of lack of discipline, drunkenness and the rise of venereal disease. Newton Baker, who had only recently been appointed Secretary of War, was much disturbed..."¹¹ There were "allegations that the guardsmen were not sufficiently or properly fed, that their camps were not sanitary, and that they were poorly transported."¹² In July, 1916 Baker asked

a former colleague and lifetime public servant Raymond B. Fosdick “to go to the Mexican border as his personal representation and found out just what the situation was.”¹³ Fosdick spent five weeks traveling the Mexican border, reviewing training camp conditions and formulating a solution to the ever-present problems of crime, dereliction, and deprivation. “There was nowhere for the men to go and forget the weariness, the homesickness, the loneliness, that prevailed...in the summer of 1916. There was nowhere to go and get away even for a short time from the monotony of drill and the almost unbearable heat”.¹⁴ Fosdick recounted that saloons and whorehouses abounded, yet there was no answer for “what we are going to substitute for the things we want to drive out...there was no athletic equipment of any kind—no baseballs, bats or mitts, no footballs, no basketballs, no playing fields or courts of any kind.”¹⁵ The ruminations on this problem sowed the seeds for what would become the largest “athletics” program the nation had ever witnessed when Fosdick addressed this problem a year later in WWI training camps.

Although “Pancho” Villa’s incursion was quickly rebuffed, poor troop morale and a burgeoning alliance between Germany and Mexico created more problems for Wilson. “If the European war were to end and we were to continue to dilly-dally with Mexico, we would have to fight a veteran European army on Mexican Soil within a few months...”¹⁶ It was increasingly evident the United States was being inexorably drawn into the war in Europe and that the US Army was unprepared for a full-scale military conflict.¹⁷ In part to prepare the US for war and also to diffuse the growing political furor incited by Roosevelt, Wood, and the “preparedness movement”, in May 1916 Wilson engineered the passage of the National Defense Act of 1916 (the Hay Act), which was signed into law on 3 June 1916. The provisions of the National Defense Act increased the peacetime US Army to 175,000, increased the National Guard to over 400,000, created an Officer and Non-Commissioned Officer Reserve Corps, and created the Reserve Officer Training Corps (ROTC).

By early 1917 the Plattsburg Military Training Camp had become the nexus of the “preparedness movement”. “Probably for the first time in history, an attempt was to be made to crowd into three months the training essential to a full-fledged and competent officer of the line.”¹⁸ To facilitate this process several “military training” manuals were developed to guide the physical training of citizens attending the Plattsburgh Camp. *The Plattsburg Manual—A Handbook for Military Training* was published in March 1917 by Captains Ellis and Garey, based upon their experiences during the summer of 1916 as instructors at the Camp. The “forward” was

written by Major General Wood. Chapter II addressed the physical requirements of soldiering and citizens were encouraged to “read this chapter as soon as you decide to attend a camp.”¹⁹ Recruits were encouraged to “let down on your smoking” and to purchase and break in a high-quality pair of hiking boots so they would arrive at camp with “hardened legs and broken in shoes.” Ellis and Garey identified five “setting up” exercises to help recruits prepare for the physical rigors of the Plattsburg Camp.



Figure 4.1. Roosevelt and Wood at Plattsburg Training Camp, 1916.

Source: Printed with permission from Tricia Davies, Director /Curator of the Clinton County Historical Association, Plattsburg, NY, <http://www.clintoncountyhistorical.org>.

On 23 December 1917 Captain James Cole and Major Oliver Schoonmaker, of the 17th Provisional Training Regiment, Plattsburg, NY, published the second “Plattsburg” training manual entitled *Military Instructors Manual*. Chapter 3 was entitled “Physical Training” and began with the assertions that “Only the carefully trained and conditioned man can make victory possible. For this reason the first and most important concern of a nation at war is the physical training of its soldiers.”²⁰ The exercise period should begin with setting-up exercise, followed by “march-

ing, jumping, double timing, gymnastic contests, and concluding or restorative exercises. Rifle exercises were recommended to increase “handiness with the piece” and to increase muscular strength. Recruits were cautioned to take frequent rests during rifle drills lest they become “muscle bound” at the expense of agility. Lastly, games were recommended as a means of restoring interest when men become bored with formal calisthenics. The objective of the camps was to develop “a physical hardihood far beyond the demands of the most vigorous civil life.”²¹

The military training camps were conceived as an “officer training” program and initially catered to college students on summer break. As the “preparedness movement” progressed and the potential for a “world war” grew more imminent, the camps began to target businessmen who could eventually serve as officers if the United States went to war. The businessman clientele prompted some to cast the military training camps as a social club. In an attempt to silence the critics, Major General Wood personally managed the strenuous military and physical training program that culminated with a 9-day “hike” with each man carrying a 42 pound load.²² After the US declared war on Germany, Captain Herman Koehler assumed an integral role in the US Army-wide physical training mission and even conducted courses in physical training and bayonet fighting at the Plattsburg Training Camp during the summer of 1917.²³ It has been estimated that over 40,000 men participate in military style training to include physical fitness, marching, and marksmanship at the Plattsburg Military Training Camp.

In early 1917 when Germany declared its intent to sink all commercial shipping bound for Europe, Wilson’s neutrality position became untenable. Following his speech to both houses of Congress on 2 April 1917, in which Wilson outlined his case for declaring war on Germany, the Congress passed a formal declaration of war on 6 April 1917. Although the provisions of the National Defense Act and the fervent wave of volunteerism following the declaration of war provided both the mechanism and the means to build the US Army, Secretary of War Newton Baker and others argued that a voluntary enlistment process was an inefficient and ineffective way to build the military on the scale needed for a “world war”. As early as 1916 Hugh Scott, former Chief of Staff, War Department, stated “The difficulty that is being now experience in obtaining recruits for the Regular Army and for the National Guard in service on the [Mexican] border and at their mobilization camps raises sharply the question of whether we will be able to recruit the troops authorized by Congress in the national-defense act....”²⁴ Baker’s position on conscription was di-

ametrically opposed to Congress that favored a voluntary enlistment process. During two weeks of testimony before the House of Representatives Armed Services Committee, Baker outlined three advantages of a military draft: (1) it spreads the burden of military preparation both longitudinally and geographically, (2) it is “certain in its operation”—men will know “if and when” they are to be called to military service and this process can manage the force so as not to deplete the skilled industrial and agricultural labor needed to fight the war, and (3) the draft starts at the beginning of the “accumulation”, and not as a penalty after a voluntary appeal has failed.²⁵ “We are now in the greatest war of all history. We are proposing to raise at the outset 500,000 men, because we think that is as many as can be presently trained.... Now, if that were a case of raising an army of 500,000 men, it might well be that some system of volunteers would be entirely adequate, although the best military opinion discredits that system as a means of raising armies....”²⁶ On 18 May 1917 the Congress passed the Selective Service Act and by the end of the year 516,212 soldiers had been drafted for military service. The US Army end-strength had risen from 108,000 in 1916 to 421,000 by the end of 1917.²⁷ By the end of 1918 the number of conscripts would grow to 2.8 million and ultimately 72% of all soldiers who served during WWI were conscripted into service.²⁸

Prior to the declaration of war, soldiers were processed into the US Army and sent directly to their units for basic physical and military training. There was no centralized basic combat training. Due to the number of soldiers (size of the force) that were needed for World War I, it was readily obvious to US Army leaders that deploying units could no longer continue to conduct basic combat training. The decision was made to establish more than 30 training camps throughout the US to manage basic combat training. Considering the lessons learned during the Mexican border campaign, Secretary of War Baker was legitimately concerned about the potentially immoral and destructive environment that seemed to develop in the communities surrounding US Army training camps. “My experience with the Mexican mobilization was that our young soldiers had a good deal of time hanging rather heavily on their hands with two unfortunate results. 1. They became homesick. 2. They were easily led aside into unwholesome diversions and recreations, patronizing cheap picture shows, saloons, dance halls and houses of prostitution.”²⁹ In a preemptive action, Baker created the Commission on Training Camp Activities, which was approved by President Wilson on 3 April 1917. “The Commission on Training Camp Activities represents the solicitude of the War Department in connection with the environment of the troops...the commission represents the meth-

od of attack by the War Department upon the evils which are traditionally associated with camps and training centers.”³⁰ The Commissions overarching objective was to create “a new kind of soldier training camp...”³¹ Because of his personal relationship with Secretary Baker and President Wilson, his experiences reviewing the Mexican border camps during the summer of 1916, and his familiarity with social issues in large organizations through his role on the Bureau of Social Hygiene , in March 1917 Secretary Baker had selected Raymond Blaine Fosdick to “take charge of some voluntary work affecting recreation and leisure occupation in the US Army...I regard the work as of great importance.”³² A short time later, Fosdick was formally appointed as the Chairman of the Commission on Training Camp Activities.



Figure 4.2. WWI Recruiting Posters for Plattsburgh and the US Army, 1917.

Source: Left to right: Photo 1. Are you trained to do your share? Plattsburg, 1917, Library of Congress Prints and Photographs Division Washington, DC. Photo 2. Paus, Herbert Andrew, artist. “The United States Army builds MEN. Apply nearest recruiting office,” c.1919. From Library of Congress Prints and Photographs Division, Washington, DC, <http://www.loc.gov/pictures/item/94514699/>.

Over concerns with prostitution and alcohol, the Commission's charter was clear; to supply the "normalities of life" and "keep the environs of those camps clean and wholesome".³³ "Secretary Baker is determined that the training camps shall be free from vice and drunkenness as is humanly possible to make them...The responsibility of the Government is doubly obvious in view of the measure of conscription."³⁴ Around the first of June 1917 Fosdick was dispatched to Canada to study their military training camps. Fosdick's knowledge of British military training camps, from his travels to Europe in 1913, and his trips to the Mexican border and Canada allowed him to define the problems the Commission would face. However, it was Secretary Baker who framed the core of the plan when he stated "that young men spontaneously prefer to be decent, and that opportunities for wholesome recreation are the best possible cure for irregularities in conduct which arise from idleness and the baser temptations."³⁵ One of the most pressing issues in the training camps was "free time". Most training programs allowed for seven hours of instruction/training per day.³⁶ In formulating the Commission's action plan, Fosdick utilized lessons learned from his visits to British and Canadian training camps who utilized athletics for recreation and to improve moral. One of the Commission's first and most important tasks was to appoint an athletic director for every training camp.

The British understood the relaxing and therapeutic effect of vigorous games...they had had their men playing football almost before the battlefield was cleared. I had, myself, in the early days of the war, seen the invigorating effect of a baseball game on an exhausted squad of raw recruits returning to camp after a long hike. We came to the conclusion, therefore, not only that athletic supplies in quantity were necessary for the new army, but also that the administration of a carefully planned program should be in the hands of competent experts in each camp.³⁷

In an attempt to remedy the "idle hands" issue and provide measured leadership for the athletic program, Fosdick turned to his Princeton University affiliations and selected Dr. Joseph E. Raycroft as chairman of the Athletic Division of the Commission on Training Camp Activities from 1917 to 1919. At the time Raycroft had been serving as the Chairman/Professor of Hygiene and Physical Education at Princeton University since 1911. He was heavily influenced by early 20th Century physical educators such as James McCurdy, W.G. Anderson, Dudley Sergeant, and Mabel Lee, who proposed a change in the focus of physical exercise from health, movement, strength and agility to athletic/sport performance. Many edu-

cators argued that focusing on sport as an outcome objective carried with it all the benefits of Turnen exercises with the added benefit of leadership development and the enhancement of social skills and moral-ethical behaviors.

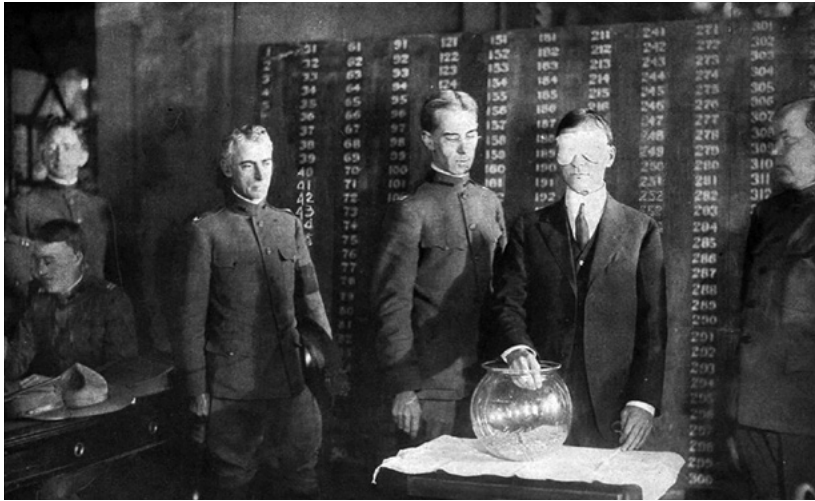


Figure 4.3. United States Secretary of War Newton Baker drawing the first Draft Number, 1917.

Source: DRAWING THE FIRST NUMBER: after he had been blindfolded, Mr. Baker, Secretary of War, plunged his hand into the large glass jar containing the 10,500 numbers enclosed in capsules. He drew one forth and passed it to a clerk who opened it and announced the number “258.” Thus the drawing began. The date was 20 July 1917. Photograph copyright 1917 by Committee on Public Information (now in public domain). <http://www.gjenvick.com/Military/World-WarOne/TheDraft/SelectiveServiceSystem/1917-07-20-Draft- DrawingTheFirst-Number.html> .

Raycroft was well known for introducing the “mass athletics” model (intramural sports) into the physical education curriculum at Princeton. As chairman of the Athletic Division, he quickly implemented the athletics model in the US Army basic training camps in order to improve health, fitness, and morale. Raycroft introduced boxing and a variety of competitive sports to mitigate the drudgery of free time and the tedium of military drill, calisthenics, and gymnastics.³⁸ “Never before in the history of this country,” wrote one newspaper sports editor, ‘have so large a number of men engaged in athletics. Every kind of sport is involved—football,

baseball, basketball, volley ball, push ball, medicine ball, soccer, track and field athletics, and particularly boxing. Everybody's boxing, even the mountaineers and the boys from the farm who never saw a pair of boxing gloves in their lives. Men are learning to get bumped and not mind it. They eat it up.' That was the spirit and the kind of army we wanted."³⁹ As the war loomed, many physical education and sports professionals provided training input. Walter Camp (well-known sports writer and football coach) developed his "daily dozen set-up" exercises, which were adopted by the US Navy in 1918.⁴⁰

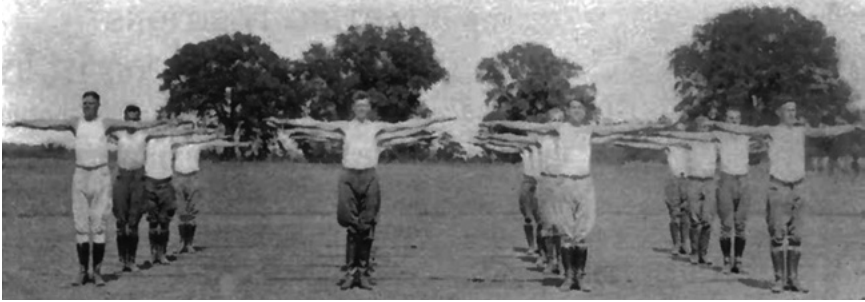


Figure 4.4. WWI Army Physical Training Formation.

Source: Raycroft, Joseph. *Mass Physical Training for use in the Army and Reserve Officer Training Corps*. Washington: US Infantry Association, 1920.

Fosdick incorporated a myriad of traditional games like football, baseball, soccer, and boxing—running, tennis, fencing, swimming, and “laughter-provoking” games of swat tag, prisoner’s base, and duck-on-the rock into US Army mass athletics to help with self-control, agility, mental alertness, and initiative. Organizations like the YMCA, Knights of Columbus, and the Jewish Welfare Board were utilized to provide additional recreational experiences during basic training. Fosdick later concluded that “athletics offers a legitimate expression for the healthy animal spirit which, when put up, will invariably assert itself in some form of lawlessness. Important as this is, the greatest function of athletics is to educate the men into better fighters”⁴¹

I have seen a boxing instructor stand up before a group of two thousand men and put them through a series of evolutions that would later be tried out in no man’s land, for there is a close relationship between boxing and bayonet fighting. I have seen

games of soccer in which four hundred players took part, and soccer, too, is one of the forms of sport which has a close parallel to fighting. While playing it, a man must be ready constantly to strike the ball with either foot. In this way he naturally acquires the short gait and balance that will serve him in good stead when he comes to crossing furrowed and shell-torn stretches of devastated land. It is a highly exhilarating game combining the maximum of exercise and recreation with valuable training.⁴²



Boxing Instruction During Basic Training.



Boxing Barracks, 311th Supply Trains, Camp Grant, 1918.



Boxing at Camp Green, Charlotte, NC, 1918.



Worlds Largest Boxing Class, 337th Infantry Brigade, 27 June 1918.

Figure 4.5. Boxing Instruction and Contests-WWI Training Camps.

Source: Photos top left to right, bottom left to right. Photo 1. Raycroft (1920, 85)-US Government Publication. Photo 2. The New York Public Library, pre-1923, Boxing in barracks, 311th Supply Trains, Camp Grant, 1918, digital ID: 117132, record ID: 136623, digital published: 3 February 2004; updated 25 March 2011. Photo 3. Charlotte Mecklenburg Library; approved by librarian Jane Johnson by phone 15 March 2012; Robinson-Spangler Carolina room, Public Library of Charlotte and Mecklenburg County, Charlotte, NC, 28202. Photo 4. Library of Congress, "World's largest boxing class, 1st, 2nd and 3rd Bat's. [sic] of 337th Inf. Brigade conducted by Billy Armstrong, 27 June 1918, Call Number: PAN US MILITARY-Army no. 205 (E size) [P&P], Library of Congress Prints and Photographs Division Washington, DC, 20540.

Clearly for Fosdick the solution to the “tendency to mental and moral disintegration” that surfaced during basic recruit training was the introduction of recreational and educational programs. From his perspective the programs Raycroft introduced in the basic training camps constituted the largest social program ever undertaken. “It was the first time a government had ever combined educational and ethical elements with disciplinary forces, in the production of a fighting organism.”⁴³

Following the Princeton connection from Wilson as university president, to Fosdick as ardent student, and Raycroft as professor, there was an inexorable move away from the influence of the institutional army and particularly West Point, much of this precipitated by Maj. Gen. Leonard Wood and his relationship with President Theodore Roosevelt. Koehler’s gymnastics model remained the foundation of physical readiness training for the regular US Army. Major Koehler continued to develop West Point officers and from 13 May 1917 to September 1918 he was detached several times on temporary duty (TDY) to train physical fitness instructors and soldiers at basic training camps throughout the US. It was reported that he personally trained over 200,000 soldiers during WWI.⁴⁴ In 1917 Koehler published Special Regulations, No. 23—*Field Physical Training of the Soldier* to supplement his field training program. This manual along with Koehler’s personal leadership and supervision at numerous basic training camps formed the foundation of physical conditioning during World War I.

During the interim tug-of-war between Koehler and Raycroft to direct the physical training program for the US Army, the War Department, under the direction of General Peyton C. March, Chief of Staff, published a training document entitled “Provisional Infantry Training Manual in August 1918.”⁴⁵ The document provided instruction and training schedules and progress tests. Although the manual was quite prescriptive, General March stated that the “standards and methods herein are, for the present, to be considered suggestive only...[and] tests should not be permitted to interfere with the regular progress of training.”⁴⁶ The training manual prescribed four categories of tests: (1) Strength—8 chin-ups and 6 dips; (2) Agility and Muscular Efficiency—running (800m in 4 minutes), jumping (vault a 4.5’ fence), climbing (20’ rope in 30 seconds), digging (1 cubic yard in 1 hours), marching (20 miles in 12 hours) and combatives (bayonet, wrestling, hand-hand fighting, (3) Sustained Rifle Fire, and (4) Equestrian. There was also specific documentation on moral and physical training. The ultimate purpose was to provide a standardized template for infantry training and testing.



Wire Entanglement Negotiation Drills.



Trench Negotiation Drills.



Casualty Evacuation Drills.



Bayonet Charge from Trench.



Rush Drills with Rifle.

Figure 4.6. WWI Basic Combat Training Drills.

Source: All 5 photos are from the digital collection at the NY Public Library—open source. Top to bottom, left to right. Photo 1, Scene at student officers training camp at Fort Sheridan, IL, showing attack wave jumping barbed wire entanglements, 1917, digital ID 117158, record ID: 136737. Photo 2, Trenches at student officers training camp, Fort Sheridan, IL, start of infantry attack, 1917-1918, digital ID: 117192, record ID: 136788. Photo 3, Bayonet charge out of a trench, 1917-1918, digital ID: 117194, record ID: 136790. Photo 4, Rescue from “no man’s” land. Scene at student officers training camp, Fort Sheridan, IL, 1917, digital ID: 117161, record ID: 136740. Photo 5, Soldiers running in a field, 1917-1918, digital ID: 117188, record ID: 136784.

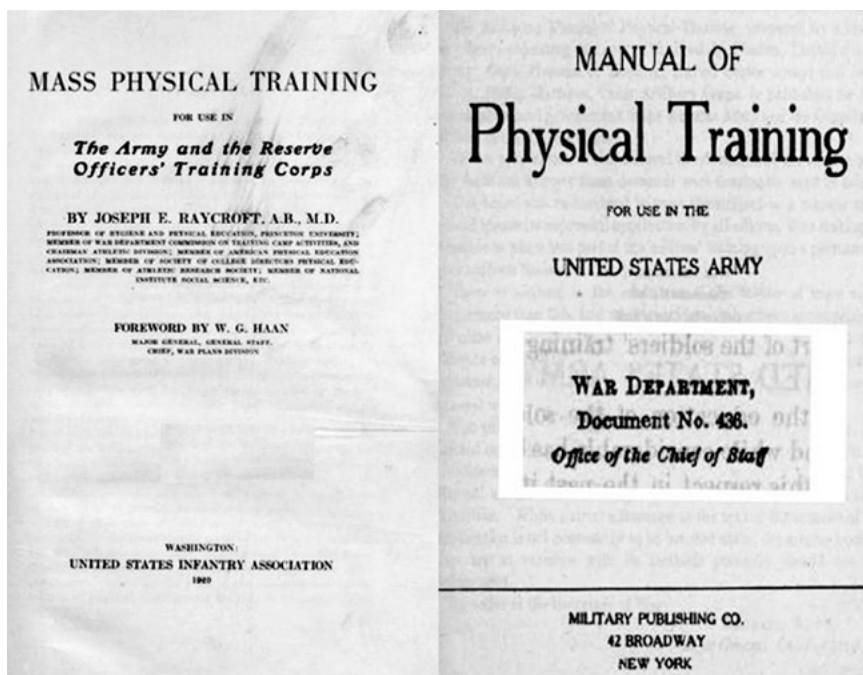


Figure 4.7. Post WWI Physical Readiness Training Manuals, Koehler-Raycroft.

Source: Photos left to right: Photo 1. Mass Physical Training manual by Joseph E. Raycroft, A.B., M.D., United States Infantry Association, DC, 1920. Photo 2. Manual of Physical Training, Doc. No. 436, Chief of Staff, US War Department, Military Publishing Company, NY.

With the cessation of hostilities on 11 November 1918, Germany had surrendered and World War I came to a rapid conclusion. During the post-war after-action reviews, the two competing physical training philosophies fully emerged: the Koehler disciplinary gymnastics model and the Raycroft athletic sport model. The battle for control of US Army physical training came to a head in late 1919. Lt. Col. Herman Koehler published the *West Point Manual of Disciplinary Physical Training*. In the “introduction” Koehler wrote: “in general, the manual is a revision of Special Regulations, No. 23, *Field Training of the Soldier*, a syllabus prepared by the author, and published by the War Department, by the direction of the Secretary of War, making it mandatory upon all to carry out this work in the service in accordance with these special regulations”.⁴⁷ On a casual read, one might construe this publication to be US Army doctrine; however Secretary of War Newton Baker stated in the “forward” that “the appearance

of Colonel Koehler's manual will...make available to a larger number of people the principle inclination of a system...which has stood the test under critical conditions...."⁴⁸ Secretary Baker went on to address the historical propensity of the US Army to support physical fitness training only in times of crisis when he stated: "whatever form our future training of boys and young men in this country may take it is greatly to be hoped that we will not again fall into the habit of slighting the body as we were on the point of doing when the war forced us to realize its importance as the basis of our national strength."⁴⁹

Approximately six months later, the US Army War Plans Division under the direction of Major General William G. Haan approved the publication of the manual, *Mass Physical Training for Use in the Army and Reserve Officers' Training Corps* (1920) written by Dr. Joseph Raycroft.⁵⁰ In the forward Haan made it clear this manual was the officially approved doctrine for US Army training; "This book was submitted to the United States War Department for publication as an official document; but in view of the delays that would probably be involved under this plan, it was decided that Dr. Raycroft should be requested to publish the book privately under his own name, so that it might be available at the earliest possible moment for use in the army. To this end, this book has the approval of the War Plans Division of the General Staff. Its contents will form the basis for the training and instruction of the military service of the United States in the subjects included. (22 December 1919)".⁵¹

Raycroft brought two notable biases to the 1920 Mass Physical Training manual. The US Army of WWI was still a rather low tech, high maintenance organization. The first bias was most daily military training involved a significant level of manual labor by the soldier. "The daily program of the soldier, comprising as it does seven or eight hours of active outdoor work, provides all the physical exercise that is required to make and keep him physically fit."⁵² The second bias was the pre-WWI training camp experience where a large number of soldiers experienced a significant amount of "free time" following the duty day. The Fosdick Commission's solution to these problems was to introduce the mass athletics model Raycroft had developed at Princeton University. "To send a man out to dig a trench and to set him up in drill day after day, does not necessarily evolve a well-developed physical man. For the sake of such development, we have placed in every training camp in the United States an athletic director responsible to the commanding officer as his civilian aid."⁵³ Following these central themes Raycroft identified six basic training domains: (1) physical drill, (2) group games, (3) drills in personal

contact, (4) individual efficiency test, (5) mass athletics and competitive games, and (6) bayonet training. Raycroft's physical drill model varied in both form and function from Koehler's callisthenic and "setting-up" model. Physical drill was designed for disciplinary training and body control and not for the development of physical fitness. These drills placed an emphasis on "securing good posture, freedom of movement and accurate snappy response to commands."⁵⁴

The drills in personal contact and bayonet training were designed to enhance aggressiveness, confidence, fighting spirit, and a "willingness to carry on in spite of punishment." Of particular importance was instruction in boxing. "Special emphasis is laid on boxing, not only because it is an excellent sport, but because of its intimate connection with bayonet fighting."⁵⁵ The competitive spirit and team work leaned during group games and mass athletics were critical objectives for soldiers and were to be conducted every day. "In other words, this comprehensive plan of physical training makes it possible to carry the recruit far beyond the point of soldierly efficiency acquired through close order drill alone, and develops in him those fundamental qualities of resourcefulness, leadership and fighting spirit, which characterize the high-grade, seasoned soldier."⁵⁶

Raycroft recommended two physical training periods per day. In the morning, not less than 1½ hours after the morning meal, Soldiers were to participate in a 1-hour lesson that concentrated on personal conditioning and combatives.⁵⁷ The 1-hour afternoon session should concentrate on mass athletics/competitive sports and preparation for the Physical Efficiency Test. Raycroft recommended that instructors should be junior officers or NCOs who were specifically trained, familiar and proficient in all phases of work, and capable of demonstrating and taking part in the performance of the work.⁵⁸ Lastly, following his natural disposition as an educator, Raycroft stated that instruction in physical training should be part of the basic training of every officer, and that a "central school" (to include advanced courses) should be developed to "train and qualify experts who will serve as inspecting instructors and thus keep the work on a high plane of efficiency."⁵⁹

Even taking into account the fact that Raycroft was a civilian educator, who had never served in the military, there were significant differences between the Raycroft and Koehler manuals. First, Raycroft's manual was obviously a consortial effort as he cited the contributions of a significant number of military and civilian physical training experts in the preparation of the manual (to include a liberal adaptation of the "setting up" exercises taken from Koehler's 1917 manual). In the preface, he acknowledged the

assistance and input from 15 “Athletic Directors, Special Instructors, and Physical Training Officers who contributed so generously of their technical training and experience and whose work in the Camps made it possible to organize this system and put it into operation during the war...The training material in this manual has been collected from many sources, both native and foreign, and no hesitation has been shown in adopting or adapting methods that have been found useful in the armies of our allies, nor in trying out any procedure that seemed to have merit and promised results.”⁶⁰ Second, Raycroft’s manual was better designed, more comprehensive, and better written, with significantly more technical information about the science of exercise. It was clearly written/edited by a senior educator with the student/instructor in mind.

Third, over 50% of the manual (pages 149-280) pertained to the use of athletic sports and games for physical training. “The physical training officer should constantly keep in mind that the prime purpose of the supervised athletic period is to give the soldier the educational value of participating in different types of athletic contests.”⁶¹ Raycroft proposed using athletic sports and games in daily physical training as a means of improving mental and physical alertness and providing variety and interest to the regular work schedule. “It was demonstrated during the war that nothing was so valuable as competitive games in keeping alive the interest of the men and in preventing discontent and homesickness during a long training period or after a protracted tour of duty in the front lines.”⁶²

Fourth, and most importantly, the Raycroft manual was the first US Army manual to identify quantitative physical outcome objectives for soldiers, which were selected to measure “all-round physical efficiency”. Although Koehler had used physical assessments to measure individual cadet development and program success since his arrival at West Point in 1885, Raycroft created a five-item battery (the Individual Efficiency Test-IET) to measure combat physical readiness (i.e., running, jumping, climbing, and throwing). The Individual Efficiency Test was composed of: 100 yd run (14 sec); running broad jump (12 feet); wall climb (8 ft unassisted); hand grenade throw (30 yards into a 10’ diameter circle); and obstacle course run. The Obstacle Course Run (OCR) presented in Raycroft’s *Mass Physical Training* manual was the first recorded use of an obstacle course to quantitatively assess functional fitness. The OCR utilized five obstacles spread over a 100-yard linear course. Soldiers were required to sprint 10 yards and vault a three-foot hurdle; sprint 15 yards and negotiate a wire entanglement; sprint 15 yards and climb a 5-foot-high ramp/platform; leap from the platform over a 10-foot wide trench; sprint 15 yards and nego-

tiate a 1-foot wide, 20 feet long plank bridge; sprint 15 yards and climb over an 8-foot smooth-faced fence; sprint to finish. The “passing” mark for the OCR was 30 seconds. The Individual Efficiency Test was designed to “stimulate the soldier to make the effort to attain a certain fixed standard, and serve also to call the attention of the Commanding Officer to those weak and inefficient men who need special attention and work to enable them to overcome their deficiencies.”⁶³



Figure 4.8. Obstacle Course Run.⁶⁴

Source: Raycroft, Joseph. *Mass Physical Training for use in the Army and Reserve Officer Training Corps*. Washington: US Infantry Association, 1920.

Raycroft further proposed that the Individual Efficiency Test contain a progressive component. He recommended that every recruit be tested as soon as they entered initial military training (Grade 3: test in service uniform without blouse and without equipment); if they fail, test again in 30 days; if they fail a second time, they should receive remedial training. Once a soldier passed in “Grade 3”, he should be tested in Grade 2: test the IET in service uniform without blouse and carrying a rifle. Once passing in Grade 2, he should be tested in Grade 1: test the IET in light marching equipment without blouse carrying a rifle. Raycroft was also the first to propose a “physical certificate” for each “grade” of the IET a soldier passed.⁶⁵ The last physical standard Raycroft proposed was to come at the end of three months of training. Each soldier was to demonstrate proficiency in hand-to-hand combat, knowledge of bayonet drill, and the ability to “acquit himself credibly in a three-round bout of boxing”. Raycroft found that even a comprehensive program of physical training could “bring the

recruit very much closer to the seasoned soldier as regards mental and physical preparedness” than previous training methods.”⁶⁶ Finally Raycroft concluded:

One of the most important of the many lessons which have come from the war is the demonstration of the fact that other types of physical activities besides calisthenics are not only extremely useful in the contribution which they make in the development of important soldierly qualities, but that they are capable of being used as an integral part of the formal program of training. Group games, wrestling, boxing, hand-to-hand fighting and other personal contact drills give the soldier a kind of training which he can get in no other way short of battle experience. The inclusion of such activities in the regular training gives to the recruit, in a very effective way and in a relatively short space of time, an invaluable mental and physical experience and contributes greatly to the development of confidence and effectiveness in combat. In other words, activities of this type are an essential supplement to the disciplinary training received from the close order drill.⁶⁷

Soon after the cessation of hostilities in WWI, Koehler’s disciplinary gymnastics model went into rapid decline. There were several key factors that caused the US Army to abandon Koehler’s physical training model as US Army doctrine. First, Koehler was retired from the US Army in 1923. Second, and perhaps more significant, was the prevalence of anti-German sentiment in the US immediately following WWI. Although Koehler’s physical training model was generally accepted as a viable training model, his program clearly epitomized the German Turnverein model. Having such inextricable links to an enemy that caused over 200,000 casualties was impossible to overcome in the short term. Even with the significant anti-German backlash following WWI, there was still some post-WWI allegiance to Koehler’s PRT model among military leaders. Koehler’s broad base of support was evidenced by the Secretary of War, Newton Baker, writing the “Forward” for Koehler’s 1919 training manual (which was never sanctioned by the US Army). Although Raycroft’s sport model was never fully implemented following WWI, it did serve as a template for physical readiness training and assessment models that would emerge shortly after the initiation of hostilities in WWII.

Post-War Consideration for US Army Physical Readiness Training: The Interwar Years

During the interwar years (1919-1939) three significant events hastened the evolution of US Army physical fitness training: (1) comprehensive after action reviews from WWI, (2) discovery and utilization of antibiotics to reduce battlefield casualties, and (3) significant advancements in warfighting technology. From its inception civilian leaders in the United States made the strategic decision to maintain a relatively small Regular US Army in times of peace. In times of crisis the intent was to reinforce Regular US Army forces “by such additional citizen forces as the particular emergency may require.”⁶⁸ “If we intend to avoid a standing US Army, (that bane of a republic, and engine of oppression in the hands of despots), our militia must be patronized and improved, and military information must be disseminated amongst the great mass of the people”.⁶⁹ Although conscripted Soldiers were somewhat problematic from a fitness perspective during the Civil War, based upon results obtained by physical examinations during WWI approximately “one third of this enormous sample of the young men of the country were found to be [physically] unfit for duty with the fighting units of the Army.”⁷⁰ Millions of men were drafted, but then rejected as physically unfit before being sworn into service. Medical examinations by local draft boards revealed the impact of poor nutrition and excessive and unsafe work conditions.⁷¹ While studying bacteriology at Camp Funston, Kansas, Major George Draper noted “it is quite apparent that the physical condition of the men...is poor....their pale skins and flabby tissues bespeak lack of tone, and indicate the absence of any kind of exercise”.⁷² “Had the general public profited by the knowledge and experience of the US Army in physical training it would not have been necessary, when the call for service in the Great War came, to discard one-third of the potential manpower because of physical disability.”⁷³

The “unfit for duty” problem was exacerbated by the sheer number of soldiers drafted. Basic training camps throughout the United States trained millions of men from mid-1917 through 1918. During the troop surge in late 1917 the US Army found itself with large numbers of conscripts, brought on active duty to meet growing manpower quotas, who were unfit for duty. Some soldiers had such significant physical deficiencies that they were of little use to their unit. Whenever possible, commanders transferred these men to other units to “purify their organizations of poor soldiers, and men of deficient intelligence and physical stamina.”⁷⁴ Finally the War Department created “convalescent units” in depot brigades where unfit men could rehabilitate and developed a limited service” category for these sol-

diers—complete non-combatant work. Due to generally poor fitness levels of these conscripted Soldiers, the entire country refocused on the physical fitness aspects of military training.

The growing emphasis on physical fitness was manifest in the four preparatory documents developed at the Citizens' Military Training Camp at Plattsburg during the summer of 1922. On 31 October 1922 the War Department published Training Manual No. 1-No. 4 entitled *Studies in Citizenship for Citizens Military Training Camps*, which were issued to all recruits upon entering the US Army. Chapter 4, Training Manual No. 2 outlined the components and expectations of “military training” and provided a global view of the role of physical training in war:

Fitness for survival, in time of war is the first and primary requisite for any preparedness program. No nation has ever survived, and no nation ever will survive, whose people are not physically, mentally, and morally fit for survival. Military training is not designed to enhance the militaristic spirit. It builds men up physically. It gives them the discipline of self-control and inculcates obedience as the first step toward effective service and competence in leadership.⁷⁵

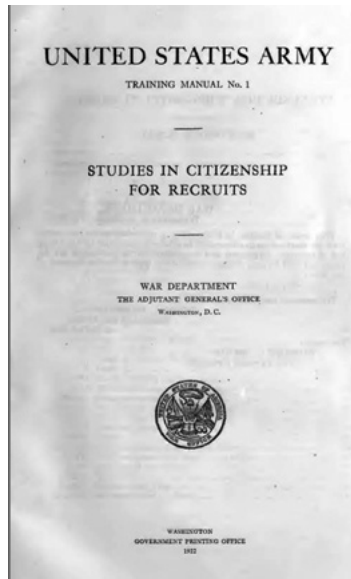


Figure 4.9. Lessons in Citizenship from WWI.

Source: Training Manual No. 1, Studies in Citizenship for Recruits, US Army, War Department, Adjutant General Office, DC, GPO, 1922.

The second significant event during the interwar years was the discovery and proliferation of antibiotics to treat combat casualties, specifically sulfa-based drugs and penicillin.⁷⁶ “War is truly a struggle between life and death and, in war, death is caused equally as frequently by sickness and incapacity as by the bullets of the enemy...in few wars has the percentage of deaths from wounds exceeded that from disease...the loss of combat and of march are occasioned as much by physical disability as by bullets”.⁷⁷ Throughout the first one hundred years of the US Army’s history, the threat of conflict brought about great concerns for combat casualties. Generally, however, the greatest threat during these early years came from communicable and infectious diseases. From the Mexican War (1846) to WWI the percentage of war-time deaths attributable to non-combat injury/illness was 64%.⁷⁸ In 1918 alone, the total number of American sailors and soldiers who died of influenza and pneumonia was over 43,000-about 80% of all soldier deaths that year.⁷⁹ As a result of the non-combat threat to all-cause mortality and morbidity the primary objective of virtually every military training program prior to 1941 was to improve the “organic vigor” (health) of the soldier.⁸⁰ Raycroft went so far as to state that “for the first time [soldiers were taught] how to combine health-giving exercise with play in the form of athletic games and sports.”⁸¹

By comparison to the 64% non-combat casualty rate from 1846-1920, the non-combat casualty rate from WWII to Vietnam dropped to 34%. This percentage represented a 100+% reduction in non-combat casualties due to injuries and illness. Along with improved emergency medical procedures and better combat casualty triage and evacuation, antibiotics significantly decreased the number of combat deaths. As a result, the historically salient outcome objectives of health and organic vigor virtually disappeared from US Army physical training manuals after the publication of FM 21-20 in 1941, as the US Army turned its attention from basic health-related fitness to functional fitness and combat readiness.

The third major event during the interwar years was the significant advancement in mechanized armor and rate of fire for personal and crew-served weapons.⁸² With widespread use of machine guns during WWI, based upon the Hiram Maxim design, commanders became painfully aware of the need for strategies to mitigate casualties by enhancing mobility and improving personal protection. In the Battle of the Somme (1916), it has been estimated that the British Expeditionary Force suffered over 420,000 casualties in a span of five months and almost 58,000 casualties on the first day of the Battle.⁸³ In an attempt to break the trench-war stalemate, the French, working from the British model of the Little Willie

(1915), developed the Renault Light Tank in 1917. “A solution for alleviating the casualties incurred in assaulting massed machine guns lay not in increasing the number of men exposed to the fire but in a technological advancement, the tank.”⁸⁴ This light armored tank had a top speed of 4.8 mph on flat terrain with an operating range of 25-30 miles, which increased maneuver mobility by allowing soldiers to assault enemy positions from a protected position.⁸⁵ However, when used during penetration maneuvers, these light weight tanks became vulnerable when separated from infantry support. The increased need for greater endurance and mobility created by the first mechanized “tanks”, coupled with the need for infantry support during combat maneuvers, translated directly to the need for soldiers to develop greater speed, agility, and stamina.⁸⁶ US Army leaders were aware that technological advancements in military weapons made the positional warfare of WWI obsolete; “...professional soldiers recognized that some change was necessary if they were to perform better the battlefield functions of penetration and exploitation that had proved so difficult during World War I.”⁸⁷

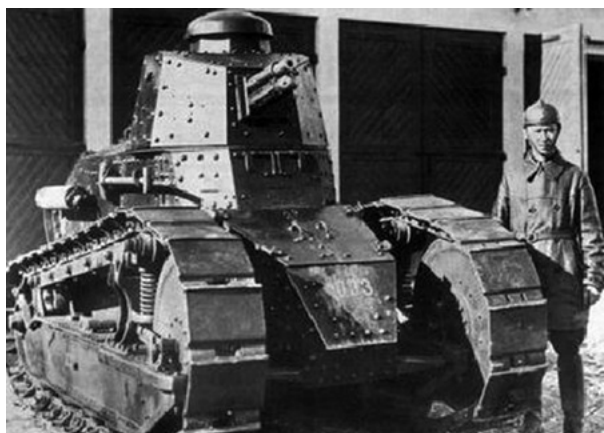


Figure 4.10. Renault Light Tank, 1917.

Source: <http://historywarsweapons.com/renault-ft-17-tank/>, public domain-pre 1923.

In reviewing the issues with the troop surge of 1917, US Army leaders concluded that the civilian population would never maintain an adequate level of physical fitness required to meet minimum thresholds for combat readiness. After the Armistice, the leaders in the Training Camp Commission recommended to the War Planning Division that a permanent “course” be developed to maintain the current momentum in physical readiness training for soldiers and instructors. In August 1919, F.E. Lacy, Colonel, Acting Director, War Plans Division staffed a memorandum through General Payton March, Army Chief of Staff to establish a Physical and Bayonet Training course designed to train “instructors” (subject matter experts) to be taught at the Infantry School of Arms at Camp Benning, GA.⁸⁸ Lacy proposed that Dr. Joseph Raycroft use his “mass of data” to write the program of instruction in: (1) physical drill, (2) boxing and hand-to-hand fighting, (3) group games and mass athletics, including competitive games, and (4) bayonet fighting and that former Training Camp instructors serve as cadre for the physical and bayonet training course.⁸⁹ Dr. Raycroft developed a 21-day course (the first iteration to be conducted from 5-30 September 1919) and recommended that four officers be selected from each of the five branches of the service (Infantry, Cavalry, Field Artillery, Coast Artillery Corps, and Engineers) to attend the first iteration. “In many ways the Benning school is the beginning of the largest physical education program ever attempted.”⁹⁰

As has been the pattern throughout the history of the US Army, the peacetime years of the 1920’s and 1930’s bought about a decade of complacency and diminishing expectations for physical readiness training.⁹¹ On 10 September 1928 Adjutant General Lutz Wahl, by direction of the Chief of Staff C.P. Summerall, published *Physical Training* (Training Regulations, No. 115-5), which superseded Koehler’s 1914 Manual of Physical Training.⁹² Training Regulation 115-5 was prepared under the direction of the Lieutenant General Merch B. Stewart, Superintendent—United States Military Academy. Stewart was an 1896 graduate of the United States Military Academy and fought in the Spanish-American War and WWI. Although he graduated in the bottom half of his class, Stewart performed well in the physical program lead by then Lieutenant Herman Koehler. Stewart authored several US Army manuals to include *Physical Development of the Infantry Soldier* prior to his supervision of the publication of TR 115-5 as Superintendent. In the preface of his 1913 training manual, Stewart revealed his physical training philosophy for the infantry soldier: “every muscle, every organ, every faculty should be capable of working to the extreme human limit, then, if necessary, beyond..... The burden of

combat is the expenditure of strength and energy required in moving from one position to another in battle, running at top speed, creeping, crawling, in crouching or lying behind cover, all in the while delivering a steady and accurate fire, in charging over long distances, and engaging in hand-to-hand fighting with butt and bayonet, and in the mental strain of facing injury or death.”⁹³ Although Koehler had been retired from the US Army for almost five years when TR 115-5 was published, the 1928 manual was basically an amalgam of his 1914 and 1919 manuals of physical training in two Parts. Part I contained all formations, setting-up drills, and calisthenics. Part II contained exercises with dumbbells and Indian clubs, gymnastic exercises with ropes, ladders, and apparatus, swimming, and combat-ives. All of the work by Raycroft, et al. and the Commission on Training Camp Activities following WWI was abandoned. The most conspicuous loss was the use of physical fitness testing to measure of combat readiness.

On 26 March, 1936 the United States War Department rescinded Training Regulation, No. 115-5 and established a new approach to disseminating training information with the publication of the *Basic Field Manual-Field Service Pocketbook*. The 1936 *Basic Field Manual* (BFM) was produced under the direction of General Malin Craig, Chief of Staff (US MA Class of 1898) and was the US Army’s first comprehensive basic field training manual. The BFM was published in two volumes and eight chapters. Chapter 4 (Volume 1) was dedicated to physical readiness training. As stated in the manual, US Army physical training should be designed to achieve five objectives: (1) general health and vigor, (2) muscular strength, coordination, and endurance, (3) discipline and teamwork, (4) self-reliance, confidence, and courage, and (5) enthusiasm, pride, and morale.⁹⁴ Soldiers were directed to participate in physical training for two hours each day, divided into two 60-minute periods. The morning period should be scheduled at least 30 minutes after breakfast and should consist primarily of individual exercise and gymnastics.⁹⁵ In the afternoon session 30 minutes should be devoted to bayonet training and 30 minutes should be devoted to mass athletics and games. The manual identified 11 areas of physical development for soldiers including: setting-up exercises, marching, rifle exercises, gymnastics, jumping, mass athletics and combatives/bayonet training.⁹⁶

For the first time in a US Army manual the exercise of running was accorded more significant consideration. In his 1919 manual, Koehler stated “there is no exercise that will develop condition, vigor and endurance, lung and leg power in general as double timing at a moderate rate of speed”.⁹⁷ He did however, caution instructors that “on account of its sever-

ity and tendency to permanent injury to the heart, instructors are cautioned to proceed carefully, especially when handling green men.”⁹⁸ Koehler recommend that soldiers should conduct double-time runs fully equipped. In the 1936 BFM, running for long periods or a high rate of speed was described as “invaluable in the development of endurance and organic vigor”.⁹⁹ Although the 1936 BFM included some new materials, it was still rather simplistic, even crude from an exercise science perspective and the majority of the text pertained to descriptions of setting-up exercises.¹⁰⁰ The 1936 BFM would ultimately be given the numerical designator 21-20, which would guide US Army physical training for the next 70+ years.

Notes

1. Note: Woodrow Wilson was a relatively talented baseball player and played one year of varsity baseball at Davidson College during his freshman year.

2. Note: Leonard Wood was a trained medical doctor (Harvard) and an avid athlete who aspired to be a combat line officer. He was a tireless champion of military preparedness and training and was the principal sponsor of the Plattsburg training camps, which gave young men their first orientation to military life. He was also a major player in the “preparedness movement” just prior to World War I. At [https:// www.wood.army.mil/mgleonard wood.htm](https://www.wood.army.mil/mgleonardwood.htm) (accessed 6 June 2011). Herman J. Koehler, *Manual for Physical Training for use in the United States Army* (New York: Military Publishing Company, 1914), 3.

3. C. Thomas Lowman, “Does Current Army Physical Training Doctrine Adequately Prepare Soldiers For War?” (Master of Military Art and Science thesis, FT Leavenworth, KS: Command and General Staff College, 2010, 13; Note: The table of contents of the 1914 *Manual of Physical Training* could likely have been taken directly from Friedrich Jahn’s “A Treatise on Gymnastics” (1828). The classic German gymnastics model served as the context for this manual as it did for other Koehler manuals. Of historical interest, it should be noted that Lt. Col. Sladen and 1st Lt. Philips were USMA graduates (Fred W. Sladen (Class of 1890) and Philip Mathews (Class of 1906)). Lt. Col. Sladen was a Plebe during Koehler’s first year on the faculty in the Department of Tactics at West Point. Cadet Sladen ranked 5/53 in “tactics”, which included his physical education instruction from the Master of the Sword, Herman Koehler. In 1911 Capt. Sladen returned to USMA as the Commandant of Cadets and was Koehler’s immediate supervisor. Maj. Gen. Sladen served as the 32nd Superintendent of the United States Military Academy from 1922-1925 and presided over Koehler’s retirement ceremony.

4. Michael J. Reagor, “Herman J. Koehler: The Father of West Point Physical Education, 1885–1923.” *Assembly*, 51:3 (Jan 1993): 4; David J. Yebra, *Colonel Herman J. Koehler: The Father of Physical Education at West Point*, (Paper written for LD 720: American Military History, United States Military Academy, 1998), 13.

5. Note: Major General Leonard Wood was replaced as Chief of Staff of the US Army on 22 April 1914.

6. Note: during the summer of 1915 and 1916 Major Herman Koehler was dispatched from West Point to the Plattsburg Military Training Camp to direct the disciplinary physical training (“The Retirement of Colonel Herman Koehler, *The Pointer* (22 October 1923): 4). Penelope D. Clute, “The Plattsburg Idea,” *New York Archives* 5:2 (Fall 2005): 11-12; *The Plattsburger* (New York: Wynkoop, Hallenbeck, Crawford Co., 1917), 13; Note: Major General Wood established camps in Pennsylvania, California, Michigan, Vermont, and North Carolina.

7. Theodore Roosevelt, *America and the First World War* (New York: Charles Scribner's Sons, 1915), 209.
8. *The Plattsburger*, 13.
9. Arthur S. Link, *Woodrow Wilson and the Progressive Era, 1910-1917* (New York: Harper and Row, 1954), 200.
10. Raymond B. Fosdick, *Chronicle of a Generation: An Autobiography* (New York: Harper, 1958), 135; Note: as a result of the Mexican conflict a young Michigan high school student named Ted Bank joined the US Army and was immediately deployed to the Mexican border—the future Colonel Bank would have a significant impact on US Army PRT during and after World War II.
11. Fosdick, *Chronicle of a Generation*, 135.
12. "Army Heads Answer Militia Complaints." *New York Times*, 20 July, 1916.
13. Fosdick, *Chronicle of a Generation*, 136.
14. Raymond B. Fosdick, "The War and Navy Departments Commission on Training Camp Activities," *Annals of the American Society of Political and Social Science* 79 (September 1918): 130.
15. Fosdick, *Chronicle of a Generation*, 140.
16. "Wants Mexico Cleaned Up—Senator Falls Fears Conflict with European Army There," *New York Times*, 22 March 1916.
17. Note: in 1916 the regular US Army at this time consisted of only about 100,000 Soldiers.
18. *The Plattsburger*, 14.
19. O.O. Ellis, and E.B. Garey, *The Plattsburg Manual—A Handbook for Military Training* (New York: The Century Co.): 21; Note: a footnote to Chapter II read: "These exercises are selected from those commonly given by Major H. J. Koehler, United States Army."
20. James Cole, and Oliver Schoomaker, *Military Instructors Manual* (New York: Edwin N. Appleton, 1917), 109.
21. *The Plattsburger*, 15.
22. Clute, "The Plattsburg Idea", 13.
23. "Bayonet Practice Again," *New York Times*, 25 June 1917; L. L. Little, "There is No Limit to Human Endurance," *Outing* November (1918): 113.
24. Hugh Scott, "Comments on Compulsory Military Service," War Department Annual Reports, 1916. Washington, DC: Government Printing Office, 1917), Volume I, 155-162 (Reprint in *The Military Draft: Selected Readings on Conscription*, edited by Martin Anderson, 515-25, Stanford: Hoover Institution Press, 1982: 517).
25. Selective-Service Act: Hearings before the Committee on Military Affairs, House of Representative, Sixty-fifth Congress, The Bill Authorizing the President to Increase Temporarily the Military Establishment of the United States (April 7, 14, and 17, 1917), Washington: Government Printing Office, 1918: 273.
26. Selective-Service Act: Hearings, 14.
27. www.sss.gov/induct.htm (accessed 14 July 2010).

28. Jennifer Keene, *The United States and the First World War* (New York: Longman Press; 2000), 29.

29. Newton D. Baker, "Letter to President Woodrow Wilson—Mr. Fosdick and Army Recreation," in *The Papers of Woodrow Wilson*, Vol. 4, January 24–April 6, 1917, ed. Arthur S. Link (Princeton: Princeton University Press, 1983), 527.

30. Raymond B. Fosdick, "The Commission on Training Camp Activities," *Proceedings of the Academy of Political Science in the City of New York* 7:4 (February, 1918): 163.

31. "Making Vice Unattractive in Soldier's Camps," *New York Times*, 20 May 1917.

32. Note: The Bureau of Social Hygiene in New York, NY was funded by J. D. Rockefeller. Newton D. Baker, "Letter to President Woodrow Wilson v. Raymond Fosdick," in *The Papers of Woodrow Wilson*, Vol. 4, January 24–April 6, 1917, ed. Arthur S. Link (Princeton: Princeton University Press, 1983), 506

33. The War Department, *Commission on Training Camp Activities*, 1917

34. "Making Vice Unattractive in Soldier's Camps," *New York Times*, 20 May 1917; quoting Raymond Fosdick

35. Fosdick, *Chronicle of a Generation*, 143.

36. Keene, *The United States and the First World War*, 29.

37. Fosdick, *Chronicle of a Generation*, 154.

38. At <http://diglib.princeton.edu/ead/getEad?eadid=AC146&kw> (accessed 24 June 2010).

39. Fosdick, *Chronicle of a Generation*, 153–154.

40. Walter Camp, "A Daily Dozen Set-up," *Outing* 73:2 (1918): 98.

41. Fosdick, "The War and Navy Departments Commission on Training Camp Activities", 138–139.

42. Fosdick, "The War and Navy Departments Commission on Training Camp Activities", 139.

43. Fosdick, "The War and Navy Departments Commission on Training Camp Activities", 131.

44. Robert Degen, *The Evolution of Physical Education at the United States Military Academy* (Master thesis, University of Wisconsin, Madison, 1967), 54; Herman Koehler, *Koehler's West Point Manual of Disciplinary Training* (New York: E. P. Dutton & Company, 1919), v; Yebra, *Colonel Herman J. Koehler*, 11.

45. US Army War Department, War Plans Division, Document No. 844, Provisional Infantry Training Manual 1918; Part I. Minimum Specifications for rained Infantry, Part II. Training Methods, (August 1918), pp. 87.

46. Provisional Infantry Training Manual 1918, p.3.

47. Koehler, *Koehler's West Point Manual of Disciplinary Training*, v.

48. Koehler, *Koehler's West Point Manual of Disciplinary Training*, bid, xiii.

49. Koehler, *Koehler's West Point Manual of Disciplinary Training*, xiii.

50. Note: a 2nd edition, which appears to be an exact reproduction of the 1st edition was published in 1924; the only addition is a preface by Brig. Gen. H.A. Drum

51. Joseph Raycroft, *Mass Physical Training for use in the Army and Reserve Officer Training Corps* (Washington: US Infantry Association, 1920), iv; Note: in 1919 Col. William H. Waldron published a secularized edition of Koehler's 1914 *Manual of Physical Training* entitled *Army Physical Training*. Waldron appears to have plagiarized much of his text directly from Koehler's manual. Waldron did change Koehler's photos to line drawings of a soldier in uniform.

52. Raycroft, *Mass Physical Training*, vii.

53. Fosdick, "The Commission on Training Camp Activities," 167.

54. Raycroft, *Mass Physical Training*, vii.

55. War Department, *Commission on Training Camps* (Washington: Government Printing Office, 1917), 13; Note: this section of the publication was attributed to Dr. Joseph Raycroft.

56. Raycroft, *Mass Physical Training*, vii.

57. Note: The first specified physical training period in the morning was at 1000.

58. Raycroft, *Mass Physical Training*, 3.

59. Raycroft, *Mass Physical Training*, viii

60. Raycroft, *Mass Physical Training*, p. vi

61. Raycroft, *Mass Physical Training*, 149.

62. Raycroft, *Mass Physical Training*, 34.

63. Raycroft, *Mass Physical Training*, viii.

64. Raycroft, *Mass Physical Training*, 147; Note: the obstacle course test run was published in *Mass Physical Training Manual*.

65. Raycroft, *Mass Physical Training*, 143.

66. Raycroft, *Mass Physical Training*, vi.

67. Raycroft, *Mass Physical Training*, v.

68. *Studies in Citizenship for the Recruit, US Army Training Manual No. 2* (Washington: Government Printing Office, 1922), 7.

69. Alden Partridge, "Lecture on Education," in *The Art of Epistolary Composition and Discourse on Education*, ed. Francois Peyre-Ferry's (Middletown, Conn.: E & H. Clark, 1826), 271.

70. James C. Magee, "Relationship of the Health of Civilians to the Efficiency of the US Army," *American Journal of Public Health* 30 (November 1940): 1285.

71. Jennifer Keene, *World War I* (Westport, CT: Greenwood Press, 2006), 26.

72. George Draper, 1918, NA; as quoted in Keene, *World War I*, 26; Note: George Draper was an US Army officer and physician and epidemiologist for the City of New York.

73. *Studies in Citizenship for the Recruit, Manual No. 2*, 33.

74. Jennifer Keene, *Doughboys, The Great War and The Remaking of America* (Baltimore: Johns Hopkins University Press, 2003), 27.
75. *Studies in Citizenship for the Recruit, Manual No. 2*, 7 & 33.
76. Note: Sulfa drugs and penicillin were actually discovered in 1928, but were in limited production and availability until about 1945 when they were mass produced.
77. M.B. Stewart, *The Physical Development of the Infantry Soldier* (Menasha, WI: George Banta Press, 1913), 2, 4.
78. Note: these percentages were calculated by averaging official US census statistics on combat and non-combat casualties for the given time periods.
79. Note: Mostly from the Spanish flu pandemic of 1918. Alfred Crosby, *Epidemic and Peace, 1918* (Westport, CT: Greenwood Press, 1976) 260; *Annual Reports of the War Department* (Washington: Government Printing Office, 1:2, 1919), 1437, 2012.
80. Note: Partridge, 1826, p. 265: “exercise for the preservation of health and confirming and rendering vigorous the constitution”; Koehler, *Manual for Physical Training*, 5: “general health and bodily vigor”; Raycroft, *Mass Physical Training*, iii: “to maintain him in a sound, healthful condition.”
81. Joseph Raycroft, *Mass Physical Training*, iii.
82. Kenneth Finlayson, *An Uncertain Trumpet: The Evolution of US Army Infantry Doctrine, 1919-1941* (Westport, CT: Greenwood Press, 2001), 84.
83. At <https://www.historylearningsite.com.uk/somme.htm>; www.history-world.org/somme.htm (accessed 20 June 2011); Note: it has been estimated that over 1 million combatants died at Somme from July to November 1916.
84. Kenneth Finlayson, *An Uncertain Trumpet*, 80.
85. Richard M. Ogorkiewicz, *A History of Mechanized Forces* (New York: Frederick A. Praeger, Publisher, 1960), 170.
86. Jonathan House, *Toward Combined Arms Warfare: A Survey of 20th-Century Tactics, Doctrine, and Organization* (FT Leavenworth, KS: US Army Command and General Staff College, 1984), 29-31.
87. Bernard Brodie, and Fawn Brodie, *From Cross Bow to H-bomb* (Bloomington: Indiana University Press, 1973), 43.
88. Lacy, F.E. Colonel, War Department: Memorandum for the Chief of Staff; Subject: Physical and Bayonet Training, August, 1919; (Printed in “News Notes,” *American Physical Education Review* 24:7:152 (October, 1919), 419. Note: there are few references to the “physical training and bayonet school”; one reference came from the biography of Brigadier General Jesmond Balmer when he became the Commandant of the Field Artillery School: Lt. Balmer returned to the United States in October 1919, and was assigned to Camp Bragg, North Carolina, where he served with the 21st Field Artillery until March 1920. He then went to Camp Benning, Georgia, to attend the Physical and Bayonet Training School until April 1920, when he went to Camp Jackson, South Carolina, as an Instructor in bayonet training. From June 1920, until August 1920, he served as an Instructor of the Army Olympic Games entries and in August returned to the 21st Field Artillery at Camp Bragg. He transferred to the 17th Field Artillery

there in September 1921. He became Provost Marshal at Fort Bragg in June 1923. (see “A New Commandant, F.A.S.” *The Field Artillery Journal* 32:8 (August 1942): 578).

89. Note: Four individuals were recommended as instructors at the Physical and Bayonet Training program: Maj. John L. Griffith, Capt. Carlton L. Brosius, Mr. George Blake, and 1st Lt. B.W. Leman; Captain Brosius was the grandson of George Brosius, Director of the Milwaukee Normal School and Herman Koehler’s teacher and mentor; all four instructors worked for Raycroft (Chairman of the Athletic Division, Commission on Training Camp Activities) during WWI; the Physical and Bayonet Training program of instruction was published by Raycroft in his manual—*Mass Physical Training* (1920).

90. Note: on 5 October 1919 a wire service article concerning the new Physical Training and Bayonet School at Fort Benning was picked up by no less than three major newspapers (*Pittsburg Times*, *New York Evening Post*, *Miami News*). The “article” described the formation of the school, the program of instruction, instructors, and overarching objectives.

91. Finlayson, *An Uncertain Trumpet*, 69.

92. Note: Raycroft’s manual of *Mass Physical Training*, which was identified by the War Plans Division as the standard for US Army-wide PRT doctrine was summarily dismissed.

93. Stewart, *The Physical Development of the Infantry Soldier*, 4, 5.

94. Department of the Army, “Basic Field Manual, Vol. I, Chapter 4,” *Physical Readiness Training (FM 21-20)* (Washington, DC: US Government Printing Office, 1936), 1-2.

95. Note: “men should not be required to indulge in strenuous exercise before breakfast”; “Basic Field Manual” (1936), 4.

96. “Basic Field Manual” (1936), 2-5.

97. Koehler, *Koehler’s West Point Manual of Disciplinary Training*, 18.

98. Koehler, *Koehler’s West Point Manual of Disciplinary Training*, 18.

99. “Basic Field Manual” (1936), 2.

100. Note: the physical readiness training programs proscribed in the Basic Field Manual (1936) were relative crud, especially considering the previous work by the Prussians and British Armies as early as 1815.

Chapter 5

World War II-A Return to Combat Readiness

Factor Influencing US Army PRT Prior to World War II

Prior to the attack at Pearl Harbor on 7 December 1941, most Americans enjoyed an unrivaled quality of life due to the expanding array of consumer durables available for the home. The demand for “labor saving” devices spiked dramatically during the late 1930’s due to technological innovations and significant increases in federal spending in preparation for war.¹ Mesmerized by the “Word of Tomorrow”, which was theme of the 1939 New York World’s Fair, Americans began to envision an all-electric world. Electrical appliances transformed the landscape at home and in the workplace and significantly reduced much of the burden of manual labor required in last century.² “The first wave of innovations to home production came from the diffusion of electricity and piped water...For the country as a whole, in 1940, 83% of the total number of dwellings had electrical lights and 74% had running water.”³ By 1940, 61% of the wired households had a washing machine, and there was significant penetration of the electric iron, vacuum cleaner, dishwasher, and refrigerators. Although 43% of Americans were employed in “blue collar” jobs, improving technology reduced the amount of hard labor.⁴ “Modern machines have to a great extent emancipated our muscles from work...and... have resulted in a lack of physical fitness in the youth of America, which seriously handicapped our war effort”.⁵ Unfortunately, the hard manual labor that remained in the US workplace was often more debilitating than constructive. In general Americans moved steadily away from a physically active industrial/agrarian society to a sedentary urban society, which further deteriorated personal health and fitness. Since the thought of another “world war” was inconceivable for most Americans, the need to maintain physical vigilance for national security was marginalized. During the interregnum from 1919 to 1939 the US and the US Army lost focus of the painful lessons learned during combat in WWI. “Lack of physical fitness prevailed among the youth of the county because the nation failed to recognize its importance.”⁶

As war beckoned, the United States found itself faced with a “perfect storm” created by 20 years of peace and emerging prosperity. The nexus of the “storm” was: (1) the need to rapidly mobilize a large number of combat soldiers, (2) measurable declines in personal health and fitness, which exacerbated the mobilization and training process, and (3) improved mecha-

nization and warfighting technology.⁷ The problems created by the cumulative effects of these issues were obscured by the perceived successes in mobilizing and training large numbers of civilians during WWI. However, soon after the declaration of war, declining levels of personal health and fitness, exacerbated by increased needs for stamina and mobility, created near desperation in the mobilization and training of soldiers. It became readily apparent to most civil and military leaders that significant changes in secular physical fitness and US Army physical training and assessment doctrine would have to occur to successfully resource the war effort.

50% of inductees cannot swim well enough to save their lives, and lack the strength to jump ditches, scale walls, throw missiles and survive forced marches. Colonel Bank...conducted physical tests with 400 troops at Fort Knox and 11 other camps. The results proved that 20-25% are in very good shape, 40% in fair shape, but not good enough for combat and 35% are in miserable shape.⁸

Over a four-year period (1940-1944) civil and military leaders developed three joint initiatives to mitigate the systemic physical fitness and manpower issues facing the US Army: (1) a national public relations and youth fitness campaign, (2) passage of the Selective Service and Training Act and establishment of the Women's Army Auxiliary Corps, and (3) revisions in US Army physical readiness training doctrine. In October 1940, President Franklin Roosevelt named John Kelly, the 3-time Olympic gold medal rower, as the National Director of Physical Fitness. This position was generally acknowledged to be a public relations post where Kelly could use his notoriety to promote physical fitness during the War.⁹ In late 1940, when US Army leaders realized that the public relations campaign alone would not resolve the manpower demands for the armed services, the War Department restructured several federal agencies to attack the medical/fitness issue. The newly established Federal Security Agency (FSA) was given broader authority to promote/develop/sustain the physical fitness of US citizens. Under the leadership of Paul V. McNutt, the FSA established several "committees" designed to enhance physical fitness. Key players on these committees were C. Ward Crampton, Col. Leonard Rowntree (MD), Arthur H. Steinhaus (MD), and Col. Theodore Bank.

With the national public relations campaign underway, on 14 September 1940 Congress moved to resolve the evolving military manpower issue by passing the Burk-Wadsworth Act (better known as the Selective Training and Service Act). This Act mandated the first peace-time conscription in the history of the United States. Between November 1940 and

October 1946 over 10,000,000 men entered military service through the Selective Service system.¹⁰ By early 1941, two historical nemeses of “military conscription” emerged: (1) “draft boards” were identifying an alarmingly high number of candidates who were physically/medically unfit for service, and (2) basic training programs were ineffective in transforming sedentary recruits into “hardened” soldiers. In 1941 only about one half of high school men participated in a regular physical education/fitness program. “This generation of draftees as a whole is considerably softer and weaker than its fathers were in 1917.”¹¹ “Many young men are entering the Army today totally unprepared for military life. It takes weeks to bring them into the physical conditioning necessary for military training.”¹² During congressional hearing on youth fitness Commissioner of Education John W. Studebaker stated: “I wonder if you understand what the usual program of physical fitness training in this country in the ordinary high school has been! It has consisted of about two periods per week. The program we recommend includes five periods per week. The recommended program was prepared by US Army and US Navy experts in physical fitness and others representing the schools and colleges.”¹³ In subsequent testimony Colonel Rowntree, medical director for the Selective Service, stated that “we are accustomed to regard ourselves, as a Nation, as healthy and rugged...but when we look at the facts as they are revealed by the statistics on rejection, a very large proportion of our manhood is far below par.”¹⁴

Our young men are being sent into our Armed Services without the ability to swim, without the leg strength to jump combat obstacles such as ditches and fences; without the arm and shoulder strength which would enable them to pull themselves up over ledges, or save their lives by climbing up or down ropes and rope ladders, and without the agilities, developed by athletics, that would increase their chances of staying alive in various combat situations.¹⁵

By most estimates Selective Service rejections averaged about 30%; however Col. Rowntree testified that out of the first 2,000,000 men examined, 1,000,000 were rejected and about 90% were rejected for physical fitness and medical issues.¹⁶ Based upon data collected during WWII for the US Army Air Force physical fitness test, Karpovich and Weiss concluded that “enlisted and aircrew personnel entered the US Army Air Forces in fairly poor condition.”¹⁷ Men were found to be deficient in running speed and endurance and abdominal endurance; however they were most deficient in arm and shoulder strength as measured by the pull-up. As the

United States marched inexorably towards war, it again became clear that many of the men who reported to the Military Entrance Processing Station (MEPS) were not physically fit for military duty. By 1943 the number of unqualified men would rise to 2.5-3 million.¹⁸



Figure 5.1. John B. Kelly, Chair-National Physical Fitness Council.

Source: University of Pennsylvania Archives, open source, <http://imagesvr.library.upenn.edu/cgi/i/image/image-idx?type=detail&cc=pennarchive&entryid=X20050915004&viewid=1&ssrt=&hits=&q1=&cat1=&thsz=&txsz=&slsz=1&med=&quality=thumbnail&ts=&c=pennarchive>.

Of the first two million men examined under Selective Service, fully half were found unfit for military combat service! Of these, 500,000...could finally be accepted for limited service. But the rest were rejected completely! Of those rejected, 400,000 men were physically unfit...they weren't healthy enough to meet Army physical standards!¹⁹

After the attack at Pearl Harbor, Americans were infused with a sense of national purpose to defeat the Axis powers; however in 1941 when the US declared war on Japan and Germany, the armed services faced critical manpower shortages. "In the beginning, the Selective Training and Service Act of 1940 was designed to provide the authority for the leisurely procurement of an army for national defense. This was most fortunate because it afforded Selective Service an opportunity for orientation...prior to the great pressure for manpower that followed the declaration of war."²⁰

Although the Selective Service boards increased rates of induction, many of the recruits were physically unfit. "...many of the registrants were found to be pampered, soft, flabby, and in need of conditioning. Special training in physical fitness was necessary, after induction, which represented weeks of wasted time and effort which could have been avoided if every young man prior to induction had made himself physically fit."²¹ In an attempt to remediate physical fitness deficiencies, which existed prior to service, US Army Chief of Staff-George C. Marshall directed a major revision of the 1936 *Basic Field Manual*, Volume I, Chapter 4. On 6 March 1941 FM 21-20 *Basic Field Manual, Physical Training* was published under the direction of Brigadier General Robert Eichelberger, Superintendent, United States Military Academy. FM 21-20 superseded Ch. 4, Vol. I, BFM (1936) and TR 115-5, Part II (1928). The stated purpose of the 1941 revision was to produce a state of health and general fitness that would enhance physical efficiency and allow soldiers to perform arduous duties, which were essential to military effectiveness.²² Although FM 21-20 (1941) was the primary physical training doctrine for the first two years of WW II, it represented only modest improvements in the evolution of physical training and assessment of the combat soldier.

The 1941 *Basic Field Manual* (BFM) partitioned physical training into eight domains: disciplinary exercises; setting-up exercises; marching and exercises while marching; running, jumping, and climbing; personal contests; mass athletics and group games; rifle exercises; and swimming.²³ Unit commanders were directed to conduct two physical training sessions per day: 30-minute session in the morning for personal fitness and conditioning and a 60-minute session in the afternoon for testing, mass athletics, and games.²⁴ FM 21-20 stressed the need for a balanced training program, which would allow the Soldier to develop "discipline, endurance, agility, good posture, body control, and health."²⁵ "Model schedules, designed to help the instructor develop a proper daily exercise program, were provided for the trained and untrained soldier in Chapter 3."²⁶

There were three unique aspects to the 1941 manual. First, the authors developed a hierarchical “model” to define “physical efficiency for military effectiveness.”²⁷ Three levels of physical training were used to achieve physical efficiency: Level 1: “disciplinary and setting-up exercises”—which consisted of military drill— (facing movements), general calisthenics, and stretching exercises designed to develop military discipline, general muscular development, and prepare the body for skill and endurance exercises; Level 2: basic movement pattern/skill exercises—throwing, jumping, crawling, climbing, lifting, etc.; and Level 3: endurance and agility training. If physical training was conducted properly the soldier would achieve total physical efficiency as expressed by the acquisition of the physical fitness, body control, posture, and health.

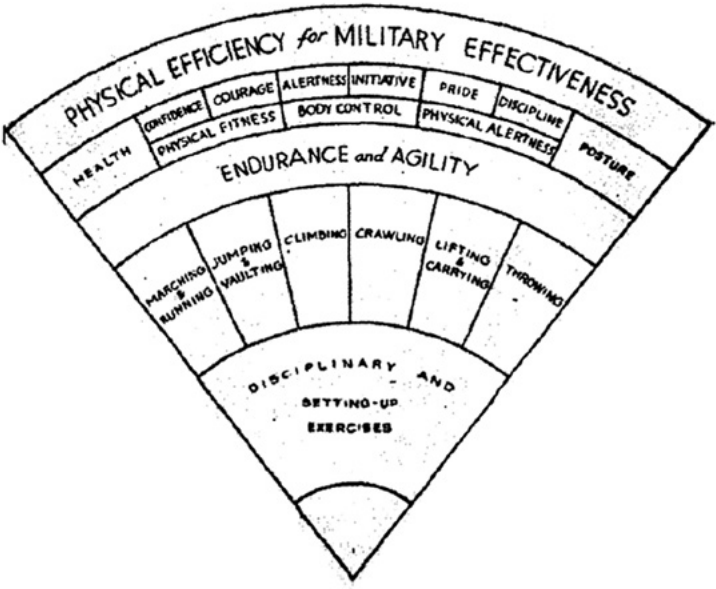


Figure 5.2. Physical Efficiency Matrix.²⁸

Source: Department of the Army. Physical Readiness Training (FM 21-20). Washington, DC, US Government Printing Office, 1941.

Setting-up exercises should be conducted so that they impart the physiological, as well as the disciplinary, benefit of which

they are capable. Accuracy and precision of performance will be insisted upon whenever they are possible of attainment... But this insistence upon accuracy and precision of performance should be with the aim in mind of insuring that the men get the maximum physical benefit from the exercises and should not be employed for purely disciplinary motives.²⁹

FM21-20 (1941) was the first manual to established basic principles of exercise to guide physical training. The two principles were: (1) progression: “a course progressively arranged will so condition the men and increase their aptitude that they will reach the standard required...”; and (2) balance: “...the work [should be] organized so as to include as many as possible of the basic skills required of the soldier.”³⁰

The second unique aspect of FM 21-20 (1941) was the inclusion of various fitness assessments and the acknowledgement of their value in physical readiness training.³¹ “The physical training program should be based upon the condition and aptitude of the men to be trained. The best method of determining this condition and aptitude of the group is by comparison with known standards.”³² Four “primary” assessments (with associated criterion-referenced standards—pass/fail) were recommended for commanders to use in assessing the physical readiness of their soldiers. A significant number of secondary assessments was also identified.

The most combat-specific assessment proposed in the 1941 manual was the “obstacle” course test-OCT (pictured below). The OCT allowed the Commander to evaluate functional fitness by measuring a soldier’s speed, strength, coordination, and agility; skills that were specified for “field service”.

Raycroft’s 1920 Obstacle Course Run, which consisting of five obstacles, and the FM 21-20 (1941) Obstacle Course Test, which consisting of seven obstacles, were remarkably similar. Both tests were 100-yard linear courses that used a low hurdle (3’ v. 2½’), a wall (fence) climb (8’ v. 7’), a running jump (6’ ditch v. 10’ trench from a platform), and balance test (24’ v. 20’). Raycroft’s test used a “wire entanglement” to assess agility as opposed to the 2’ high frames in the 1941 OCT. The 1941 OCT added two obstacles; a 4’ fence vault and a 2’ high low crawl. The minimum time specified for Raycroft’s OCR was 30 sec, while the minimum time for 1941 OCT was at the Commander’s discretion. The authors concluded that “tests can be conducted with little, if any, interference with the scheduled program, and require nothing more than a little planning on the part of the

instructor. Their value to the program is so great that they should be held at regular intervals.”³³



Air Service Command
PT Formation, 1943



Darby's Ranger Training, 1942.



Obstacle Course Training
Fort Jackson, SC, 1943.



Commando Training
Camp Carson, CO, 1943.

Figure 5.3. WWII Physical Readiness Training.³⁴

Sources: D. Photos top left to right, bottom left to right: Photo 1. FM 21-20 (1941); Department of the Army. Physical Readiness Training (FM 21-20). Washington, DC: US Government Printing Office, 1941. Photo 2. Photo from private collection of Mr. Warren Evans; permission received 19 March 2012 from Mr. Warren Evans and confirmed with his daughter “Connie” at hburgumc@psci.net. Photo 3. NARA photo: Figure 126. Obstacle course at Fort Jackson, SC, 28 April 1943 (NARA College Park, RG 111-SC WWII, Box 155, Photo SC173955), http://www.denix.osd.mil/cr/upload/05-265_Miscellaneous_Training_Sites.pdf. Photo 4. NARA photo: Commando training at Camp Carson, CO, 24 April 1943, ARC Identifier 197168, Franklin D. Roosevelt Library, Hyde Park, NY.

Primary Assessments	
100-Yard Dash	14 sec
Running High Jump	3' 9"
Running Broad Jump	12'
Push-Ups	20
Secondary Assessments	
Baseball Throw	125'
Basketball Throw	60'
Bar Vault	4'
1/4-Mile Run	87 sec
1/2-Mile Run	3 min 15 sec
2-Mile Walk	23 min 30 sec
Standing Jump/Reach	13'
Pull-Ups	6
20' Rope Climb	20 sec
Standing Hop/Skip/Jump	18'
Running Hop/Skip/Jump	22'
Standing Broad Jump	6'
Standing Backward Jump	2' 8"
Running Long Dive	5' 6"

Figure 5.4. Chart of Primary and Secondary Assessments.

Source: Created by author from FM 21-20 (1941).

The third unique aspect of the 1941 physical training basic field manual was the inclusion of a detailed chapter on swimming, lifesaving, and water safety. Since ancient Greece, armies have valued the tactical advantages and safety and survival benefits of swimming and basically all army manuals from Clais to Maclaren to Koehler ascribed significant value to survival swimming. Although the 1928 Physical Training manual (TR 115-5) included some aquatic information, BFM (1936) Vol. 1, Chapter 4 Physical Training included no information on swimming or lifesaving. “All soldiers should receive instruction and training in swimming, both

without and with equipment...soldiers who have been properly instructed should be able to ford streams, participate in landing operations, and take care of themselves in the water in emergencies.”³⁵ This swimming section was eerily prophetic for the soldiers who assaulted the beaches of Normandy, 6 June 1944. Although many soldiers died from plunging fire, “Even the lightly wounded die by drowning, doomed by the waterlogging of their overloaded packs. From Boat No. 1, all hands jump off in water over their heads. Most of them are carried down. Ten or so survivors get around the boat and clutch at its sides in an attempt to stay afloat. The same thing happens to the section in Boat No. 4. Half of its people are lost to the fire or tide before anyone gets ashore.”³⁶ It is believed that a significant number of the 4,000+ soldiers killed in action during the D-day assault actually drowned as they abandoned their landing crafts or were “put ashore” in water that was 10-15 feet deep.³⁷

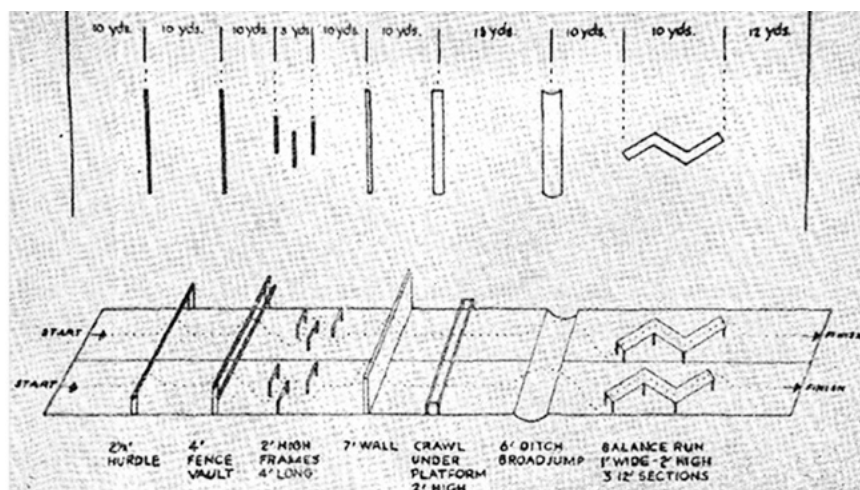


Figure 5.5. Obstacle Course Test. 1944.³⁸

Source: D Department of the Army. Physical Readiness Training (FM 21-20). Washington, DC, US Government Printing Office, 1941.

Meeting the Combat Readiness Needs of World War II

Colonel Theodore Paul “Ted” Bank would become the central figure in the continuing evolution of US Army physical readiness training during

WWII. As a decorated soldier, with significant combat experience in France as a member of the WWI American Expeditionary Force, Bank understood the physical requirements of combat.³⁹ After the war he enrolled at the University of Michigan, joined the football team as a “walk-on,” and ultimately became the starting quarterback for several successful seasons (1920-1921) under Coach Fielding Yost. After college Bank enjoyed a successful football coaching career at the high school and college level, where he nurtured his interests in physical fitness and sport. Having served in the US Army Reserves since 1919, in February 1941 Bank was ordered back to active duty in the rank of Captain. Bank was quickly advanced to the rank of Colonel and ultimately appointed as the Chief–Athletic and Recreation Branch, working for Major General Joseph Byron, head of the US Army’s special services division.⁴⁰



Figure 5.6. Rescuing soldiers during the Normandy Invasion, 1944.

Source: Photo is part of the Army Signal Corps Collection posted by US National Archives (NARA).

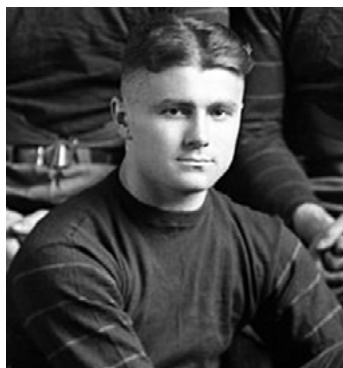


Figure 5.7. Colonel Theodore Paul “Ted” Bank.

Source: Photo was “cropped” from the 1922 University of Michigan football team photo. Used with permission from reference archivist Karen Jania and the historical records of the University of Michigan Athletic Department, Bentley Historical Library, University of Michigan, 23 February 2012, karenjania@umich.edu .

Even with a well coordinated national public relations campaign and an extensive revision of the US Army physical training manual, there were still critical manpower issues by 1942. Based upon the dramatic rejection rates of greater than 50% of registrants, more direct action was required to ensure adequate manpower for the armed services. In October 1941 President Franklin D. Roosevelt initiated a plan to “rehabilitate” 200,000 recruits. The US Army selected the most promising dental and orthopedic cases for rehabilitation; however the entire program was soon terminated because of meager positive results. Instead the Manpower Commission chose to initiate a “prehabilitation” program to address the greater physical fitness problem. Local doctors, dentist, and school health professionals were directed to conduct a “pre-examination” to assess and provide corrective programs for adult males who failed to meet the standards required for military service.⁴¹

Since the mid 1930’s the science of exercise and fitness assessment had developed at a torrid pace in US universities and colleges. The “prehabilitation” efforts of 1941 leveraged these advancements to prepare young adult men for military service. Subject matter experts like Charles McCloy (University of Iowa), Thomas Cureton (University of Illinois), A. A. Esslinger (Stanford University), Karl Bookwalter (Indiana University), and

Peter Karpovich (Springfield College) served as excellent resources for the research needs of the armed services. Through his coaching experiences at Tulane University and the University of Idaho, Ted Bank had become familiar with these physical education professionals and their innovative approaches to fitness assessment and program design. In late 1941 and early 1942 Colonel Bank (Chief of the Athletic and Recreation Branch) enlisted the services of Charles McCloy and A.A. Esslinger to develop a new physical training and assessment program for the US Army.⁴² They began by administering 25 different physical fitness assessments to over 400 soldiers to determine which fitness assessments best measured combat readiness. Upon analysis, McCloy and Esslinger determined that ten fitness items best discriminated between fit and unfit soldiers: pull-ups, 20 second burpee, 3 successive broad jumps—triple bound, shot put, push-ups, 75-yd pick-a-back run, dodging run, 6-sec run, sit-ups, and 300-yd run.

During the summer of 1942 a newly designed PRT program was assessed in a series of training studies conducted throughout the US Army by Esslinger, Bank, and McCloy. In the first 6-week training study significant improvements in total physical conditioning were observed: 30% in pull-up strength, 50% in push-up and abdominal strength, 8% in cardio-respiratory endurance, and 11% in muscular endurance.⁴³ During the autumn Colonel Hallenbeck, Commander of the 125 Infantry Regiment stationed at Camp Page Mill (California), requested that these tests be given to all personnel in the camp. Esslinger conducted a 5-week training study utilizing two experimental and two control companies. Soldiers in the control and experimental companies were assessed with the 10-item physical fitness battery at the end of the 5-week training period. The control company reported a 3.5% increase in physical fitness, while the experiential group reported a 23.5% increase in total physical conditioning.⁴⁴

In March 1942, as Esslinger, Bank, and McCloy were working to develop the new scientifically based PRT doctrine for the US Army, the War Department initiated a major reorganization of the force. The US Army Ground Forces (AFG) was tasked to provide ground force troops that were properly equipped and trained for combat operations. The AGF preempted Bank's new PRT doctrine by issuing a Training Directive (Letter) on 19 October 1942 that reduced the time allotted to individual (basic) training from 17 weeks to 13 weeks and outlined the requirements for a new physical fitness test—the Army Ground Forces Test (AGFT). The AGFT was primarily designed to assess unit effectiveness on mission essential tasks. It was recommended that commanders administer the test every 8-12 weeks. The test items were push-ups, 300 yard shuttle run, 20-second burpees, 70

yard pig-a-back run (carrying a man of equal weight), 70 yard zigzag run (involving creeping, crawling, jumping, and running on seven legs of ten yards each), and a four mile march (50 minutes).⁴⁵ Although the administration of the AGFT was encouraged, it was not mandatory.

Only a month after the Army Ground Forces Directive was published, the US Army published Bank, et al.'s new physical training guidance in the form of Training Circular 87 (TC 87).⁴⁶ Based upon their findings at Fort Knox and other army camps, "Colonel Banks and his board came up with 15 Callisthenic exercises that use every muscle in the body if given and taken properly. This Training Circular 87 was accepted by the government 17 November 1942."⁴⁷ The publication of Training Circular No. 87 once again represented the US Army's historical propensity for being behind the physical training curve and playing catch-up with the start of hostilities. Although FM 21-20 had just been published on 6 March 1941 and the US Army Ground Forces Directive in March 1942, they were already outdated. TC 87 stated, "The exercises listed below differ from those now in general practice [i.e., published in FM 21-20] in that they are more strenuous and varied in nature. They are presented for the purpose of placing greater emphasis on the physical conditioning of troops..."⁴⁸ While FM 21-20 (1941) was more process based, TC 87 was more outcomes based. TC 87 contained specific distances/times for ruck marching and more specific guidance for calisthenics, grass and guerilla drills, and running exercises. Special emphasis was given to mobility runs and "double exercises". In order to increase the leg and shoulder strength and endurance, soldiers were directed to 0.....lift a partner- (via the army, Fireman's, Cross, Single shoulder lift)and carry him some specified distance (i.e. effectively "doubling" the training load). These exercises utilized the overload principle to enhance strength and power, as well as improving casualty evacuation skills. They also served as the impetus for the 75-yard pick-a-back test item, which was included a year later in the Physical Efficiency Test Battery. Based upon the research by Bank, McCloy, and Esslinger, for the first time the US Army had empirical data to support a physical training program and assessment battery.

In the April 1943 issue of the *Journal of Health and Physical Education*, Colonel Bank presented a detailed review of "The Army Physical Conditioning Program". He outlined the developmental process and the basic "program of instruction" (POI), attributing much of the physical training program development to McCloy and Esslinger. He provided a basic outline of Training Circular 87, which involved marching, calisthenics, guerrilla exercises, grass drills, combative events, and running exer-

cises to enhance soldier fitness. Although Colonel Bank was an advocate for soldier fitness relative to combat readiness, as a former football coach he also subscribed to the “Raycroft” mass athletics model. In the final section of this article Bank described the genesis of the Special Service Corps (Officer) and its impact on soldiers through athletic participation. “Every company that goes overseas carries with it two athletics kits. It has boxing equipment, footballs, basketballs, and soccer balls...In addition we have activated the Special services units comprised of five officers and 118 enlisted men, all of whom are specialists” in music, athletics, and theater.⁴⁹

Since 1940 the United States had instituted a military draft, launched a massive public awareness campaign on physical fitness, registered approximately 10,000,000 men for armed service, revised FM 21-20 (1941), developed the AGF combat readiness test, and issued new PRT guidance in the form of TC 87. However, by the beginning of 1943 it was apparent these efforts were not sufficient to provide enough recruits who were physically prepared for initial military training or combat. During the Senate subcommittee hearings on HR1975 (March 1943), Colonel Leonard G. Rowntree Chief of the Medical Division, Selective Service System and Vice Chairman, National Committee on Physical Fitness testified that “In the beginning we were selecting for a peacetime Army...Now we are at the bottom of the barrel, and we are not only lowering our standards, but we are going back through our rejected list...trying to determine what can be salvaged and made available for military service.”⁵⁰ Following the historical pattern exhibited by every army with manpower shortages, the Selective Service Board made two changes to increase inductions: (1) they lower the physical standards required for selection and (2) they changed the age range of eligible draftees from 21-36 to 18-45.⁵¹ Although these changes provided some relief to the acute manpower shortages, with no end to the war in sight national leaders remained concerned about chronic manpower shortages. With a growing sense of unease, the Office of Education was directed to formulate a plan to change the public high school curriculum. Under Commissioner John W. Studebaker’s leadership, the Federal Security Agency developed a plan to prepare high school youth for war and for the war-time labor market by developing the “Victory Corps” program.⁵²

The Office of Education produced a series of six “pamphlets” designed to proscribe and coordinate a voluntary “Victory Corps” curriculum for junior and senior high schools. In the overview (Pamphlet No. 1) Secretary of War Henry L. Stimson wrote “The Victory Corps, with its emphasis on a thorough mastery of fundamental subjects—physical

training, special studies, and other activities that can properly be a part of any school's program—will enable the boys and girls to serve more usefully after graduation, both in the war effort directly and indirectly in other related pursuits.”⁵³ Pamphlet No. 2: *Physical Fitness through Physical Education* was designed to “make secondary school pupils physically fit to undertake the unusually heavy tasks they will probably be called upon to assume in the near future.”⁵⁴ In the preface to Pamphlet No. 2, Victory Corps Chairman Eddie Rickenbacker wrote “there are many data and reports of observations by competent persons which indicate that American youth are deficient in the physical characteristics needed by soldiers, sailors, and airman.”⁵⁵ “No part of the secondary school program is affected more in this war period than that which pertains to health and physical education...complete adaptation of the physical education program to wartime needs is essential.”⁵⁶ During the 1943 Senate hearings on the Victory Corps program Lieutenant Colonel Harley West testified that “The US Army has a tremendous task. We are fighting a war all over the world, we are training men by the millions. We feel that we have the right to ask for inductees who have a sound high school [physical] education on which we may build.”⁵⁷

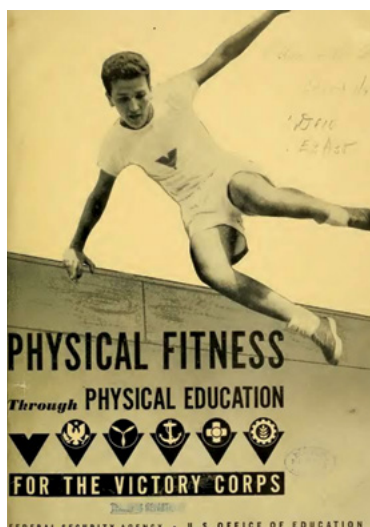


Figure 5.8. Victory through Fitness-The Victory Corps.

Source: Photo is the cover of a US Government publication, US Federal Security Agency, US Office of Education.

The Victory Corps physical education program was designed to develop: (1) strength, endurance, stamina, and bodily coordination, and (2) physical skills of direct value to the armed forces and war work. On the title page of *Youth Goes to War*, Lieutenant General Brehon B. Somervell, Commanding General, Army Services Forces stated:

Let us be realistic. Every able-bodied boy is destined at the appointed age for the armed services... Those who do not or cannot go to college must begin now...to prepare themselves for the tasks which are for them inevitable and unavoidable. Young people in high school must be trained specifically to become better warriors...a selectee who is rejected from military service because of physical disability is no good to the Army... Far too many young people are unable to serve their country because they are not in tip-top physical shape.⁵⁸

By July 1943 more than 70% of high schools in the United States had tried, and 52.2% had adopted, the Victory Corps program.⁵⁹

The Pamphlet No. 2 steering committee was coordinated by Jackson R. Sharman, Principal Specialist in Physical Fitness, US Office of Education, a Columbia doctoral graduate (1929) and faculty member at the University of Alabama. Significant portions of the physical training program presented in Pamphlet No. 2 were taken directly from Training Circular 87, which was developed by Colonel Theodore Bank (who also served on the Pamphlet No. 2 steering committee). A robust curriculum of aquatics, gymnastics, combatives, games and sports were presented in Chapter IV (boys) and Chapter V (girls). In Chapter VI—Standards and Tests, teachers were provided a menu of fitness assessments and were encouraged to select 10 events (no more than three from each category) to create a test battery for their students. The fitness testing events were generally selected from the test and measurements textbooks written by Bovard and Cozens (1938) and McCloy (1939) and from drills proposed in TC87. The suggested test events by category were: arm/shoulder: pull-ups, pushups, dips, 15' rope climb, bar vault; abdomen/back: sit-ups, hanging half lever, leg lift, forward bend, bank twist; legs: potato race, jump and reach, standing long jump, running long jump, running high jump, 100-yd dash, 440-yd run, 880-yd run. A fairly complex military obstacle course was also presented in the Appendix.⁶⁰

With an ever increasing need for combat forces and an ever expanding role for women in the armed services, the Honorable Edith Nourse Rogers, Congresswoman from Massachusetts introduced the Army Wom-

en's Auxiliary bill in May 1941. The objective of the bill was the development of an auxiliary corps to complement the Army Nurse Corps. "On 14, May 1942, Congress approved the creation of a Women's Army Auxiliary Corps (WAAC) and Oveta Culp Hobby was appointed the first Director...."⁶¹ On 1 July 1943, the Women's Army Corps was signed into law and women were given military status as enlisted and officer personnel. Approximately 150,000 women served in the US Army during WWII.⁶²



Figure 5.9. Women's Army Corps Fitness, 1943.⁶³

Source: Photo was taken from: War Department. W.A.C. Field Manual Physical Training-FM 35-20. Washington: US Government Printing Office, 1943.

As the role of women in the US Army expanded and they assumed more rigorous jobs, physical fitness became an increasing priority. On 15 July, 1943 the War Department published the Women's Army Corps (WAC) Field Manual—*Physical Training* (FM 35-20). The purpose of the manual was to establish a physical fitness program that would prepare women for their non-combat roles in the US Army (i.e., to "take over" jobs that would allow men to fight). The preface succinctly stated the mission: "The demands of war are varied, endless, and merciless. To satisfy these demands, you must be fit.... Your task is to do the things which, if you did not do them, would have to be done by men taken from the fighting ranks; men whose presence in the battle line may mean victory, whose absence

might mean defeat. You must be able to do these.”⁶⁴ Various conditioning drills were described in the “daily exercise series”, which when properly executed in a progressive manner would improve performance in each of the four WAC physical conditioning domains: strength, stamina, coordination, and stability. Although there was no required physical readiness assessment, FM35-20 did present a battery of fitness “self test” items, which consisted of: full dips (push-ups), sit-ups (bent knee modified), wing lifts (prone trunk extensions—hands behind the head), endurance: squat thrusts or running in place or running for a distance at a “dog trot” pace, and balance: “stork stand”.⁶⁵ There was also instruction in swimming, unarmed combatives, and recreational games.

In late 1943, as the United States’ full-scale involvement in WWII became inevitable, the national emphasis on physical fitness training reached its zenith. While the Selective Service Boards were in-processing thousands of soldiers per week, Colonel’s Rowntree and Bank convinced civilian and US Army leaders that individual soldier fitness would be a key determinate of a successful war effort.⁶⁶ Some of these efforts coalesced around the National Committee on Physical Fitness, which had been commissioned by President Franklin Roosevelt in early 1943. The committee was chaired by the former Olympic champion John Kelly and co-chaired by Colonel Leonard Rowntree, Chief of the Medical Division for the Selective Service System. The National Committee on Physical Fitness was charged with developing and operating a program for improving physical fitness throughout the nation. “Such a program would include evaluation of the physical state of our young men and women and increase the activities and responsibilities of schools and colleges in physical education... and enlist the active support of industrial, social, religious, patriotic, professional and other groups.”⁶⁷ Rowntree enlisted the support of various medical and physical education organizations, primarily the American Medical Association (AMA) and the American Association for Health, Physical Education, and Recreation (AAHPER)) to actively support this national mission. In 1943 AAHPER dedicated the national association to the year of US Army fitness. The theme of their annual convention (the National War Fitness Conference) was “Victory through Fitness”. Each monthly issue of the *Journal of Health and Physical Education* was replete with articles like: “The Role of Exercise in Physical Fitness”—Steinhaus; “The Physical Fitness Program of the Army Air Forces”—Stansbury; “Psychological Factors in Total Fitness for War”—Bonney; “Military Physical Fitness and Physical Education”—McCloy, and “The Army Physical Conditioning Program”—Bank.⁶⁸ The National Committee on Physical Fitness

designated 1944 as the “Physical Fitness Year” with an implementation date of 1 September 1944.⁶⁹



WASP Pilot Physical Training, 1942.



WACs Physical Training in Barracks.



WACs Performing Calisthenics, 1942.



Obstacle Course Training
to Increase Agility.

Figure 5.10. Women’s Army Corps (WAC) Physical Training.

Sources: Photos top left to right, bottom left to right: Photo 1. Physical Education training classes of WASPS at Avenger Field, Sweetwater, TX, 17 August 1944-NARA. Photo 2. Evening calisthenics in the barracks at Fort Des Moines, IA. Photo courtesy of executive director Michael Kates and visitor services manager Tina Achebe, Education Center, Fort Des Moines Museum, IA. Photo 3. WACs doing daily calisthenics exercises, Fort Des Moines, IA, 1942, photo credit Maria Hansen, Time/Life-for personal, non-commercial use, <http://images.google.com/hosted/life/58c044a93a2b942a.html>. Photo 4. PHYSICAL TRAINING at an Army Air Forces Training Command base in 1943, <http://www.history.army.mil/books/wwii/Wac/ch09.htm>.

In light of the rapid development in the science of exercise and fitness from 1938–1943 and Colonel Bank’s success in influencing basic recruit

fitness in 1942, the Army Ground Forces initiated an aggressive program to study fitness assessment as a means of shaping physical training and ensuring combat readiness. Over the next several years numerous physical fitness tests were developed and research studies conducted by military and civilian personnel in an attempt to predict combat physical readiness. These assessments were designed to accomplish three objectives: (1) to screen soldiers into and out of the military, (2) to identify soldiers who needed remedial training, and (3) to provide performance criterion for certain military jobs (i.e., for pilot or parachute training).⁷⁰



Figure 5.11. WAC Combat Readiness Training.

Source: All four photos were taken from the Army Training Film (TF 35 3838), produced in 1967; <http://www.youtube.com/watch?v=cUJyG7J8-44>.

One example of these efforts was the creation of the US Army Ground Forces Medical Research Laboratory (AGFMRL) at FT Knox, KY. In response to growing issues with “aircrew fatigue”, from 24 September 1942 to 10 March 1944 the AGFMRL analyzed a variety of physical fitness tests that might be used to predict fatigue. As a foundation for

these studies Eichna, Bean, and Ash defined the physically fit man as one who possessed: (1) the capacity to do multiple types of “high energy” work, (2) the ability to endure and continue to do work for long periods of time, (3) significant muscular and cardio-respiratory reserves to minimize the disturbance of “physiologic functions”, and (4) the capacity to do meaningful work following the exercise bout.⁷¹ They compared soldier performance on four different physical fitness tests: US Army Ground Forces test (AGF), US Army Air Forces (AAF) test, Navy step test, and Harvard step test. For purposes of analysis, performance on the four tests was classified into three categories: poor, average, and good. Based upon a “mean” performance on the four tests, the 7-item AGF test was found to over predict physical fitness— (resulted in the most soldiers classified as “good”), while the AAF test was found to under predict physical fitness— (resulted in the most soldiers classified as “poor”). Ultimately the researchers concluded that fitness tests did not possess a high degree of predictive validity and should therefore only be used as one aspect of assessing physical fitness/readiness.

During this two-year period, many of the research projects coalesced around Colonel Bank’s efforts to continuously update and improve US Army physical fitness training and assessment. On 1 May 1944 the War Department published Pamphlet No. 21-9 (PAM 21-9): *Physical Conditioning* under the signatures of Major General J.A. Ulio, Adjutant General and General George C. Marshall, Chief of Staff.⁷² As stated in the Introduction, Training Circular 87 was fielded in the summer of 1942 in response to the need for more strenuous training.⁷³ The function of PAM 21-9 was to provide an entirely new approach to physical conditioning and proposed that US Army physical conditioning should focus on “total military fitness”, which was composed of three domains: (1) technical fitness—knowledge, (2) mental and emotional fitness—habits, sense of mission, and willingness to win, and (3) physical fitness—developing the body to function effectively under physical stress. The “constituents” of physical fitness were defined as: freedom from disease and injury, strength, endurance, agility, and coordination. PAM 21-9 identified eight components of physical conditioning: marching, calisthenics, guerrilla exercises, grass drills, combatives, running exercises, swimming, and relays.⁷⁴ A separate section was devoted to the use of “athletics” in the physical training program as some of Raycroft’s 1920 work from WWI reemerged.

PAM 21-9 recommended a minimum of 1½ hours of physical training per day. Exercise prior to breakfast was approved as long as there was an adequate warm-up period prior to strenuous exercise.⁷⁵ PAM 21-9

suggested that the average man could be “put in good physical condition” in about 12 weeks— (approximately the length of basic combat training), if the program was balanced and progressive. Training programs were to begin at a moderate intensity and progress gradually and steadily. For the first time in a US Army training manual, the authors specifically identified the concepts of “overload” and “intensity” as key principles of physical development. “As physiologists have discovered, the nearer an exercise approaches the limits of one’s ability [overload] the greater the development...development depends not upon the amount of work done, but the amount of work done per second [intensity].”⁷⁶ In the first week of a new physical training program, instructors were directed to concentrate on callisthenic exercises for 40-45 minutes each day, since they provided the greatest benefit for the general body. Although a myriad of exercises were as described; “Running is the best single conditioning activity and should be used every day.”⁷⁷ Again for the first time in any US Army training manual, three stages of conditioning were defined. Stage one was the “Toughening Phase”, which should last one to two weeks and is where soldiers should concentrate on mastering good form; calisthenics and running were the most favored activities.⁷⁸ Stage two was the “Slow Improvement Phase”, which should last 6-8 weeks and constituted the period of most rapid development. Stage three was the “Sustaining Phase”, in which the soldier reached peak performance and strives to maintain this high level of performance.⁷⁹ PAM 21-9 was quite sophisticated relative to the science of exercise and provided greater clarity on preparing soldiers for the physical rigors of combat.

PAM 21-9 also introduced a new physical readiness test titled the Physical Efficiency Test Battery (PETB). The PETB was designed to replace the Army Ground Forces Test. “This test battery was developed after a tremendous amount of testing experience in the US Army. It represents the 7 best tests out of an original group of 25.”⁸⁰ The test items selected for the PETB were: pull-ups, 20-sec. burpee, squat jumps, pushups, 100-yard pig-a-back run (which was increased from 75 yards from the AGF); sit-ups, and the 300-yard shuttle run.⁸¹ The 70-yard zigzag run and the four-mile road march from the Army Ground Forces Test were eliminated.⁸² As fitness testing evolved, the importance of standards of performance, uniforms, and testing environments emerged. The manual also provided guidance concerning the importance of testing order, uniformity of judging/scoring, and the condition of the test areas and facilities.⁸³ The most revolutionary addition to PAM 21-9 was the inclusion of normative scales for each of the seven test items. The normative scales provided commanders

with a “man’s total score,” which was a powerful motivation to excel. “By using these tables, the competitive spirit of the men is aroused because they want to make the highest total score and beat their friends.”⁸⁴ Raw scores were converted to scale scores that ranged from 0–100 (making the highest total score=700). A soldier’s performance could be classified as Very Poor, Poor, Average, Good, or Excellent for each of the seven test items. “Every company commander should have a physical fitness profile for every man in his organization,” which can be used to identify and remediate weak performers.⁸⁵



Figure 5.12. US Army Air Corps Physical Training, Miami Beach, c.1943.

Source: Soldiers performing training exercises on the beach during WWII at Miami Beach, Florida. Image Number: RC04847, between 1939 and 1945, courtesy of State Archives of Florida, approved by Mr. Adam Watson. Photo is part of a collection managed by the Florida Memory project.

At approximately the same time Bank was completing PAM 21-9 and the Physical Efficiency Test Battery, the US Army Air Force (AAF) began to diverge from traditional US Army PRT doctrine. Captain Edgar B. Stansbury, Chief, Physical Fitness Branch, Special Services Division

summarized the AAF's program in *Physical Fitness Program of the Army Air Forces (AAF)*.⁸⁶ From the outset the fledgling AAF acknowledged the need for "physical training specialists," and due to the force size /structure set about to "procure specialists who were qualified in physical education to aid commanding officers in maintaining superior physical condition of AAF personnel."⁸⁷ The effort to provide trained fitness instructors contradicted the staffing plan for US Army PRT. Only six months prior, Colonel Bank stated that "Physical training specialists as such, do not exist in the Army...the very size of the ground forces prohibits the use of such specialists...it is doubtful that as many as 10,000 would suffice to handle the task of conditioning the troops."⁸⁸ The AAF also took a slightly different approach to physical training by adopting the "whole man" unitary philosophy, which focused on physical fitness, social fitness, and mental fitness. In reality the "whole man" concept was an extension of the "mens sana in corpore sano" philosophy (prayer) published in *Satire X* by the Roman poet Decimus Juvenalis in the mid 1st Century AD, and was secularized into the "mind, body, spirit" triad proposed in 1891 by Luther Gulick as the central dictum for the YMCA.⁸⁹

The AFF developed a twopart physical training program consisting of "required" and "voluntary" activities. There were two components to the "required program" and each component accounted for 50% of the soldier's physical program. Fifty percent of the "required program" mandated the completion of the activities specified in TC 87, while the other 50% could be selected from TC 87 or any other "pertinent publication." For the "required program" each soldier was to exercise between three to six hours per week distributed over a minimum of three days. The voluntary program was designed to supplement the required program and followed Raycroft's 1920 mass athletics model utilized by the basic training camps in WWI. Since PAM 21-9 did not require units to use the US Army's Physical Efficiency Test Battery, the AAF developed their own Physical Fitness Test (PFT), which was published in Regulation No. 50-10 (28 April, 1943). Stansbury alluded to an empirical study where the 3-item PFT was developed; the three test items were: sit-ups, chinning, and 300-yd shuttle run, which were a subset of the 7-item Physical Efficiency Test battery.⁹⁰ The PFT was designed to determine individual fitness status and program effectiveness. Lastly the AAF established a Physical Fitness Rating (PFR) system (excellent, very good, good, poor, very poor) to evaluate an Officer/NCO's progress in the physical program. These rating cards became a permanent part of the Officer/NCO's records and followed them from station to station.⁹¹

The Effects of World War II on US Army PRT

War places a great premium upon the strength, stamina, agility, and coordination of the soldier because victory and his life are so often dependent upon them⁹²

From a physical readiness program and assessment perspective the first and most important PRT change during WWII was growth in the use of empirical, scientific approaches to program development. In 1942 McCloy, Esslinger, and Bank developed an alternative PRT program and assessment for the US Army.⁹³ Over the summer they utilized an empirical research design to test the hypothesis that their training POI was better (i.e., produced greater gains in physical fitness) in a controlled environment. The results demonstrated that their PRT program was quantitatively better than the existing 1941 FM 21-20 training POI, which ultimately resulted in the publication of TC 87 and PAM 21-9 and precipitated numerous changes in the 1946 revision of FM 21-20.

As with every war, WWII confirmed the universal axiom that physical fitness is a key and essential combat skill.⁹⁴ “A man who is more clever, agile, and mentally alert than his opponent will be defeated by that less skillful and less imaginative individual if the latter has greater strength and endurance and knows no rules of fairness except one—to win at any cost.”⁹⁵ “Success in battle goes to the troops who can take one more step and fire one more shot than the enemy.”⁹⁶ “The generals...realize that the military wizard but physical moron should be relegated to the same classification as the Samson who is a military dud.”⁹⁷ Physical fitness issues that arose during WWII were again exacerbated by the conscription of men into the US Army who were physically unprepared to fight. “Had we had proper physical fitness programs in America for the 23 years prior to Pearl Harbor, many of our boys that made the supreme sacrifice would be alive today.”⁹⁸ “Approximately a million men have been returned from overseas physically unfit.”⁹⁹

One application of the progress in physical readiness training during WWII came from General Lucian Truscott. The “Truscott Trot” was legendary during World War II and stemmed from Truscott’s belief that the ordinary infantryman was no different from elite forces that were made to endure strenuous physical training.¹⁰⁰ “You can’t lead your men from a command post.”¹⁰¹ Instead of the old infantry marching rate of 2 1/2 miles per hour, Truscott required his division to march five miles the first hour, four miles in each of the next two hours, and 3 1/2 miles per hour for the remainder of a march lasting 30 miles.¹⁰² Truscott also prepared his

soldiers to operate in mountainous terrain by exposing them to mountain walking and running techniques, night and day operations in the mountains, and numerous rope climbing skills. "This pre-invasion mountain training paid off in Italy where in five days, after fierce fighting in Agrigento, the 3d Infantry Division marched 100 miles to Palermo...a classic for its speed and success."¹⁰³

WWII again confirmed the US Army's need to commitment greater energy and resources to the development of physically fit soldiers.¹⁰⁴ US Army leaders like Colonel Leonard Rowntree worked to define combat related fitness: "Physical fitness is the bodily state which combines maximum power and efficiency, with the minimum time for recovery after exhaustion" and the physical attributes needed to succeed in combat: "strength, endurance, stamina, special agilities, leadership, initiative, emotional stability and the indomitable 'will to win'".¹⁰⁵ While Rowntree worked to define physical fitness, Colonel Theodore Bank worked to apply these concepts to physical development programs for the US Army and society in general: "Physical fitness should be based on a continuing and graded progression, and is especially important while our youth are in formative years, long before they arrive at 'military age'".¹⁰⁶

We can learn a valuable lesson from the dramatic changes in attitude relative to the importance of physical training that occurred in many combat units shortly after the United States entered WWII. Historical records from the 2nd Army provide a cogent example. In a 1941 training memorandum from the 2nd Army Commander, Lieutenant General Benjamin Lear directed subordinate commanders to provide minimal emphasis on physical training and cautioned that excessive fatigue and exhaustion were to be avoided. Physical exercises should consist of mass calisthenics for general physical development and competitive contests for the "physical benefit... and to develop team spirit."¹⁰⁷ In a subsequent memorandum Lear stated "It is not intended to have physical conditioning unduly stressed."¹⁰⁸ By mid 1942, the complexion of physical training and the attitude of 2nd US Army command had changed significantly. In subsequent training memoranda Lear directed that "physical hardening was to be brought to such a state that infantry units could "make a continuous foot march of 25 miles with full field equipment...we must do all in our power to train... all units [so] they are physically and emotionally prepared for the realities of the war."¹⁰⁹ In training directive No. 40, Lear directed his subordinate commanders to develop a physical training program that was more extensive than directed by Army Ground Forces. Lieutenant General Lear's replacement, Lieutenant General Lloyd Fredendall, had recently returned

from commanding II Corps in northern Africa where he saw significant combat action.¹¹⁰ Fredendall placed a heavy emphasis on physical training and stated “if all soldiers were physically hardened to the extent of being ‘tough guys’...military operations would be a success...All troops should undergo a course of training paralleling that of our Ranger Battalion. It would involve maximum physical hardening, training for personal physical combat...[and] training in all weapons.”¹¹¹ The lessons learned in combat quickly filtered back to the training bases in the US and significantly influenced the pace and intensity of US Army physical readiness training.

The extensive after-action reviews following WWII were predictably similar to those that followed WWI relative to recruit/soldier fitness, physical training, and remediation. All three issues were identified as serious impediments in prosecuting the war. With the memories of combat still vivid in their minds, US Army leaders acknowledged the shortcomings in the physical readiness program and set about to rectify these problems. Following nearly the identical course of action that led to the development of the Physical and Bayonet Training ‘course’ at Camp Benning (1919) and Raycroft’s 1920 revision of physical training doctrine, the US Army formally established the Physical Training School (PTS) in late 1945 and tasked them with the revision of FM 21-20. Originally the School was to be located at Camp Lee, VA, but it was ultimately activated at Camp Bragg, NC.¹¹² Upon inception the Physical Training School was assigned two primary tasks. The first task was to develop and implemented two educational courses: the Physical Education Supervisors course and the Physical Training Instructors course. Both courses were designed to provide knowledge and skills on how to design and implement a scientifically based physical training program. The supervisor’s course lasted seven weeks and the instructor’s course lasted three weeks. The ability for graduates to implement the practical lessons learned at the PRT School varied by command.¹¹³

Again similar to the task list developed for the Physical Training and Bayonet School (1919), the second task assigned to the PTS was to rewrite FM 21-20 *Physical Training*, which was revised for the second time and published in January, 1946.¹¹⁴ FM 21-20 (1946) superseded FM 21-20 (1941), TC 87 (1942), and PAM 21-9 (1944). The general focus of the 1946 revision was the application of the “total military fitness” concept to combat effectiveness; “without physical fitness [the soldier] lacks the strength and stamina to fight”.¹¹⁵ Since WWII saw great advances in mechanized warfare, the authors were careful to caution against the perception that enhanced mechanization reduced the need for physically fit soldiers.

“The fact that warfare has become mechanized has accentuated rather than minimized the importance of physical fitness.”¹¹⁶

FM 21-20 (1946) focused in much more detail on the “planning and development of physical training” (Chapter 3), rather than the execution of physical training that was so dominant in previous US Army PT field manuals. Predictably, after the issues with the fitness levels of conscripted soldiers, the 1946 manual went into great detail concerning the pace of training sedentary recruits and the hazards of over training. There was an in-depth discussion on exercise progression and the manual even presented a crude periodized training model. Due to the number of troops deployed during WWII and the time requirements to transport large numbers of soldiers to Europe, there were extensive discussions about maintaining fitness levels while in transport aboard ship and while in combat. On several occasions throughout the manual the authors acknowledged the need for and benefit of “variety” in physical training as a preventative for overuse injuries and to reduce boredom and improve motivation. With West Point no longer actively directing the physical training program of instruction for the US Army, the 1946 F M 21-20 revision moved away from the traditional Turner gymnastics terminology of setting-up and disciplinary exercises and employed a more secular construct-based approach to physical training. Gone also was the overarching philosophical model of “physical efficiency for military effectiveness” and any significant mention of health and vigor as an outcome objective of physical training.

The exercise focus of the 1946 revision was on the integration of strenuous physical activity into all aspects of military training “in order to produce a soldier with the staying power and mental confidence to win.”¹¹⁷ A variety of callisthenic exercises were introduced: conditioning: rifle, log, and guerilla; cardio-respiratory exercises: marching, running, grass drills; combatives; swimming; athletic and games; and posture training. In Chapter 3.36 there was a significant increase in specificity when describing the “model” or purpose of exercise activities like guerrilla drills, running, and combatives.¹¹⁸ The 1946 manual reaffirmed that “running is the best single conditioning activity for developing endurance and should be used every day.”¹¹⁹ Three new chapters were added to the 1946 revision of FM 21-20: Chapter 7—The Strength Course, Chapter 13—Combative Activities, and Chapter 14—Tumbling. The “strength course” combined content on how to train both muscular endurance (pull-ups, decline sit-ups, war-club—similar to a kettle bell, squat jumps, etc.) and muscular strength (dead lift, snatch, curls, military press).

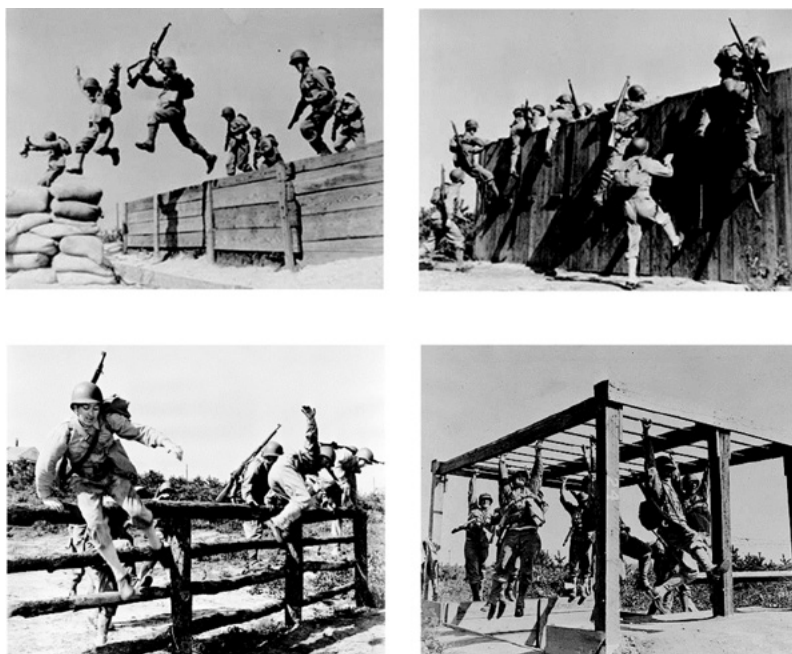


Figure 5.13. WWII Combat Readiness Training.

Source: All four photos are from the Library of Congress, top left to right, bottom left to right:

Photo 1. Camp Edwards, Massachusetts, steeplechase form. Published 1942, reproduction number: LC-USW33-000255-ZC, b&w film neg., US government.

Photo 2. Camp Edwards, Massachusetts, horizontal ladders. Published 1942, reproduction number: LC-USW33-000256-ZC, b&w film neg., US government.

Photo 3. Camp Edwards, Massachusetts, obstacle course. Published 1942, reproduction number: LC-USW33-000257-ZC, b&w film neg., US government.

Photo 4. Camp Edwards, Massachusetts, eight-foot wall. Published 1942, reproduction number: LC-USW33-000254-ZC, b&w film neg., US government.

Since there were extensive discussions about boxing, wrestling, and gymnastics in previous US Army PT field manuals, the most conspicuous new materials in the 1946 manual pertained to combatives training. The combatives activity chapter contained the usual “personal contests” like Indian wrestling, cock fighting, and grappling. However, for the first time in any US Army field manual, Chapter 13 presented 20 pages

of material on “hand to hand fighting”— (the forerunner to modern US Army close quarters combat training). The “hand to hand fighting” skills included strikes, chops, kicks, gouges, stomps, chokes, etc.¹²⁰ Following the combatives chapter was Chapter 14—Tumbling. Considering the focus on combat applications throughout the 1946 manual, it was interesting to find a chapter on tumbling that included 33 pages of stunts and tumbles to include rolls, vaults, and somersaults and a number of “partner” stunts like the knee hand spring, the shoulder balance, and the groin pitch. The tumbling chapter contained the first “military gymnastic” materials since Koehler’s 1914 Manual of Physical Training and seemed decidedly out of context. Although FM 21-20 (1946) was authorized by the Secretary of War—Dwight D. Eisenhower and approved by the Acting Adjutant General—Edward F. Witsell, there is no indication or record of who actually authored the 1946 revision. The chapters on combatives, boxing, wrestling, tumbling, and swimming, however, seem to closely emulate the 4th Class Physical Education curriculum at the United States Military Academy in the 1940’s, therefore the Academy’s influence on this manual seems undeniable.

In the 1946 manual an entire chapter (Chapter 17) was dedicated to the discussion of “physical fitness testing”. The fitness assessments were designed to achieve five objectives: measure current status, track progress, identify deficiencies, motivate soldiers to train, and drive training. Conspicuously gone from the manual was a “title” for the fitness test. Neither the Ground Forces Test nor the Physical Efficiency Test Battery was included in this revision. The 1946 FM 21-20 described an outdoor and indoor “test battery.”¹²¹ The outdoor battery consisted of pull-ups, squat jumps, push-ups sit-ups, and 300-yd shuttle run; gone were the 20 second burpee and the 100 yard pig-a-back run from Bank’s 1944 Physical Efficiency Test Battery. The indoor battery substituted a shuttle run (25 yards x 10 laps = 250 yards) or 60 second squat thrusts test for the 300-yd shuttle run. The purpose of the indoor/outdoor tests was to “find out the condition of the troops and then to do something about the deficiencies revealed.”¹²² Commanders were encouraged to develop individual performance profiles, using the updated normative 100-point scales. The average score per test item was expected to be 50 points (out of 100 points), which allowed for a total of 500 points. Performance on the test items was categorized from Very Poor to Excellent and the “average” category was changed to “fair”. Although all combat troops were encouraged “to achieve a high standard of physical fitness regardless of age—for military combat takes no cognizance of age,” scales scores were adjusted for men over the age

of 30.¹²³ Men were to be tested about every 8-12 weeks. Interestingly, the last line of Chapter 17 (printed in “bold” print) stated “Whether or not to employ these tests is, of course, a command responsibility.”¹²⁴



Figure 5.14. Bayonet and Unarmed Combat Instruction.

Source: Photo is the property of the US Marine Corps, permission granted by media officer Capt. Gregory A. Wolf, US Marine Corps, Division of Public Affairs. Corporal Alvin “Tony” Ghazlo, the senior bayonet and unarmed combat instructor at Montford Point, demonstrates a disarming technique on his assistant, Private Ernest “Judo” Jones. Between 1942 and 1947, <http://www.marinecorps-times.com/news/2011/09/marine-montford-marines-added-to-crucible-091011>.

On 31 May 1946 the Army Medical Research Laboratory, Fort Knox (formerly the Army Ground Forces MRL) was approved to conduct a second study to critique various physical fitness tests. Bean, et al. stated that the purpose of physical fitness tests was to logically employ pre-selection, measure the effects of training, and determine the stages of convalescence.¹²⁵ This study was an extension of the 1944 study by Eichna, et al. Although generally the results were similar to those of the 1944 study, the analysis of some specific test items produced interesting results: (1) the 300-yd shuttle run exhibited a poor correlation with the Harvard Step Test and therefore should not be considered a good measure of aerobic capacity, (2) the change in performance on the pull-up test following 57 days of training was 7 to 9 pull-ups, leading the researchers to conclude

that pull-up score distributions would always be positively skewed and somewhat leptokurtic; and (3) the 4-mile march is not sufficiently rigorous to differentiate among levels of performance.

Notes

1. Sue Bowden, and Avner Offer, "Household Appliances and the Use of Time: The United States and Britain since the 1920s," *The Economic History Review* 47:4 (1994): 732; William Tuttle, "Part Two: The American Family on the Home Front," in *World War II and the American Home Front*, prep. Marilyn M. Harper (Washington, DC: US Department of the Interior, October 2007), 51—"In January 1939, President Franklin D. Roosevelt submitted a \$9 billion budget that contained \$1.3 billion for national defense. Just a week later, he asked Congress for an additional \$525 million for building a "two-ocean" navy, strengthening the nation's seacoast defenses, and manufacturing military aircraft."
2. David Ney, *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge, Mass: MIT Press, 1990), 16, 368.
3. Emanuela Cardia, "Household Technology: Was It the Engine of Liberation?" Unpublished manuscript, (University of Montreal, April 2010), 3.
4. Emanuela Cardia, "Household Technology", 3; Bowden and Offer, *Household Appliances and the Use of Time* (Table 1), 729; William Tuttle, *Part Two: The American Family on the Home Front*", 88.
5. Theodore Bank, "Trends Toward Separate Commission on Fitness," *Aim for Industrial Sports and Recreation—A Sports World Digest* (AIM) 4:4 (1945): 22.
6. Leonard Rowntree, "National Program for Physical Fitness," *The Journal of the American Medical Association* 125:12 (22 July 1944): 825.
7. Note: for example, by 1938 the United States had developed the M36 tank with a top speed of 28 mph; the M36 tank significantly increasing mobility requirements during combined arms maneuvers.
8. *Ardmore Army Air Field (1942-1946): Chronological Reminders of the Past* (reference: November 27, 1943), www.oklahomahistory.net/airbase/1jogger.html (accessed 21 June 2011).
9. Robert France, *Introduction to Physical Education and Sports Science* (Clifton Park, NY: Delmar, Cengage Learning, 2009), 18.
10. *Induction Statistics*, www.sss.gov/induct.htm (accessed 24 September, 2010); Marcus Goldstein, "Physical Status of Men Examined through Selective Service in World War II," *Public Health Reports* 66:19 (11 May, 1951): 592.
11. Bank, "Trends Toward Separate Commission on Fitness", 22.
12. *High School Victory Corps*, Hearings before the Committee on Education and Labor, United States Senate on S.875 (Washington: Government Printing Office, 14 April, 1943), 37 (testimony of Col. Theodore Bank).
13. *High School Victory Corps*, Hearings on Senate Bill S.875, 16 (testimony of Commissioner Studebaker, PhD).
14. *High School Victory Corps*, Hearings on Senate Bill S.875, 32.
15. Bank, "Trends Toward Separate Commission on Fitness", 23.
16. *High School Victory Corps*, Hearings on Senate Bill S.875, 32.

17. Peter Karpovich, and R. A. Weiss, "Physical Fitness of Men Entering the Army Air Forces," *Research Quarterly* 17:3 (1946): 192.
18. *High School Victory Corps*, Hearings on Senate Bill S.875, 33 (testimony of Col. Rowntree).
19. Lyle M. Spencer, and Robert K. Burns, *Youth Goes to War* (Chicago: Science Research Associates, 1943), 165.
20. Rowntree, "National Program for Physical Fitness", 821.
21. Rowntree, "National Program for Physical Fitness", 825.
22. Department of the Army, *Physical Readiness Training (FM 21-20)* (Washington, DC: US Government Printing Office, 1941), 1.
23. *Physical Readiness Training-FM 21-20* (1941), 3.
24. Note: from *Physical Readiness Training (FM 21-20, 1941)*: "Exercises before breakfast are not recommended; if indulged in at all, they should be confined to a few arm stretchings and relaxed trunk-bending exercises—just exertion enough to accelerate circulation mildly. To exercise strenuously before breakfast is likely to affect the digestive operation seriously and is more apt to weaken than to strengthen the body, which is at a very low state of physical efficiency immediately after arising, when its resistance is low.", p. 7.
25. *Physical Readiness Training-FM 21-20* (1941), 12.
26. *Physical Readiness Training-FM 21-20* (1941), 56.
27. Note: there is no clear evidence who actually developed *Physical Readiness Training-FM 21-20* (1941); if the process followed the pattern established for TR 115-5 and BFM Vol. 1, Chapter 4, it was likely developed at West Point under the direction of COL John W. Harmony, Master of the Sword. *Physical Readiness Training-FM 21-20* (1941), 2.
28. *Physical Readiness Training-FM 21-20* (1941), 2.
29. *Physical Readiness Training-FM 21-20* (1941), 37.
30. *Physical Readiness Training-FM 21-20* (1941), 12.
31. Note: Physical fitness tests/assessments had not been included in an US Army training manuals since Raycroft's *Mass Physical Training* (1920); although *Physical Readiness Training-FM 21-20* (1941) included a menu of physical fitness assessments, it stopped short of establishing a standardized physical readiness battery/test.
32. *Physical Readiness Training-FM 21-20* (1941), 5.
33. *Physical Readiness Training-FM 21-20* (1941), 6.
34. Note: the second photo on the right "Darby's Rangers" was taken in England in 1942 where US Ranger trained with battle-hardened British Commandos; the first man in line was Mr. Warren "Bing" E. Evans; "Evans helped spearhead four invasions—North Africa, Sicily, Salerno and Anzio—and was a POW for more than 14 months. His third escape attempt was successful, shortly before he was scheduled to be shot on 22 April 1945. "I was overseas for three years and seven months," said Evans, "and probably had more combat experience and time behind enemy lines than anyone." Darby's Rangers, who underwent rigorous training by the famed British Commandos, were pioneers in night operations and fighting—in mountains, fields and on water. They specialized in

surprise night attacks from unlikely and difficult directions, often the backside of an enemy-occupied mountain. They were skilled in hand-to-hand fighting, often using knives and bayonets when they didn't want to be discovered at night." (Eckerle, 2008); Mr. Evans began the war as an NCO, but received two battle-field promotions to captain; he was awarded the Purple Heart and the Silver Star.

35. *Physical Readiness Training-FM 21-20* (1941), 96.

36. S.L.A. Marshall, "First Wave at Omaha Beach," *The Atlantic* (November, 1960); <http://www.theatlantic.com/magazine/archive/1960/11/first-wave-at-omaha-beach/3365/> (accessed 2 March 2012).

37. Michael D. Krause, "History of US Army Soldier Physical Fitness," in *National Conference on Military Physical Fitness-Proceedings Report*, ed. Lois A. Hale (Washington, DC: National Defense University, 1990), 22; Note: statistics were provided by The National D-day Memorial-www.dday.org (accessed 20 June, 2011); S.L.A. Marshall, *The Soldier's Load and the Mobility of a Nation* (Quantico: The Marine Corps Association, 1980), 35; Note: reports from the Pacific theatre during World War II suggested that more soldiers died in the island campaigns from drowning than from Japanese bullets; Note: whether fact or anecdote the drowning during D-day drove the inclusion and assessment of the "bob and travel" in the US MA aquatic curriculum for the last 60 years; Marshall, S.L.A. "First Wave at Omaha", *The Atlantic Magazine*, November 1960, p.—"At one thousand yards, Boat No. 5 is hit dead on and foundered. Six men down before help arrives. The other six boats ride unscathed to within one hundred yards of the shore, where a shell into Boat No. 3 kills two men. Another dozen drown, taking to the water as the boat sinks."

38. *Physical Readiness Training-FM 21-20* (1941), 43.

39. Note: Ted Bank enlisted in the US Army in 1916 at age 18 (immediately upon graduating from high school in Clint, Michigan); he saw considerable combat during the Mexican Border dispute and in France with the American Expeditionary Force during WWI; he was wounded in combat and received the French Croix de Guerre for gallantry in battle ("Former Michigan Quarterback Considered for Texas Coach: Has Colorful, Fighting Career," *San Antonio Express*, 10 January 1934).

40. Bank, "Trends Toward Separate Commission on Fitness", 22; Note: the football photo was cropped with permission from the 1919 Michigan Football Roster photo, University of Michigan, Bentley Historical Library.

41. Rowntree, "National Program for Physical Fitness", 822; Stanley J. Reiser, "The Emergence of the Concept of Screening for Disease." *The Milbank Memorial Fund Quarterly, Health and Society* 56:4. (1978): 409; Mary McElroy, "A Sociohistorical Analysis Of US Youth Physical Activity And Sedentary Behaviors," in *Physical Activity and Sedentary Behavior-Challenges and Solutions* ed. Alan L. Smith and Stuart J.H. Biddle (Champaign, IL: Human Kinetics Inc., 2008), 65.

42. Note: Dr. Charles H. McCloy was the noted professor of physical education at the State University of Iowa. Note: Dr. A. A. Esslinger was an associate

professor and Director—Division of Physical Education for Men at Stanford University and a major in the US Army Reserve.

43. Theodore Bank, "The Army Physical Conditioning Program," *Journal of Health and Physical Education* 14:4 (1943): 197.

44. *Annual Report of the President of Stanford University*, 1943, 230; Bank, "The Army Physical Conditioning Program," 197; War Department, *Physical Conditioning—Pamphlet 21-9* (Washington: Government Printing Office, 1944), 6.

45. <https://history.amedd.army.mil/booksdocs/wwii/medtrain/ch8.htm> (accessed 8 September, 2010); William B. Bean, Charles R. Park, David M. Bell, and Charles R. Henderson, *A Critique of Physical Fitness Tests* (Fort Knox, KY: Army Medical Research Lab, Report 56-1(07), 19 February 1947), 14; Ludwig Eichna, William Bean, and William Ashe, *Comparison of Tests of Physical Fitness* (Fort Knox: Army Ground Forces Medical Research Laboratory, 1944), 1; John P. Ladd, *US Army Physical Fitness Testing: Past, Present and Future* (Student paper written for the Communicative Arts Program, March, 1971), 12; Note: based upon the fitness testing items selected for the Army Ground Forces test, its development was clearly influenced by the work of Bank, McCloy, and Esslinger.

46. Note: Army Training Circular 87 was developed by McCloy, Esslinger, and Bank.

47. *Ardmore Army Air Field (1942-1946)*, <http://www.oklahomahistory.net/airbase/1jogger.html> (accessed 10 September, 2010).

48. Army Training Circular No. 87, 1942, p. 1.

49. Bank, "The Army Physical Conditioning Program," 196; Ward C. Crampton, *Fighting Fitness: A Preliminary Training Guide* (New York: McGraw-Hill Book Co, 1944), 10.

50. Subcommittee on the Committee on Appropriations, US Senate Hearings on H.R. 1975, 1943, p. 60 (testimony of Col. L.G. Rowntree); Richard M. Uglund, "Education for Victory: The *High School Victory Corps* and Curricular Adaptation during World War II," *History of Education Quarterly* 19:4, (1979): 443.

51. *High School Victory Corps*, Hearings on Senate Bill S.875, 37 (testimony of Col. L. G. Rowntree, Chief, Medical Division, Selective Service System), Subcommittee of the Committee on Appropriations on HR1975, p. 55 (testimony of Dr. J.W. Studebaker), p. 59 (testimony of Col. L.G. Rowntree); Rowntree, "National Program for Physical Fitness," 824.

52. *High School Victory Corps*, Hearings on Senate Bill S.875, 1.

53. *Physical Fitness through Physical Education—Pamphlet No. 2*, iv.

54. *Physical Fitness through Physical Education—Pamphlet No. 2, Victory Corps Series* (Washington: Government Printing Office, 1942), 1-2.

55. *Physical Fitness through Physical Education—Pamphlet No. 2*, v.

56. D.A. Emerson, and Joy Hills, *The Victory Corps Program: A Wartime Program for High Schools* (Salem, OR: Superintendent of Public Instruction, 1943), 21.

57. *High School Victory Corps*, Hearings on Senate Bill S.875, 26 (testimony of Lt. Col. Harley B. West, General Staff Corps).

58. Spencer and Burns, *Youth Goes to War*, cover page, 5, 29, and 129.

59. Uglund, "Education for Victory", 439.

60. Victory Corps Series: Pamphlet No. 2, 1942, p. 26, 52, 91

61. Accessed at www.armywomen.org/history.shtml (accessed 22 November 2010).

62. Judith Bellafaire, *The Women's Army Corps: A Commemoration of World War II Service* (FT McNair, DC: Center for Military History Publication 72-15, 17 February 2005), 2; (document can be accessed at <http://www.history.army.mil/brochures/WAC/WAC.HTM>).

63. War Department, *W.A.C. Field Manual Physical Training-FM 35-20* (Washington.: US Government Printing Office, 1943), 1a.

64. *W.A.C. Field Manual Physical Training -FM 35-20* (1943), 1, 4.

65. Note: a successful repetition was one in which a woman lowered her body in a generally straight/rigid manner until the arm's reach a 90 degree angle and the chin touches the ground/floor.

66. Bank, "The Army Physical Conditioning Program", 197; Bank, "Trends Toward Separate Commission on Fitness," 22; Rowntree, "National Program for Physical Fitness", 821.

67. "Physical Fitness Program—Editorial," *The Journal of the American Medical Association* 125:12 (22 July 1944): 851; Note: the National Committee on Physical Fitness was the forerunner of the President's Council on Physical Fitness and Sport.

68. "Victory through Fitness"—National War Fitness Conference." *Journal of Health and Physical Education* 14:4, (1942): 131.

69. Note: The start of the "Physical Fitness Year" in September 1944 should be juxtaposed on important WWII military dates: 06 JUN 1944—D-Day, Normandy Invasion, 25 AUG 1944—Liberation of Paris, and 16 DEC 1944—Battle of the Bulge. Goldstein, "Physical Status of Men Examined", 608.

70. David E. Thomas, "Selection of the Parachutist," *Military Surgeon Magazine* 91 (1942) and *Military Review* 86 (1942): 64; Note: in order to qualify for parachute training, candidates were "required to demonstrate good physical strength, stamina and coordination by his ability to do fifteen push-ups and perform coordination exercises with an acceptable degree of proficiency...a history of excellence in some competitive sport is desirable but not required."

71. Eichna, et al., *Comparison of Tests of Physical Fitness*, 1.

72. Note: this document was clearly written or directed by Col. Theodore Bank based upon the inclusion of research results from 1942 and also the "Bank twist" on page 35.

73. *Physical Conditioning—Pamphlet 21-9*, 5.

74. *Physical Conditioning—Pamphlet 21-9*, 2-8.

75. *Physical Conditioning—Pamphlet 21-9*, 10; Note: *Physical Training-FM 21-20* (1941) stated that in some hot climates exercise early in the morning may be preferable and the Surgeon General had determined that hot weather exer-

cise was not harmful if soldiers were give adequate time to acclimatize (S.G.O. Circular Letter No. 119, 3 July 1943, "Acclimatization, Including Water and Salt Requirements in Hot Climates.")

76. *Physical Conditioning—Pamphlet 21-9*, 64; Note: "the amount of work done per second" was the authors attempt to describe what we not call "work intensity".

77. *Physical Conditioning—Pamphlet 21-9*, 64.

78. Note: the concept of "toughening" grew from the poor condition of conscripted Soldiers during WWI and WWII as evidenced by the testimony of Col. L. Rowntree: "These boys when they come up are soft and flabby. It is not their fault. It is the fault of civilization and these boys are not touch and the Army and Navy has set up within their organizations ways and means of toughening and conditioning these men" (*Hearings on H.R. 1975 First Deficiency Appropriations Bill for 1943* (Washington, DC: US Government Printing Office, 1943), p. 60).

79. *Physical Conditioning—Pamphlet 21-9*, 61.

80. *Physical Conditioning—Pamphlet 21-9*, 71.

81. Note: pushups were to be completed continuously to exhaustion-no rest was allowed; the soldier was required to keep his body in a generally straight line from head-toe and lower his body until his chest touched the ground; to facilitate rater reliability the rater would place his hand flat on the ground, about the center of the chest; the Soldier testing was required to lower his body until his chest touched the raters hand.

82. *Physical Conditioning—Pamphlet 21-9*, 71; Ladd, *US Army Physical Fitness Testing*, 13.

83. Ladd, *US Army Physical Fitness Testing*, 14; *Physical Conditioning—Pamphlet 21-9*, 76.

84. *Physical Conditioning—Pamphlet 21-9*, 78.

85. *Physical Conditioning—Pamphlet 21-9*, 81.

86. Edgar B. Stansbury, "The Physical Fitness Program of the Army Air Forces," *The Journal of Health and Physical Education* 14:9 (1943): 463; *Physical Conditioning—Pamphlet 21-9*, 82.

87. Stansbury, "The Physical Fitness Program of the Army Air Forces", 463.

88. Bank, "The Army Physical Conditioning Program", 195.

89. Martti Muukkonen, "Orandum Est Ut Sit Mens Sana In Corpore Sano—Formation of the Triangle Principle of the YMCA," (Paper presentation to the TUHTI Seminar of the Finnish Youth Research Society. Helsinki, 20 September 2001), 6; Note: Luther Gulick was a gymnastics instructor at the YMCA Springfield Training College and a close personal friend and professional colleague of Major General Leonard Wood.

90. Stansbury, "The Physical Fitness Program of the Army Air Forces", 503.

91. "The Physical Fitness Program of the Army Air Forces", 503.

92. Department of the Army, *Physical Readiness Training-FM 21-20* (Washington: US Government Printing Office, 1946), 1.

93. Bank, "The Army Physical Conditioning Program", 196; Hagen, 1996, p. 85-86.

94. D'Eliscu, 1943, p. 3; Note: perhaps one of the more definitive lessons on the benefits of physical and mental toughness came from Third US Army's maneuver to relieve the 101st Airborne at Bastogne during the Battle of the Bulge. Following the meeting at Verdun with General Eisenhower, late on 19 December 1944 General George S. Patton broke contact with the Germans near Saarbrücken almost 100 miles from Bastogne. In approximately 72 hours Patton marched contingencies of the Third US Army over 100 miles of rugged terrain in the dead of winter to interdict the Germans at Bastogne. With little or no rest "his forces still had the stamina and discipline in engaging the German forces and succeed in breaking through them." (<http://threeo.ca/outstandingpmsgen-georgespattonc758.php>-accessed 21 December 2011); Agostino Von Hassell, and Ed Breslin, *Patton: The Pursuit of Destiny* (Nashville: Nelson, 2010), 157; Don Fox, *Patton's Vanguard: The United States Army Fourth Armored Division* (Jefferson, NC: McFarland & Company, Inc., Publishers; 2003), 304; Tim McNeese, *The Battle of the Bulge* (Philadelphia: Chelsea House Publishers, 2004), 77-79.

95. Francois D'Eliscu, *How to Prepare for Military Fitness* (New York: W. W. Norton & Company, 1943), 3.

96. Gerald Astor, *Battling Buzzards: The Odyssey of the 517th Parachute Regimental Combat Team* (New York: Dell Publishing, 1993), 97; Note: this statement was attributed to Col. Lewis A. "Lou" Walsh, Commanding Officer 517 Parachute Regimental Combat Team, October, 1943.

97. C.L. Brownell, "We Learned About Fitness from Them," *Journal of Health and Physical Education* 15:4 (April 1944): 183.

98. Bank, "Trends toward Separate Commission on Fitness", 23.

99. Bank, "Trends toward Separate Commission on Fitness", 23.

100. Lucian Truscott, *Command Missions, A Personal Story* (New York: Dutton, 1954), 176; Note: "I was confident then that an average infantry battalion could approximate Ranger and Commando standards for marching, but I realized that I would have to approach the objective gradually. Officers and men would have to be imbued with the importance of such preparation and with confidence in their ability to attain it. It would be some time before each battalion could be required to attain a marching speed of five miles in one hour, four miles an hour for twenty miles, and three and a half miles an hour for distances up to thirty miles. But each battalion would attain it." (Truscott, *Command Missions*, 180).

101. Will Lang, "Lucian Truscott," *Life Magazine* (2 October 1944): 106.

102. Lang, "Lucian Truscott", 106; Truscott, *Command Missions*, 185; Note: Truscott went as far as establishing the proper stride length (30"-36") and stride rate (104-146 steps per minute) to achieve a 3, 4, 5 mph pace. Truscott's training schedule required each Officer and Enlisted person to march five miles in one hour twice each week and eight miles in two hours once each week. The

purpose was to develop physical condition and stamina and determine combat readiness and capabilities.

103. Mark Hertling, *Physical Training and the Modern Battlefield: Are We Tough Enough?* (School of Advanced Military Studies Monograph, Fort Leavenworth, KS: US Army Command and General Staff College, 1987), 20; Lang, "Lucian Truscott", 106; Note: "Palermo was a hundred miles to the north and west. Our first forty or so miles led through rugged mountains which rose to a height of more than 4,000 feet.... Our three tortuous roads northward had steep grades, numerous hairpin turns, and many bridges.... I told them I expected them to be in Palermo in five days and be the first to arrive." (Truscott, *Command Missions*, 224).

104. Major A.A. Esslinger, Chief-Physical Training, Army Service Forces, 10 October 1945; in a personal letter to the Master of the Sword, Department of Physical Education, United States Military Academy he wrote: "My conviction that the Army has failed miserably in conditioning our troops makes me disappointed that more is not being done at the Academy to bring about an improvement in this situation. While the physical condition of a regimental or divisional commander is important it is far more important that regimental or divisional commander have the proper attitude and knowledge in relation to the physical condition of his troops."

105. Rowntree, "National Program for Physical Fitness", 825.

106. Bank, "Trends toward Separate Commission on Fitness", 24.

107. Bell L. Wiley, and William P. Govan, *History of the Second Army* (Study No. 16) (Washington: Historical Section, Army Ground Forces, 1946), 53.

108. Wiley and Govan, *History of the Second Army*, 55.

109. Wiley and Govan, *History of the Second Army*, 108, 111.

110. Note: Maj. Gen. Fredendall was the commander of II Corps during the Tunisia Campaign and was defeated by Rommel and von Arnim at the Battle of Kasserine Pass. He was relieved by Eisenhower and returned stateside where he was ultimately given the command of 2nd Army on 1 June 1943.

111. Wiley and Govan, *History of the Second Army*, 122.

112. Richard W. Whitfield, *History of the US Army Artillery and Missile School-Volume 3: 1945-1957* (Fort Sill, OK: US Army Field Artillery School, 1957), 17; *World War II* (USAPFS Archived Historical Documents, 1987), 37, 40-41.

113. *World War II* (USAPFS Archived Historical Document, 1987), 40-41.

114. Note: *Basic Field Manual-1:4* (1936) was never officially designated as *Field Manual 21-20*, therefore for chronological purposes *Physical Readiness Training-FM 21-20* (1941) will be identified as the originating document in the "FM 21-20 Field Manual" series. Note: According to two sources *Physical Fitness Symposium Report* (FT Benning, GA: US Infantry Center, 12-14 October, 1970), 9 and Krause, "History of US Army Soldier Physical Fitness", 22; the Physical Fitness School was "transferred to FT Bragg in 1946 and was placed in

charge of the revision of FM 21-20". The date given above (1946) for the Physical Training School's formation and its involvement in the revision of FM 21-20 are contradictory, since *Physical Readiness Training-FM 21-20* (1946) was published in January 1946. Generally the revision of this type of manual took about six-eight months. There are three possible explanations for this contradiction: (1) the PTS was operational at FT Bragg prior to 1946 and was tasked to revise *Physical Readiness Training-FM 21-20* (1941) beginning in 1945 – with a January 1946 publication date; (2) the 1946 revision was written by individuals who were later assigned to the Physical Training School at FT Bragg, North Carolina, in 1946; or (3) the *Physical Readiness Training-FM 21-20* revision alluded to in the Physical Fitness Symposium report and by Krause was actually the 1950 revision.

115. *Physical Readiness Training-FM 21-20* (1946), 1.
116. *Physical Readiness Training-FM 21-20* (1946), 1.
117. Krause, "History of US Army Soldier Physical Fitness", 22.
118. *Physical Readiness Training-FM 21-20* (1946), 34 (see Table 1, p. 36).
119. *Physical Readiness Training-FM 21-20* (1946), 35.
120. *Physical Readiness Training-FM 21-20* (1946), 217.
121. *Physical Readiness Training-FM 21-20* (1946), 333.
122. *Physical Readiness Training-FM 21-20* (1946), 349.
123. *Physical Readiness Training-FM 21-20* (1946), 345.
124. *Physical Readiness Training-FM 21-20* (1946), 349.
125. Bean, et al., A Critique of Physical Fitness Tests, 1.

Chapter 6

The Cold War Era-Forming a National Fitness Day

Only strength can cooperate. Weakness can only beg.
Dwight D. Eisenhower

As America settled into a post war routine and lives returned to their normal peace-time pace, the US Army again grew complacent about physical readiness training. American occupational soldiers in Japan enjoyed the easy life of an occupational army.¹ Families joined their husbands and life took on a very social atmosphere. An eight-hour duty day, parties, and social functions for the married Officers and NCOs was a way of life. The younger, single soldiers found recreation in the form of drinking and dating Japanese women. Ultimately, American soldiers in Japan became soft.² “When World War II ended in 1945, the American Army was the most capable in the world. Five years later, by June 1950, the Army was a shadow of its former strength...the Army had lost its warfighting edge.”³ The US Army’s peacetime rhythm relegated tactical and physical training to a low and under resourced priority, which resulted in a US Army that was ill prepared physically, mentally, or emotionally for combat in Korea.⁴

On 25 June 1950, the North Korean Army (NKA) invaded South Korea.⁵ Several days later a US Army task force under the command of Lieutenant Colonel Charles Smith was committed to the battle to stop the advancing NKA somewhere north of Osan. Outnumbered and out resourced the US forces made contact at 0816 on 5 July 1950.⁶ By 1430 the NKA had overrun or flanked US positions and Lieutenant Colonel Smith gave the order to disengage.⁷ Although US forces were confronted with a larger, better equipped, and better trained NKA, many analysts attribute the poor combat performance of Task Force Smith to a lack of preparation for war.⁸ “By failing to train properly, by failing to develop esprit, and by failing to develop the physical and mental conditioning required to fight, the companies and battalions of the Eighth US Army set themselves up for failure long before the first airplane or ship landed in Korea.”⁹ The advantages of the NKA’s superior forces were enhanced by the extremely poor physical conditioning of US troops; “The first indications of a decline in the physical strength and ability of young Americans became apparent among United States soldiers in the early stages of the Korean War.”¹⁰ “Dismounted soldiers who bypassed the roadblock by moving cross-country over the steep Korean hills realized in no uncertain terms what a lack of physical preparation for the rigors of combat actually meant.”¹¹

As part of the on-going after action review for the Korean War, several faculty members of the Department of Physical Education at West Point surveyed recent graduates that had seen combat in Korea.¹² Of those who completed the survey: 35% responded that American troops were inferior to other UN troops in physical conditioning; 93% responded that a vigorous physical conditioning program prepared soldiers for combat; 68% responded that combat fitness could not adequately be developed through routine field training; and 50% responded that adequate physical training programs were provided for their unit prior to combat.¹³ These results are supported by the reflective statement published in the historical summary of FM 21-20 (1957): “as the reports came back from Korea, an alarming number of casualties were attributed to the inability of the US soldiers to physically withstand the rigors of combat.”¹⁴

On 30 November 1950, the US Army revised FM 21-20 for the third time, which was one year ahead of the previous 5-year revision cycle and only five months after the Task Force Smith debacle. Interestingly there were only minor changes in the physical training doctrine: (1) the principles of exercise were identified as—progression and overload; and (2) the phases of physical development were identified as—toughening, slow improvement, and sustaining. From an exercise prescription perspective there were no significant changes to the training program. Chapter 14—“Tumbling” was removed and replaced with “Mass Games and Contests”. Most of mass games materials were taken from Chapter 7—“Personal” “Contests and Games” (FM 21-20, 1941). The most significant content revision was the deletion of all “hand to hand” fighting activities that had been incorporated for the first time in the post-WWII FM 21-20 (1946). There were no significant changes to Chapter 17—“Physical Fitness Testing” and the approved physical fitness test was the 5-item Physical Fitness Test Battery (Outdoor): pull-ups, squat jumps, pushups, sit-ups, 300-yard shuttle run or the alternative fitness test battery (indoor), which allowed for the substitution of an indoor shuttle run (250-yards at 25 yards per link) or 60-seconds squat thrust test for the 300-yard shuttle run. The normative scoring scales remained unchanged.¹⁵

The post Korean War period was a particularly contentious time in the United States, especially relative to the doctrine of communism. Senator Joseph McCarthy’s “red scare” created an ideological schism between America and much of the world. Virtually every facet of American life became a competition with the Soviet Bloc; industrial productivity, technology, space exploration, and ultimately physical fitness.¹⁶ The tensions that arose from this competitive environment ultimately had a dramatic

effect on secular and US Army physical readiness training. In 1953 the former German physiotherapist Dr. Hans Kraus and his colleague Dr. Sonja Webber developed the Kraus-Webber Test of Minimum Muscular Fitness, see graphic 6.1. In 1954 Kraus and his assistant Ruth Hirshland conducted clinical trials assessing minimum muscular fitness of American and European children.¹⁷ Later that year, at the height of the “red scare”, Kraus and Hirshland published their findings in several seminal articles.¹⁸ Kraus and Hirshland reported that 57.9% of American children failed the 6-item fitness battery as opposed to 8.7% of European children. Following a White House luncheon on 11 July 1955, Kraus and Hirshland presented their data to 30 government leaders including President Eisenhower and Vice President Nixon. Shocked by the results, Eisenhower declared this to be a serious problem that was even more alarming than he had imagined. Kraus and Prudden (formerly Hirshland) attributed the cause of the problem to a range of factors “from the playpen to the school bus to television—in short, America’s plush standard of living.”¹⁹ On 16 July 1956 President Eisenhower issued Executive Order 10673 to establish the President’s Council on Youth Fitness, which started a 7-year national campaign to promote physical fitness.²⁰

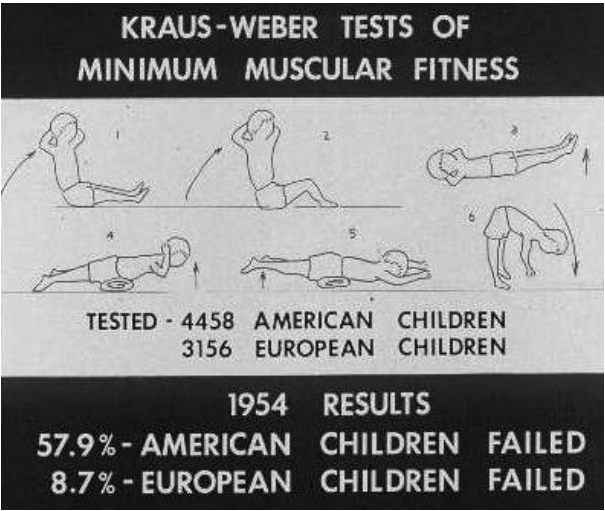


Figure 6.1. Exercises from the Kraus-Weber Test.

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Contrary to the direction of the Nation, which was earnestly promoting a national commitment to physical fitness, following the Korean War armistice on 27 July 1953, the US Army once again started losing ground on the physical readiness training. One of the victims of the Eisenhower budgetary reductions was the Physical Training School at Fort Bragg.²¹ Over the protests of Representative Carl Durham—top minority member of the House Armed Services Committee (Chapel Hill, NC) the PTS was closed on 1 January 1954 to save the US Army \$250,000.²² The projected US Army budget in FY1954 was \$6.9 billion.²³ Both Durham and then Secretary of the Army Robert T. Stevens acknowledged that field commanders in Korea were calling for a greater emphasis on physical conditioning of troops. “It just doesn’t make sense, Durham said, to save money by cutting out something...you admit you need urgently.”²⁴ 1953 marked the second time the US Army’s physical readiness training school was eliminated.

On 25 January 1956 *Physical Training-Women’s Army Corps* (FM 35-20) was revised and published for the second time. Although not as patronizing as the 1943 version, the 1956 revision still portrayed the physical character of women as “the weaker sex”. Field Manual (FM) 35-20 (1956) established a new format for US Army field manuals and appears to be the precursor to the 1957 revision of FM 21-20 and Technical Manual (TM) 21-200. FM 35-20 (1956) presented chapters on planning/administering PRT; leadership and organization of physical training programs, general conditioning, posture training, body mechanics, and team sports, relays, and swimming. While the upcoming 1957 revision of FM 21-20 (for men) focused on combat readiness, FM 35-20 focused on personal and social wellness and included phrases like “the contents consist of...various types of physical training activities suitable for female personnel” and survival swimming is “one of the finest means of developing grace and coordination.”²⁵ Although the swimming and sport chapters were relatively gender neutral, the conditioning exercises, body mechanics, group and relay games were generally devoid of any significant exercise intensity or rigor. Lastly, the limited discussion on fitness testing for women presented in the initial FM 35-20 (1943) was not included in the 1956 revision.

With the demise of the Physical Training School in January 1954, proponentcy for physical readiness doctrine and training was transferred to the Special Services Division (specifically the Ranger Department) at the US Army Infantry School at FT Benning. From 1953 to 1957 various US Army-wide physical fitness “conferences” were held to support physical fitness training and development. On 8 October 1957 *Physical Training*

(FM 21-20) was revised and published for the fourth time and superseded *Physical Training* (FM 21-20,1950), Change No. 1 (26 October 1951), Change No. 2 (15 September 1952), and Training Circular (TC) 21-3 (18 April 1957). During this revision US Army leaders elected to segregate PRT “concepts” from “applications.” The conceptual information relating to PRT development, planning and organization was published in FM 21-20–*Physical Training*. Applied information related to exercise prescription, physical conditioning, and exercise was published several months later in Technical Manual (TM) 21-200–*Physical Conditioning*. The revised FM 21-20 (1957) adopted a decidedly more scientific foundation with new chapters on the influence of exercise on body structure-muscle and skeletal systems, and body function–circulatory, respiratory, endocrine, and lymphatic systems. Chapter 6–Program Planning was significantly more dogmatic than the 1950 version. Approximately 50% of all physical training was dedicated to Drill 1–the enhanced Army Dozen.²⁶ In addition FM 21-20 (1957) prescribed that running, grass and guerrilla drills, combatives and games, relays, and sports were to be incorporated into the training schedule to enhance variety and balance.

On 31 December 1957, a little over two months after the revised FM 21-20 was released, the applied portion of the US Army’s physical training doctrine was published in TM 21-200, *Physical Conditioning*. The 588 page “hip-pocket” manual provided detailed descriptions of conditioning activities designed for administration by Drill Sergeants and NCOs. The manual reiterated the five (5) components of physical fitness: muscular strength (“power of contracting is regularly challenged by maximum load”), muscular endurance (“performing continuous work over long periods”), circulo-respiratory endurance (“Wind-ability to use oxygen to do work over an extended period”), agility (“ability to change direction quickly”), and coordination (“Timing–“ability to move all body parts in a smooth, efficient, concerted effort”). It described the three overarching principles of physical conditioning: (1) moderate beginning (build a foundation), (2) gradual progression, and (3) overload; and reiterated the three stages of development: (1) The Toughening Stage–for untrained men, (2) The Slow Improvement Stage–slow, progressive, steady improvement, and (3) The Sustaining Stage–sustaining high levels of fitness with little improvement. TM 21-200 provided extensive instructions on developing each component of physical fitness, most of which was taken from the 1950 FM 21-20.²⁷

Physical fitness/combat readiness testing and evaluation doctrine was also segregated by manual. FM 21-20 contained information related to the

philosophy of physical readiness testing in Chapter 11—"The Evaluation of Physical Fitness" and TM 21-200 contained information related to the administration of physical readiness tests in Chapter 11—"Administration of Physical Fitness Tests." The 5-item Physical Fitness Test Battery (PFTB) remained the US Army's approved fitness test. Although PFTB items remained the same, there were slight adjustments in the normative scales. At the 100-point level pull-ups decreased from 20 to 18, squat jumps increased from 75 to 95, push-ups increased from 54 to 60, sit-ups increased from 79 to 85, and the 300-yard shuttle run remained unchanged. Perhaps in response to "lessons learned" from combat experiences in Korea, the 1957 manuals also included a new test called the Physical Achievement Test (PAT), which was designed for "combat-type units" to assess combat-related skills. The 5-item PAT included: 5-second rope climb, 75-yard dash, standing triple broad jump, 150-yard man carry, and 1-mile run.²⁸ Although "distance runs" had been included in US Army training manuals since 1826 as an effective measure of stamina, the addition of a low intensity, aerobic capacity event (1-mile run) was a significant change for US Army fitness testing. The administration and application of these fitness tests was still at the discretion of the commander and the emphasis continued to shift from program effectiveness (unit readiness) to individual readiness. For the first time the administration of both physical fitness tests became mandatory during basic combat training.

The costly lessons learned from our past military experiences have led to...the ever increasing realization that our troops must be well conditioned.²⁹

As a part of the national emphasis on physical fitness initiated by President Eisenhower, on 21-24 April 1958, the US Army Infantry School (USAIS) hosted its first major Physical Fitness Seminar at FT Benning, GA.³⁰ The myriad of military and civilian conferees were organized into five working committees: (1) the role of the Nation in the US Army's progress towards fitness, (2) physical fitness and total military fitness, (3) the physical needs of the pentomic soldier, (4) the program for fitness, and (5) the evaluation of physical fitness.³¹ The seminar was hosted by the Ranger Department, a subordinate unit of the US Army Infantry School, which was responsible for US Army-wide physical training policy and doctrine and the resident instruction of students in physical training.³² Over 65 civilian and military organizations were represented at the seminar. Some of the keynote speakers were Brig. Gen. Stanley Larsen (assistant commandant USAIS), Dr. Ott Romney (President's Council on Youth Fitness), Dr. Ray Duncan (American Association for Health and Physical Education),

and Lt. Col. Frank Kobes (Director/Master of the Sword, Department of Physical Education, USMA). Brig. Gen. Larsen succinctly outlined the four key fitness questions facing the US Army and the Nation in his welcoming address: (1) how does civilian fitness affect us, (2) what should we be fit for, (3) how do we attain fitness, and (4) how do we measure fitness?"³³

As part of the seminar Lt. Col. James Reilly (Chairman, Combat Conditioning Committee) outlined the US Army physical training model, which consisted of three stages: (1) the toughening stage, where soldiers first experience a regular exercise program, mostly during initial entry training; (2) the slow improvement stage, where soldiers built upon their "toughening" foundation through progression and overload; and (3) the sustain stage, where soldiers use greater balance and variety of physical exercises and sport to maintain motivation and interest as long as troops are on active military duty. After two days of discussions, each of the five working committees reported their conclusions and recommendations:

Committee 1: What part can the Nation play in the US Army's progress towards fitness? This committee reported eight conclusions and two recommendations, the most salient of which were:

- Conclusions
 - The nation must awaken to the necessity of physical fitness.
 - Communities with sound fitness programs send men to the US Army in a better state of physical, mental, and technical fitness.
 - The American soldier must be in good physical condition through participation in a variety of sports and other recreational skills.
 - The nation should maintain higher standards for youth fitness.
- Recommendations
 - Endorse physical education programs that contain a combination of body building, athletic, and recreational sport activities.
 - Oppose the substitution of ROTC for physical education.³⁴

Committee 2: Is physical fitness necessary for total fitness? This committee reported four conclusions and four recommendations, the most salient of which were:

- Conclusions
 - Physical fitness is essential to total military fitness and should receive equal emphasis with the development of technical skills.
 - Benefits of physical fitness support emotional and mental fitness, physical aptitude is essential to military leadership.
- Recommendations

- Ensure Command emphasis on physical fitness at all levels.
- Establish a program of instruction to train military physical fitness supervisors.
- Establish a Division/Post level physical training course to train unit instructors.³⁵

Committee 3: Determine the degree of physical proficiency required of the pentomic soldier. This committee reported 11 conclusions and seven recommendations, the most salient of which were:

- Conclusions
 - Current concepts and doctrine are adequate.
 - Personnel who are continuously engaged in physical training will be physically fit for their job assignment.
 - The physical fitness program is for all military regardless of duty assignment.
- Recommendations
 - Current doctrine (FM 21-20/TM 21-200) should be sustained including current definitions relating to physical fitness.
 - Increased motivation methods to include awards programs for individuals and units.³⁶

Committee 4: Determine the adequacy of the physical training program to include training aids and research. This committee reported 10 conclusions and three recommendations, the most salient of which were:

- Conclusions
 - The current fitness training program is adequate to meet the requirements of the present concept of warfare.
 - Current BCT/AIT programs do not allocate sufficient hours to physical conditioning.
 - Reduce time devoted to “Drill One” and increase time devoted to developing stamina.
 - There is a need for continuous research and evaluation of all aspects of the physical training program.
- Recommendations
 - Mandate one hour per day of physical conditioning for all personnel.³⁷

Committee 5: The over-all evaluation of the physical fitness program. This committee reported seven conclusions and three recommendations, the most salient of which were:

- Conclusions

- Physical fitness tests should assess endurance, stamina, strength, and activities that produce a combat effective soldier.
- Physical assessments should be multidimensional, including individual achievement tests, road marches, obstacles courses and field training exercises.
- Physical fitness type tests should be used by a superior when rating a subordinate.
- Recommendations
 - Additional emphasis be placed on the evaluation of the over-all physical fitness program by the commander.
 - Incorporate fitness assessment data in NCO evaluation reports.
 - DA Form 705 should be a permanent part of a soldier's 201 file.³⁸

During the decade of the 1960's the United States experienced the most prolific growth in secular physical fitness, which many attribute to the number of soldiers that received physical fitness training during WWII and Korea and the fears aroused by the "Cold War". The President's Council for Youth Fitness provided significant programmatic and public relations support to the effort. The American Association for Health, Physical Education, and Recreation served as the dissemination network for thousands of public-school students and their parents through physical educators and coaches. US colleges and universities provided extensive empirical research to support the development of the science of exercise. Our national leaders, specifically Presidents Eisenhower and Kennedy, provided significant cachet for the "fitness movement" through their personal commitment and active involvement in fitness development. Kennedy leveraged his knowledge and experience as a combat naval officer to further our national emphasis on physical fitness. In a poignant article for *Sports Illustrated*, published in December 1960, president-elect John F. Kennedy argued:

The physical vigor of our citizens is one of America's most precious resources...throughout our history we have been challenged to armed conflict by nations which sought to destroy our independence or threatened our freedom...our growing softness, our increasing lack of physical fitness, is a menace to our security...the stamina and strength which the defense of liberty requires are not the product of a few weeks' basic training or a month's conditioning...[however, they] come from bodies which have been conditioned by a lifetime of participation in sports and interest in physical activity.³⁹

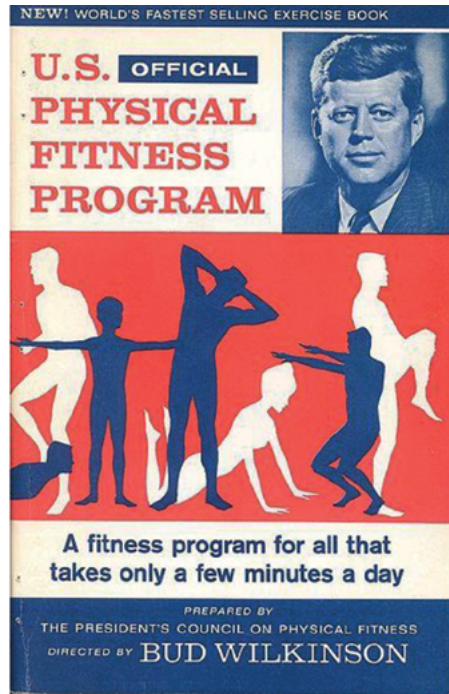


Figure 6.2. US Physical Fitness Training Program manual, 1963.

Source: The *US Official Physical Fitness Program*, the President's Council on Physical Fitness by Bud Wilkinson, 1963.

On 2 October 1959, the US Army published Change 1 to TM 21-200. This rather innocuous change had one significant historical implication that would change US Army physical readiness testing forever. Change 1, TM 21-200, established the Army Physical Fitness Test and Physical Achievement Test as a service requirement for all soldiers with a minimum total score to pass each test of 200 points.⁴⁰ Passing thresholds for each individual test item were not established. On 25 July 1961, the US Army published Change 2 to TM 21-200, where the lessons learned in Korea finally caught up with PRT doctrine. Change 2 marked a return to “combat readiness” as the primary focus of US Army fitness testing (as was the case in 1920 and again in 1946). As described in Change 2 (TM 21-200) the major emphasis of US Army physical fitness testing was to assess those components of fitness and functional skills that were deemed necessary in combat. Essential military skills were defined as: running, jumping, dodging, climbing, and traversing, vaulting, carrying, balancing,

falling, and swimming. In TM 21-200 both the Physical Fitness Test and the Physical Achievement Test were discarded in favor of the Physical Combat Proficiency Test (PCPT). The PCPT became the required physical fitness test for the US Army and incorporated assessments of both individual fitness and unit readiness. The PCPT events were (including minimum performance time/score): 40-yard low crawl (36 seconds), horizontal ladder (number of rungs in one minute-36), dodge run and jump (agility run-26.5 seconds), grenade throw (15 points), and a one-mile run (8:30).⁴¹ The PCPT was mandatory for basic combat training and generally used to assess combat readiness of most soldiers. Each event was worth 100 points with a maximum score of 500 points. A minimum of 300 points was considered passing, however soldiers were required to achieve a minimum of 60 points in each event to be considered “combat qualified”.⁴²

We find ourselves now in a rather serious predicament, one which is becoming more serious each year. Incoming cadets possess less physical ability than they did twenty or thirty years ago and the time allotted for developing physical ability in these cadets has gradually been reduced—31% since 1945. At the same time it is apparent that the officer of today and tomorrow will need more physical coordination, strength, and stamina than his predecessor.⁴³

During the summer of 1962 the US Army Infantry Center developed a document entitled *Your Individual Physical Fitness* to help US-AIS students better understand fitness development and aid them with the planning and execution of an individual physical activity program.⁴⁴ The document was quite sophisticated relative to the discussion in Section IV—“Building Your Fitness Program”. The manual presented the five elements (principles) of a sound physical training program: overload—a level of intensity greater than you are accustomed to doing; progression—regularly increasing your workload; balance—working all body parts/systems; variety—using a variety of exercise to prevent overuse and boredom; and regularity—exercising on a regular and predictable schedule.⁴⁵ In order to facilitate progression and recovery, the manual presented six Tables (“progression guides”) that regulated frequency and intensity of physical work.

Once the US Army made the PCPT a service requirement in 1959 with performance criteria of 200 points and 300 points (TM 21-200 Change 1 and Change 2 respectively), it became necessary to formalize this requirement. On 7 January 1963, *Army Physical Fitness Program* (Training Circular 21-1), outlined the regulations for administering/grading the PCPT. The PCPT was mandatory for: “All personnel under forty years old

in Active Army divisional and non-divisional combat and combat support TOE units, every six months; personnel attending service schools longer than twenty weeks, preferably about midway through the course; basic trainees, twice during basic combat training and once during advanced individual training; and all others on active duty with available facilities, semiannually.”⁴⁶ Those soldiers who did not have access to the physical testing facilities were required to take the US Army Minimum Physical Fitness Test–Male twice each year. A soldier’s performance on the physical fitness test was to be included in his official file. On 26 July 1963, the US Army published TC 21-1, Change 3, which mandated that the physical fitness test card become a permanent part of an individual’s field 201 file for all soldiers less than 40 years of age.⁴⁷

On 7 January 1963 the Department of the Army issued two additional physical training pamphlets, DA PAM 21-1–*Physical Fitness Training Program for Specialist and Staff Personnel* and DA PAM 21-2–*Physical Training Program for Women*. During the ramp-up to the Vietnam War there was a significant need for additional “non-combat” troops. Despite Committee No. 3’s recommendation (1958 USAIS Fitness Seminar) that the US Army physical fitness program is for all military personnel regardless of duty station, the physical expectations for these “support” troops were generally lower than for combat-type troops.⁴⁸ These lower expectations necessitated the development of the Army Minimum Physical Fitness Test–Male (PAM 21-1), which was designed for personnel who were assigned to duties that “precluded” them from “training” for the PCPT. The Army Minimum-Male test consisted of six events, one for each focus area: flexibility, shoulder girdle, abdominal, back, leg, and circulo-respiratory. Each focus area had a primary and alternate test; the soldier had the choice of which event he would take. The primary events included: squat bender, push-ups, sit-up, “legs over”, squat thrust, and stationary run. The alternate events included: squat stretch, 8-count pushup, body twist, leg spreader, mountain climber, and one-half mile run. The test could be administered indoors or outdoors and there were no published standards of performance.⁴⁹

PAM 21-2 established the Army Minimum Physical Fitness Test–Female to assess the five exercises that comprised the “5-10 Plan.”⁵⁰ The five items in the AMPF-Female were: arm circle (18 reps), twister (15 reps), bent-over airplane (15 reps), sit-up (15 reps), jumping jacks (16 reps). There was no time limitation and female soldiers “passed” if they could execute the requisite number of repetitions. The AMPFT–Female was re-

quired for all members of Women's Army Corps trainees during and upon completion of basic training.



Figure 6.3. Army Special Forces Rappel Training, 1963.

Source: Photo courtesy of NARA: Figure 157. Special Forces rappelling training tower at Fort Bragg, NC, 18 September 1963, NARA College Park, RG 111-SC post-1955, Box 385, Photo SC609492.

Between 1960 and 1964 US involvement in Vietnam and the concomitant increase in casualty rates doubled each year; for 1965 the number of casualties jumped to 1,862. Prior to 1969 the majority of soldiers voluntarily enlisted in the US Army. With the increased need for soldiers and

increased risk of deployment to Vietnam, the soldiers enlisting in the US Army were not always among the most physically fit. A part of the physical fitness problem was an ever-increasing issue with body composition. On 25 October 1963 the US Army institutionalized the policies and procedures of the US Army weight control program with the publication of *Weight Control* (AR 600-7). This document superseded DA Circular 600-7, which was published on 10 September 1962. AR 600-7 applied to all active-duty soldiers and the AWCP was administered by the commander. Body weight standards by age and gender for enlistment, reenlistment, and extension of service for all Officer and Enlisted personnel were published in AR 40-501.⁵¹ Since relatively little was known about the assessment of lean and fat body mass, obesity was defined in terms of body weight. DA Form 2738-R was established as the counseling form for body weight. "Personnel whose weight exceeds the appropriate standard established in table I or II, appendix III, AR 40-501, and whose obesity has been determined by a physician to be attributable to nonmedical causes, will be placed on a medically supervised weight reduction program regardless of the date of expiration of their term of service."⁵²

Although US advisors had been in Vietnam since 1955, combat troops were not used until after the Gulf of Tonkin incident on 02 August 1964. By the end of 1965 "President Johnson announced plans to deploy additional combat units and increase American military strength in South Vietnam to 175,000."⁵³ As the US Army prepared for combat in Vietnam, 5 January 1965 would become another seminal date in the history of physical readiness training and assessment for the US Army. Although TC 21-1 specified army-wide fitness assessment requirements, it was not until January 1965, that the physical training and testing requirements were formally codified in US Army regulations. Army Chief of Staff, Harold K. Johnson directed the publication the *Army Physical Fitness Program* (AR 600-9), which established the regulatory framework for US Army physical readiness training and assessment. Physical fitness was identified as "an indispensable part of leadership" and individual commanders were given the authority and responsible for executing the US Army physical fitness program. AR 600-9 did not provide specific PRT doctrine; "Detailed objectives for male personnel are as indicated in TM 21-200 and DA Pam 21-1; and for female personnel as indicated in FM 35-20 and in DA Pam 21-2."⁵⁴ AR 600-9 established US Army-wide minimum physical fitness standards for all personnel and the implementation policy for the US Army's physical fitness program. All personnel were required to take a fitness test "periodically". When tested on a semi-annual basis, tests were to

occur about every six months. All male personnel were required to take the Physical Combat Proficiency Test or during inclement weather the Army Minimum Physical Fitness Test-Male. Female personnel were required to take the Army Minimum Physical Fitness Test-Female, which was to be administered twice to “WAC trainees” as prescribed in DA PAM 21-2 and “periodically” upon completion of basic training.



Bend and Twist.



Knee Bender.



Push-up.



Formation Run.

Figure 6.4. Physical Readiness Training, 1967.

Source: Department of the Army. *Physical Readiness Training* (FM 21-20). Washington, DC, US Government Printing Office, 1941.

Throughout 1965 there were many additional changes to US Army physical readiness training and doctrine. On 26 February 1965 Headquarters DA published the first revision of *Physical Fitness Program for Women in the Army* (DA PAM 21-2). While some of the materials overlapped *Physical Training-Women's Army Corps* (FM 35-20, 1956), PAM 21-2 provided the rationale for why women needed to exercise and build a strong physical fitness program. The unique feature in PAM 21-2 was the required basic exercises for women—the “5-10 Plan”. The rather parochial

5-10 Plan outlined the “five basic exercises to be performed each day in just 10 minutes.”⁵⁵

On 26 May 1965, the US Army issued Change 4 to TM 21-200–*Physical Conditioning*. Other than minor revisions to two exercise drills, the primary purpose of Change 4 was to supersede Change 2–Physical Fitness Testing and bring TM 21-200 (1957) into alignment with AR 600-9 (1965). Change 4 outlined the three authorized US Army fitness tests: Physical Combat Proficiency Test, Army Minimum Physical Fitness Test –Male, and the Airborne Trainee Physical Fitness Test. The only scoring change to the PCPT was to lower the dodge run and jump time from 26.5 seconds to 25 seconds.



Figure 6.5. Strength Circuit in Basic Combat Training, 1967.

Source: All four photos were from a 1967 US Army training film, TF7–3856, accessed on YouTube video, <http://www.youtube.com/watch?v=OXZ6dTo2Ksk>.

On 23 June 1965 AR 600-7, *Weight Control* was revised and published for the second time. There were no substantial changes; AR 600-7 provided regulatory control of body weight for active-duty service mem-

bers. “Maintenance of proper body weight is a prerequisite to achieving a satisfactory degree of physical fitness”.⁵⁶ The weight control program was still command-driven. After determining an overweight condition was not due to a medical issue, the soldier was counseled by completing DA Form 2738-R and began a program to reduce his/her body weight.

On 2 September 1965 *Physical Training—Women’s Army Corps* (FM 35-20) was revised and published for the third time. The 1965 revision signified a dramatic departure from previous parochial attitudes about women, exercise, and fitness and brought FM 35-20 into alignment with AR 600-9 (1965). As stated in the purpose “this manual provides guidance in the planning, execution, and evaluation of physical training” for women.⁵⁷ Like their male counterparts, the primary physical components were defined as: strength, stamina, coordination, flexibility, and sports-related skills. Exercises were divided into seven chapters: physical conditioning—mostly calisthenics; posture training; body mechanics—functions skills like lifting, pushing, etc.; group games; relay games; team and individual sports; and swimming. Interestingly, even though physical fitness testing requirements for women were specified in AR 600-9 (January 1965), there was no mention of a physical fitness testing requirement for women in either revision of PAM 21-2 (February 1965) or FM 35-20 (September 1965).

In 1966 the number of US Army physical fitness tests grew when the Inclement Weather Physical Fitness Test was introduced in the Continental Army Command Pamphlet 600-1.⁵⁸ The Inclement Weather Test was designed to insure there was no disruption to the training/testing schedule for soldiers in basic, advanced individual, or combat support training as a result of weather. Test events were selected to measure muscular strength and endurance and coordination of the five basic muscle groups. The test items were: push-ups, knee bender, sit-ups, side step (jumping jacks), and the squat thrust. Males older than 40 years of age were exempt from all physical fitness testing.

With US troop levels peaking in Vietnam, *Physical Readiness Training* (FM 21-20) was revised and published for the sixth time on 31 January 1969.⁵⁹ Taking advantage of the exponential growth in the body of knowledge on exercise science, the 1969 revision made substantial changes to the 1957 physical training doctrine. The basic anatomy and physiology presented in Chapters 2 & 3 (1957) were enhanced and moved to Part Six—“The Human Body.” Chapter 28—“The Body and Physical Fitness”, a discussion of the applied science of exercise physiology, and Chapter 31—“Posture Training” were added. The 1969 revision previewed a new

chapter entitled “Development of Physical Readiness”.⁶⁰ This chapter provided a concise summary of the types, components, stages and principles of exercise. The terms isotonic and isometric were used for the first time in US Army PRT doctrine. The five basic principles of exercise (overload, progression, balance, variety, and regularity) were operationally defined.⁶¹ In an attempt to centralize US Army doctrine and training, all conditioning drills and sport activities, which were published separately as TM 21-200 in 1957, were reintegrated into FM 21-20 (1969) in Chapters 10-23. *Physical Conditioning* (TM 21-200) was discontinued.



Rifle Drills.



Log Drills.



Guerilla/Grass Drills..



Double-time Formation Run.

Figure 6.6. Combat Readiness Training, 1967.

Source: All four photos were from a 1967 US Army training film, TF7-3856, accessed on YouTube video, <http://www.youtube.com/watch?v=OXZ6dTo2Ksk>.

Based on FM 21-20 (1969) commanders were allowed to choose from four physical fitness tests. These tests were designed to assess the essential components of fitness and combat-related skills. Essential combat skills were defined as: running, jumping, dodging, climbing and traversing, crawling, throwing, vaulting, carrying, balancing, falling, and swimming.⁶² The four fitness tests available to male soldiers were: Physical

Combat Proficiency Test (PCPT), Army Minimum PFT–Male, Airborne Trainee PFT, and the Inclement Weather PFT. Tests were ostensibly selected to fit the unit’s mission. The revised PCPT included the 40-yard low crawl; horizontal ladder; run, dodge and jump; grenade throw (the 150-yard man-carry was substituted for the grenade throw in basic combat training, advanced individual training, and combat support training); and a one-mile run.⁶³ For the first time, a minimum standard was established for each PCPT event; all soldiers were required to achieve 300 total points, with a minimum of 60 points per event for combat soldiers and 45 points per event for combat support soldiers. The Army Minimum PFT–Male (AMPFT-M) consisted of six events that were specifically focused on: flexibility, shoulder girdle, abdominal, back, leg, and circulo-respiratory. Each functional area had a primary and alternate test event and the soldier chose which event he would take. The primary events included: squat bender, push-ups, sit-up, legs over, squat thrust, and stationary run. The alternate events included: squat stretch, 8 count push-up, body twist, leg spreader, mountain climber, and one-half mile run. The Airborne Trainee Qualification Test was the only US Army test with criterion-referenced performance standards for each event. This Airborne test required trainees to achieve minimum scores of: 6-chin-ups, 20-bent leg sit-ups, 22-push-ups, 80-half knee bend (2 min.), 8:30-1-mile run.⁶⁴

Birth of the Soldier Fitness Center

With the influence of Presidents Eisenhower and Kennedy and the President’s Council on Youth Fitness, the secular fitness movement grew exponentially during to the decade of the 1970’s primarily through the influences of two exercise professionals: Dr. Kenneth Cooper and Mr. Arthur Jones. In 1968 Cooper published his seminal work *Aerobics*, which started a generation of “baby boomers” on the aerobic path to fitness.⁶⁵ In early 1970 Arthur Jones produced his first strength training machines, which were marketed under the brand name “Nautilus.” The Nautilus machines allowed the beginner to engage in varying intensities of strength training with a minimum level of instruction and supervision. Trainees could enhance work capacity by reducing the rest interval between exercise sets.

As the US Army entered into the turbulent 70’s with a protracted conflict in Southeast Asia, the United States once again resorted to forced conscription to manage manpower requirements.⁶⁶ The concomitant poor initial entry fitness levels were exacerbated by two persistent human resource problems: (1) how to manage the expanding role of women in the US Army, and (2) the growing physical fitness/weight management/body

composition issue. Following the secular trends of women's emerging contributions to sport and the workplace from 1940 to 1970, society's perceptions of women's physical abilities had changed dramatically. Although it was generally believed women were physiologically incapable of successfully engaging certain strength and endurance events (e.g., running long distances), in December 1963 American Merry Lepper ran the first competitive marathon since 1926.⁶⁷ In 1966 Roberta Gibb unofficially ran the Boston Marathon and completed the 26+ mile race in 3:21:25.⁶⁸ The civil rights and affirmative action movements of the 1960's and 1970's further impacted women's roles in the US Army. Although women had made some strides in athletics, this progress was not evidenced in the 1970 publication of the *Army Training Program* (PAM 21-114: male and PAM 21-121: female). Significant gender gaps remained in the physical requirements of basic combat training that resulted from the divergent missions of men and women in the US Army. Men were trained for combat-related tasks requiring muscular strength and stamina, while women were trained for administrative tasks that required only marginal levels of general fitness and conditioning. For the US Army there were still significant questions and concerns about a woman's ability "to withstand arduous physical exercise."⁶⁹

On 12-14 October, 1970 the US Army Infantry School (USAIS) hosted its second Physical Fitness Symposium at FT Benning, GA. There were seven objectives for the conference: (1) discuss new developments in fitness programming, (2) nurture liaisons between military and civilian fitness experts, (3) discuss recent PRT developments by the Infantry School, (4) evaluate Army PRT programs, (5) learn about civilian research and development, (6) determine the relationship between fitness and military job performance, and (7) evaluate the US Army's physical fitness testing program.⁷⁰ The symposium was hosted by the Leadership Department and the Office of Doctrine, Development, Literature, and Plans (ODD-LP), which was the US AIS's proponent agency for US Army physical fitness programs.⁷¹ Over 80 leading "civilian and military physiologists, medical specialists, physical fitness educators and military training specialists" gathered for the symposium.⁷² Some of the keynote speakers were Brigadier General John Carley, Dr. Paul Ribisl (Kent State), Dr. Edwin Fleishman (American Institute for Research), Dr. George Cousins (Indiana University) and Col. Frank Kobes (Master of the Sword, Department of Physical Education, USMA).

When the Physical Fitness Symposium concluded on 14 October 1970, participants had established fifteen (15) conclusions and nine (9)

resolutions. The most noteworthy conclusions were: (1) physical fitness is essential to total military preparedness and should receive equal emphasis with the development of technical skills, (2) the application of “aerobics” is a required component for physical fitness training, (3) physical training programs should be implemented by qualified school-trained personnel, and (4) all soldiers, regardless of age, should meet minimum physical fitness standards. There were two noteworthy resolutions; the US Army should develop: (1) a national research and documentation center that would serve as the focal point for research in physical fitness, and (2) an “Army Physical Fitness Institute” to teach selected officers and enlisted men the skills and expertise to properly implement approved fitness programs.⁷³ This was the fourth time since 1885 that a US Army planning and operations committee recommended the US Army develop and resource a school to train US Army Officers and NCOs about physical fitness.



Figure 6.7. Combat Obstacle Course Training, 1967.

Source: All four photos were from a 1967 US Army training film, TF7–3856, accessed on YouTube video, <http://www.youtube.com/watch?v=OXZ6dTo2Ksk>.



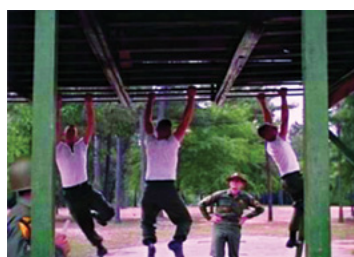
Source: Marshall Gagne Private Collection.

Figure 6.8. Combatives training during Basic Training at Fort Knox, KY, 1967.

Source: These four photos are from Marshall Gagne’s personal collection and printed with permission from Marshall Gagne, accessed from <http://www.ushapki.com>.

On 12 November 1971, the *Army Physical Fitness Program* (AR 600-9) was revised and published for the second time. In a consolidation of authority and responsibility, proponentcy for the Army Physical Fitness Program was given to the Assistant Chief of Staff for Force Development and physical fitness was redefined from “essential for leadership” to “essential for accomplishing the US Army’s mission”. Clearly influenced by the 1970 report of the Physical Fitness Symposium, the 1971 revision contained a new definition of physical fitness: a physically fit soldier has “a healthy body, the capacity for skillful and sustained performance, the ability to recover rapidly from exertion, the desire to complete a designated task, and the confidence to face any eventuality.”⁷⁴ The concept of rapid

recovery from exertion reflected the current state of aerobic fitness assessment where step tests were used to measure cardio-respiratory efficiency of heart rate recovery. AR 600-9 was divided into three major sections: General, Responsibilities, and Training. The training section provided doctrine for basic combat training (BCT), table of organization and equipment (TO&E), and table of distribution and allowances (TDA) units. This section also specified physical fitness testing requirements. “When tests are utilized the test appropriate to the duty assignment or qualification desired should be administered as outlined in FM 21-20 for men and FM 35-20 for women. DA Form 705, Physical Fitness Testing Record, may be used to record the results.”⁷⁵ Interestingly the current FM 35-20 (1965) failed to specify any fitness tests or testing requirements for women; however later in the Training section 11.b.4, it stated that “The Army minimum physical fitness test-female should be administered to all unit assigned female personnel under 40 years of age.”⁷⁶ Female personnel were required to achieve the minimum number of repetitions specified for their age group.



Horizontal Ladder Test.



Run, Dodge, Jump Test.



Figure 6.9. Physical Combat Proficiency Test, 1969.

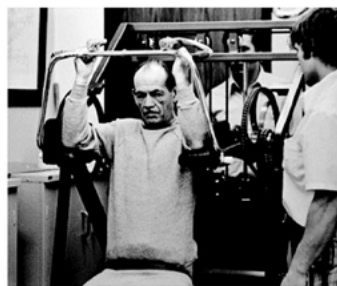
Source: Photos are left to right, and top to bottom. All four photos are still pictures from a 1967 US Army Training file. Photos 1-3 were printed with permission from Andy Erickson at <http://www.criticalpast.com>. Photo 4 was from a 1967 US Army training film, TF7-3856, accessed on YouTube video, <http://www.youtube.com/watch?v=OXZ6dTo2Ksk>.

On 30 March 1973, as the United States was nearing ‘tracer burn-out’ with the Vietnam Conflict, *Physical Readiness Training* (FM 21-20) was revised and published for the seventh time.⁷⁷ The manual was divided into six “parts”: Part 1–Physical Fitness Leadership, Part 2–Physical Readiness Training Programs (program development and design), Part 3–Physical Activities (“conditioning” drills and activities), Part 4–Competitive Conditioning Activities (combatives, team athletics), Part 5–The Army Physical Fitness Evaluation, and Part 6–The Human Body. The major changes in FM 21-20 (1973) came in Part Five (Chapters 24, 25, 26). Seven separate physical fitness tests comprised the Army Physical Fitness Evaluation (AAPE). There were three basic fitness tests: Advanced Physical Fitness Test; Staff and Specialist Physical Fitness Test; Basic Physical Fitness Test. There were also four special purpose fitness tests: Inclement Weather/Limited Facilities Physical Fitness Test; Minimum Physical Fitness Test; Airborne Trainee Physical Fitness Qualification Test and; Ranger/Special Forces Physical Fitness Qualification Test.⁷⁸



Source: Photo Courtesy of Cooper Aerobics.

Kenneth H. Cooper, MD, MPH.
Founder and Chairman of Cooper
Aerobics at Coop Clinic, c. 1970.



Source: Photo Courtesy of www.arthurjonesexercise.com.

Arthur Jones, Found of Nautilus, Inc.,
taken during a Colorado Experiment,
Fort Collins, 1973.

Figure 6.10. Kenneth Cooper and Arthur Jones, c. 1975.

Source: Photos are left to right. Photo 1. Kenneth H. Cooper, printed with permission from communications manager Christina Witzsche, Cooper Aerobics, Health and Wellness, Dallas, TX, c. 1973, <https://cooperaerobics.com>. Photo 2. Arthur Jones, printed with permission from William E. Jones (WEJ), Arthur’s son, Fort Collins, CO, 1973, <http://www.arthurjonesexercise.com>. Photo credit Inge Cook Jones, Mr. Arthur Jones’ wife, at their Fort Collins, CO training site, 1975.

The primary fitness test, the Advanced Physical Fitness Test (APFT), was a derivative from the Physical Combat Proficiency Test that had been used since 1961. The APFT was composed of five events: inverted crawl

("crab walk" for 20 yards); bent leg sit-ups (fingers interlaced behind the head); run, dodge, jump (26 yards); horizontal ladder (20 ft.–14 rungs); and the 2 mile run (in fatigues/boots). Male soldier (17-25) standards for the 2 mile run were 14:41 = 100 pts and 20:33 = 60 pts. To meet the combat readiness requirement a soldier must score a minimum of 60 points per event and a total of 300 pts. The Staff and Specialist PFT substituted pushups for the inverted crawl and 1 MR for the 2 MR (1MR scores were: 6:02 = 100 pts and 8:20 = 60 pts). The Airborne Trainee PFQT consisted of chin-ups, sit-ups, push-ups, knee bender, and a 1MR. The Ranger/Special Forces Physical Fitness Qualification Test was a new addition to the 1973 revision. This test consisted of the inverted crawl, sit-ups, push-ups, run/dodge/jump, 2MR, and a combat swim. For Ranger candidates the combat swim requirement was 15 m in utilities, boots, pistol belt, first aid pouch, two full canteens, two ammo pouches, harness, and individual weapon. For Special Forces candidate the combat swim was 50 m in utilities and boots. A 60-point criterion-referenced standard was established for each event of the Ranger/Special Forces test, which was approximately equal to the 75-point level for similar events on other PFTs. For example, on the Ranger/Special Forces PFQT the 60-point standard for the 2 mile run = 16:30 for all soldiers; there were no age-adjusted scores.⁷⁹

Physical fitness testing requirements remained lower for combat service support soldiers. "The physical standards to be attained by combat and combat support unit personnel are more demanding than those expected of other personnel due to the nature of the job requirement."⁸⁰ The soldiers in combat and combat support units took the Advanced Physical Fitness Test and were required to score a minimum of 60 points in each of the five events. The standards of fitness for combat service support soldiers "...are established at a level to ensure an adequate degree of fitness"⁸¹ The soldiers in combat service support units had to complete all five of the events and score a total of 300 points.

Later in 1973 the US Army conducted a major reorganization under the aegis of Operation Steadfast. The most significant change resulted in the formation of the Training and Doctrine Command (TRADOC) at FT Monroe, VA; Combined Arms Center (CAC) at FT Leavenworth, KS, Logistics Center (COGC) at FT Lee, VA, and the Administrative Center (ADMINCEN) at FT Benjamin Harrison, IN. US Army leaders planned for the ADMINCEN "to become the collection point for all matters related to the US Army's personnel system and the human dimension of military operations."⁸² Although the USAIS (Infantry School) maintained control over PRT doctrine and training, the Army Soldier Support Center at FT

Benjamin Harrison slowly assumed control over various aspects of PRT doctrine. The Family Resource Center took the early lead in PRT doctrine development while ADMINCEN initiated broader organization changes in training and doctrine development to a “schools” model.⁸³

Although it had only been two and a half years since the second revision, the *Army Physical Fitness Program* (AR 600-9) was revised and published for the third time on 7 May 1974. Proponency for AR 600-9 was reassigned to the Deputy Chief of Staff for Military Operations. This revision was designed to reflect the recent reorganization of the US Army, specifically the formation of the Training and Doctrine Command (TRADOC). Control of physical fitness testing and standards was transferred from the Commanding General (CG) CONARC to the CG-TRADOC. Transferring proponency of PRT doctrine to TRADOC represented the beginning of a significant shift from an infantry-centric PRT focus to a US Army-centric PRT focus, which has plagued PRT doctrine ever since. There were no significant changes to training or testing requirements.⁸⁴

Two key events for the US Army occurred during 1975. First, on 17 February 1975 *Physical Fitness–Women’s Army Corps* (FM 35-20) was revised and published for the fourth and final time. As a sign of greater acceptability of women in the US Army, the field manual name was changed from *Physical Training–Women’s Army Corps* (1965) to *Physical Fitness Training for Women*. Other changes signified a significant transformation in content and perspective. Changes in perspective were most evident by the significant number of photos that depicted women soldiers engaging in team contact sports and combat-related physical training.⁸⁵ A second key event occurred on 7 October 1975 when President Gerald Ford signed Public Law 94-106 opening enrollment in the US Service Academies to women. This single event forever changed US Army physical readiness training and assessment policies and practices.

In FM 35-20 (1975) women were introduced to the “stages” of physical training: Beginning, Slow improvement, and Sustaining and the four components of physical fitness: strength, endurance, agility, and coordination. The training programs for women were much more demanding with the introduction of three strength circuits (1) barbells-squat “snatch” to a military press and curls plus body weight exercises; (2) circuit interval training; and (3) an isometric strength circuit. Chapter 6 was entirely devoted to running with specific instructions pertaining to sprinting, formation running, cross-country running, and jogging. The workload concepts of pace and progression were also described. **FIGURE 6.12.**

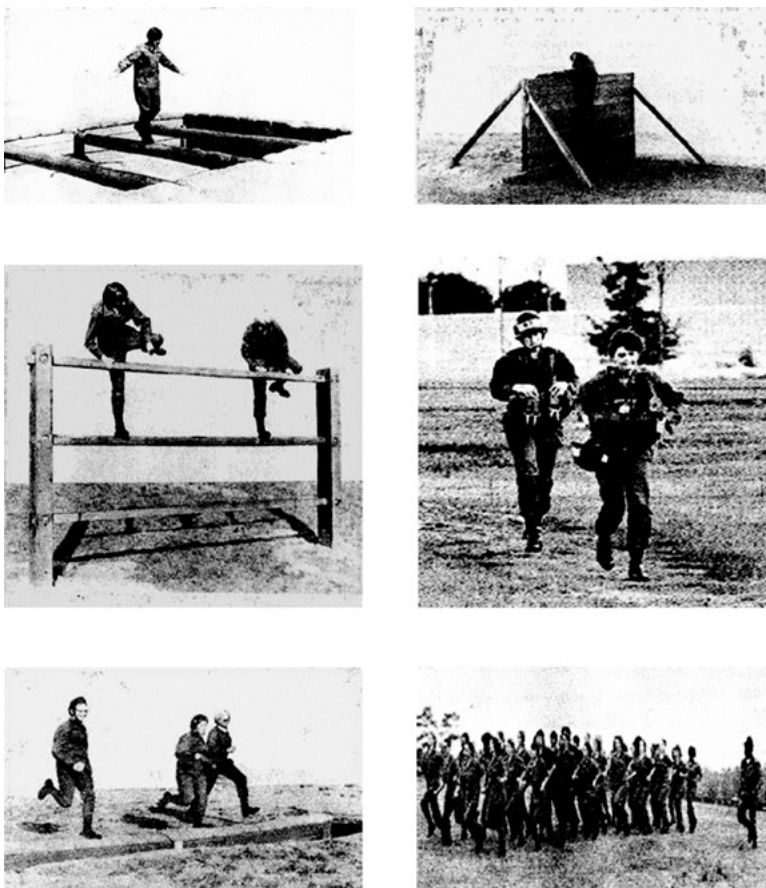


Figure 6.11. Women's Army Corp Physical Readiness Training.

Source: All five photos were taken from a 1963 US Army training film, TF35–3400, accessed on YouTube video, <http://www.youtube.com/watch?v=bZTu-LO-RkRE>.

The most significant change in the 1975 revision came in Chapter 14–“Physical Fitness Testing”. Four physical fitness tests were approved for women: (1) Advanced Physical Fitness Test for women (APFT-W)–80 meter shuttle run, modified pushups (from the knees); run, dodge, and jump (same test as men); modified sit-ups (crunch), and 1-mile run; (2) Basic Physical Fitness Test for women: same four events as the APFT-W test with a .5-mile run; (3) Staff and Specialist PFT for women: same first four events as the APFT-W with a stationary run; and (4) Airborne Trainee

Physical Fitness Qualification test for women: incline chin-up, modified push-up and sit-up, knee bender, and 1-mile run. The incline chin-up device utilized a metal frame with a “foot rest” and a movable chinning bar that could be adjusted according to height. From a seated position the soldier placed her feet on the “foot rest” and grasps the bar with an underhand grip (palms facing the soldier) and arms fully extended and the chinning bar just below shoulder height. Maintaining a straight body (approximately a 45o angle) the soldier flexed her arms and pulls up until her chest touches the bar. The score is equal to the maximum number of repetitions. None of the three body-weight tests (incline chin-ups, modified push-ups, or modified sit-ups) were timed. Women were required to score a minimum of 60 points per event for a total of 300 points. Passing scores for the five events in the APRT-W were: incline chin-up = 7; push-ups = 18; run/dodge/jump = 27.5 sec., sit-ups = 20; 80m shuttle run = 26.5 sec.; and 1MR = 9:14. In Change 1, 30 October 1975 a separate scoring form (DA 4415) was created for women.⁸⁶ FM 35-20 (1973) previewed many changes that would appear into the next revision of FM 21-20, where US Army leaders integrated the men’s (FM 21-20) and women’s (FM 35-20) physical training doctrine into a single field manual.

Transition of US Army PRT to Health-Related Fitness

During the post-Vietnam miasma US Army leaders became increasingly concerned with the level of physical fitness and mental toughness of soldiers as the US Army transitioned to an all-volunteer force. A critical nuance to this issue was the potentially significant increase in the number of women soldiers. In July 1975, the Deputy Chief of Staff-Personnel commissioned the Army Research Institute (ARI) and US Army Forces Command (FORSCOM) to develop the “Women Content in Units Force Development Test”, better known as the MAX WAC test.⁸⁷ In October 1976 ARI/FORSCOM sampled 40 US Army units at 19 posts in the continental US and Hawaii. Although the results indicated that unit content of up to 35% women had no adverse effect on mission performance, Maj. Gen. Julius Becton, commander of US Army Operational Test and Evaluation Agency (OTEA) disputed those findings. After changing the basic research protocols, OTEA repeated the “women content” study and concluded that a maximum of 20% women per unit was the right percentage to prevent degradation of mission capabilities.⁸⁸

The gender and fitness issues were further exacerbated by the enrollment of women at the US Service Academies in the fall 1976. Increased numbers of women in the enlisted and officer corps resulted in growing

pressure for greater opportunities in a wider variety of military occupational specialties (MOS). One of the outstanding issues relative to job performance was the historical perception that women lacked the physical strength and stamina to successfully accomplish warrior tasks and battle drills. "Army commanders had long complained that women were unable to perform many routine physical tasks associated with their assigned specialties."⁸⁹ The dichotomy between physical readiness training and assessments required for men in FM 21-20 and PRT required for women in FM 35-20 continued to exacerbate the perception and the reality. In May 1976 the General Accounting Office (GAO) recommended that the US Army "develop standards for measuring the ability of personnel to satisfy strength, stamina and operational performance requirements for specialties where such attributes are factors in effective performance".⁹⁰ This action resulted from the arbitrary closure of many military occupational specialties (MOS) to women that were presumed to be too physically demanding. With reports like Project 60 (1976), Women in the Army (1977), and Project Athena (1979), the US Army tried to determine the range of physical abilities of women soldiers. In July 1977, the US Army Vice-Chief of Staff directed the US Army to study the impact of gender-free physical standards that could be used for MOS selection and assignment. With the need to utilize increasing numbers of women in nontraditional MOSs as well as to respond to affirmative action policies, "it became apparent that the Army could qualify and assign new entrants by matching individual qualifications with specific MOS physical requirements regardless of gender."⁹¹

Based on the requirement to integrate women into the US Service Academies and to provide more access for women to a greater variety of MOSs, there were increasing equity and cost concerns relative to gender-segregated initial entry training (IET). In the fall 1976 the US Army conducted a series of Basic Initial Entry Tests to determine the effects of basic physical fitness on integrated physical readiness training. The clinical trials were conducted to determine if women could undergo the same basic training as men regardless of lower levels of strength and cardiorespiratory work capacity. The trials were conducted at Fort Jackson, South Carolina, and the results showed that "physical training could be modified for women without changing content or value or lowering male standards. Other results were that the women tested felt more challenged physically, were better prepared for service in units than those who had undergone Women's Army Corps basic training, and could use basic tactical skills and employ weapons necessary for individual and unit survival in a defensive battlefield environment."⁹² As a result of these trials TRADOC

instituted the Common Entry Level Training (CELT) program. The CELT (mixed-gender unit training) was scheduled to begin at Fort Jackson early in fiscal year 1978. Although men and women were initially segregated by platoons within the same company; US Army leaders believed that the more rigorous training in mixed units would provide women better tactical and weapon skills necessary for individual and unit success in a “defensive battlefield environment.” The final integration of men and women in initial entry training was completed by the end of fiscal year 1979.⁹³

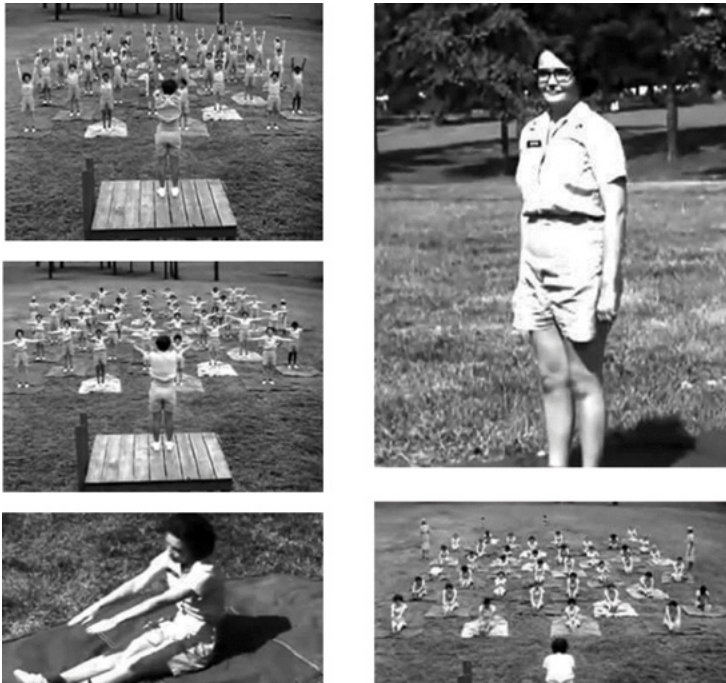


Figure 6.12. WAC Combat Readiness Training, FM 35-20, 1975.

Source: All photos are from Department of the Army, *Physical Training-Women's Army Corps (FM 35-20)*. Washington, DC, US Government Printing Office, 1975.

On 30 November 1976 the US Army reengaged the growing weight control problem with the fourth revision the Army Physical Fitness Pro-

gram (AR 600-9). The most significant aspects of this revision were the integration of *Weight Control* (AR 600-7, 1965) and *Standards for Conduct and Fitness* (AR 632-1, 1972) into AR 600-9 and the introduction of the “Army Weight Control Program” (AWCP).⁹⁴ Command authority for implementing AR 600-9 was transferred from the Chief of Staff, Military Operations to the Chief of Staff, Personnel. Chapter 1 was created to establish the regulatory requirements for the Army Weight Control Program (AWCP). The terms “obesity” (excessive accumulation of adipose tissue) and “overweight” (when weight exceeds maximum allowable standards) were defined in section 1-2. Maximal allowable weight tables were removed from Standards of Medical Fitness (AR 40-501) and published in the Appendix (p. E3).⁹⁵ The physical fitness philosophy was defined in section 1-3.a.: “It is essential to the readiness and combat-effectiveness of the US Army that every soldier be physically fit regardless of age or duty assignment.”⁹⁶ “Closely related to physical fitness are weight control and military appearance. Corrective measures at all levels of command and staff will be taken, in accordance with this regulation, when officers and soldiers do not maintain acceptable weight and military appearance standards.”⁹⁷ Indicative of a growing concern over potential harmful effects of exhaustive exercise on older personnel (>40 years of age), section 1-3.b cautioned commanders to be aware of excessive physical exhaustion; “Pride and competitiveness...may drive individuals beyond their limit of endurance with serious consequences.”⁹⁸ One example of a sign/symptom of over exhaustion was an exercise pulse rate >140 beats per minute.⁹⁹ The testing section became more generalized (must test at some point during Basic Combat Training and Advanced Individual training and regular soldiers must test annually) and less prescriptive (the US Army regulation no longer identified specific tests). The US Army’s weight control program was fully delineated in Chapter 3.¹⁰⁰

The most significant addition to AR 600-9 (1976) was Chapter 3–“Weight Control”. “Excess body fat is a serious detriment to health, longevity, stamina, and military appearance...Members who are overweight or obese must accept the personal responsibility for weight reduction and control.”¹⁰¹ This chapter further outlined the overweight standard (see Appendix–Weight Tables for Army Personnel), the process of weight loss, the commander’s responsibilities, the role of the medical officer, and disposition of chronically overweight personnel. For reference purposes the maximum allowed body weight was: males: 60”–144lbs, 72”–203lbs; females: 60”–121lbs, 72”–175 lbs. Personal complicity to a failure to achieve satisfactory progress could result in discharge from service. The implementa-

tion of a “weight control program” would turn out to be prophetic for the US Army and for once put them ahead of the physical readiness “curve”.

In 1978 the American College of Sports Medicine (ACSM) established its position stand on exercise frequency, intensity, and duration. In *Recommended Quantity and Quality of Exercise for Developing and Maintaining Fitness in Healthy Adults* the ACSM outlined the optimal amount of exercise required to achieve and maintain physical fitness in the general population. Using changes in maximum oxygen consumption (VO_{2max}), ACSM differentiated between the amount of exercise needed for general health and the amount needed to improve your level of fitness. In their position statement, which was updated in 1990 and 1998, ACSM used military readiness as their criterion to establish exercise minimums. The ACSM recommended “the frequency (3–5 times/wk), intensity (60–90% of maximum heart rate), duration (20–60 minutes of continuous aerobic activity depending on intensity), and mode (activity using large muscle groups that can be maintained continuously) of the exercise required for development and maintenance of a level of physical fitness similar to that required by all military troops for readiness.”¹⁰² In the 1978 version of the position stand, resistance exercise was an additional recommendation—conditioning of the major muscle groups at least 2 d/wk to ensure sufficient strength to perform normal activities of daily living, maintain fat-free mass (FFM), and control body weight.¹⁰³

During the late 1970’s US Army leaders became more concerned over the rigor of physical readiness training. This issue was exacerbated by concerns over a gendered-integrated initial entry training (IET) program and significant increases in number of women soldiers and came at the same time Army Chief of Staff General Edward Meyer was expanding initial entry training.¹⁰⁴ On 28 April 1978, the US Army formally dissolved the position of Director, Woman’s Army Corps and in September 1978 Congress passed a law “that disestablished the WAC as a separate Corps of the US Army effective 20 October 1978.”¹⁰⁵ Following the work of agencies like the American College of Sports Medicine and the National Strength and Conditioning Association (NSCA) and based upon the Resolutions 8 & 9 of the 1970 Physical Fitness Symposium report, General Donn Starry, Commander–TRADOC, launched a bold initiative to centralize the research and educational components of physical readiness training and thereby standardize PRT doctrine.¹⁰⁶ Four issues drove this effort: (1) a perceived lack of rigor of initial entry training (IET), (2) the complexities of the MOS-related physical fitness tests, (3) the significant increase in the accession of women into the US Army, and (4) the

lack of currency in the US Army physical fitness testing program. “The Army’s desire to utilize greater numbers of women in physically demanding, non-traditional occupations has created the need to match individual capacities with occupational demands. Research has been conducted to develop a process by which objectively determined physical demands of MOSs can be converted into gender-free physical fitness standards.”¹⁰⁷ The upcoming revision of the Advanced Physical Fitness Test gave US Army leaders an opportunity to resolve many of the outstanding issues concerning testing rigor and gender integration by refocusing the US Army physical readiness training and assessment.

To jump start General Starry’s revolutionary change to PRT, a group of civilian and military physical fitness experts meet at Airlie House, VA in late 1979 to discuss the revision of the Army Advanced Physical Fitness Test. In January 1980, General Starry met with General Meyer to “review the situation.” “They agreed that the MOS-related system was too complex and was at the root of the lower standards.”¹⁰⁸ In early February General Starry directed the “APRT Study Group” (lead by the US-AIS, FT Benning) to update the US Army’s PRT doctrine by revising and combining the doctrine currently published in FM 21-20 and FM 35-20 and in doing so develop a new physical readiness test. The new Army Physical Readiness Test had to be gender integrated, easy to administer, and require little or no equipment. The “study group” consisted of representatives from the US Army, the Marine Corps, and leading civilian physical educators.¹⁰⁹ Col. James Anderson (West Point), Col. Fred Drews (Carlisle Barracks), and Lt.Col. Robert Tetu (from DCSOPS) represented various interests from the US Army. The APRT Study Group was tasked to establish a physical fitness test that measured baseline fitness for all US Army personnel and could be administered anywhere with no equipment. In late February 1980 the APRT Study Group briefed General Starry on the proposed changes to FM 21-20, the development of a new US Army regulation—The Army Physical Fitness Program (AR 350-15) and the new Army Physical Readiness Test (APRT).¹¹⁰

On 31 October 1980 *Physical Readiness Training* (FM 21-20) was revised and published for the eighth time. This revision represented the philosophical transformation from a Vietnam-era combat readiness focus to a Cold War era nuclear-threat focus. From the Bay of Pigs invasion to the M.A.D. (mutual assured destruction) nuclear deterrence policy, the prevailing attitude among many civil and military leaders was that conventional ground warfare was obsolete. Exacerbated by the problems with an all-volunteer force comprised of an ever-increasing number of women,

senior leaders thought it was prudent to change the Army PRT focus from ground combat readiness to physical fitness and health. This paradigm shift was reinforced by secular advances in fitness development during the 1970 and 1980's with the emergence of Dr. Kenneth Cooper's aerobic movement and Arthur Jones' Nautilus movement. "The most significant impact on Service physical fitness programs in the last 30 years is the body of research dealing with cardio-respiratory endurance or "aerobics." This research, begun by Dr. Kenneth Cooper of the Air Force, has become a primary focus for many unit programs."¹¹¹ This philosophical change was most evident in the transformation of the Army Physical Readiness Test (APRT). The combat-related test items from the 1973 Advanced Physical Fitness Test (inverted crawl, horizontal ladder, and the dodge, run, and jump) were replaced with the push-up. The new three-event APRT purported to measure three areas of soldier fitness: aerobic capacity—two-mile run, upper body endurance push-up, and trunk/abdominal endurance—bent knee sit-up.¹¹² The revised test was gender integrated, required no equipment, was easy to administer, provided normative standards adjusted for physiological differences between men and women, and purported to more accurately measure physical fitness. Soldiers were required to complete the test items in order (push-ups, sit-ups, 2-mile run) in a maximum of two hours, with a min/max rest time of 10/20 minutes provided between each event.¹¹³

Once normative data had been collected, proposed Army Physical Readiness Test (APRT) standards were forwarded to the Cooper Institute for Aerobics Research and Army Research Institute for review. Dr. Cooper applied points to his adjectival ratings for aerobic capacity, e.g., Superior = 100 points, Good = 60 points, and Fair = 50 points. He further stated that 5% of the US Army should be able to score 300 points on the APRT ("max" the PT test) and 90% should pass. Lastly, he concluded if the US Army was presented with healthy recruits, through frequent, progressive and challenging training, the US Army could develop soldiers to meet and surpass the basic minimum standards.

All soldiers were required to take a record APRT two times a year with a minimum of four months between administrations. The scoring standards were established for men and women in 7-year age groups. An APRT score was determined by converting raw scores to a 100-point scale score for each event. The maximum score a soldier could earn on each event was 100 points, for a total score of 300 points. All soldiers had to attain at least 60 points (50 points during IET) on each of the three test events to pass the APRT. Minimum scores (60-point score) for 17–25-year-old men

were PU = 40, SU = 40, 2MR = 17:55; for 17–25-year-old women: PU = 16, SU = 27, 2MR = 22:14.¹¹⁴ Initial test minimums reflect that the APRT was administered in fatigue trousers, t-shirt or fatigue shirt and combat boots (commonly referred to as “utes and boots”). Initial assessments indicated that 85% of US Army personnel could pass the 3-event APRT and that 5% of soldiers tested could achieve a maximum score, indicating that the standards were sufficiently challenging. The reserve component was allowed to phase in the new APFT over a 2-year period.¹¹⁵

In terms of “content” the 1980 field manual symbolized the transient nature of US Army physical readiness training in the early 80’s. There was a significant reduction in content specificity as FM 21-20 (1973) was reduced from the 31 chapters (350 pages) to eight chapters and approximately 250 pages (1980). There were significant elaborations provided in the “physical considerations” section to address the growing understanding of the physical abilities of women. Women’s issues such as bone density, environmental concerns (heat), menstruation, pregnancy and athletic injuries were also discussed (section 1-5). In summary, FM 21-20 (1980) stated that although women are different, “this doesn’t mean that women are incapable of achieving satisfactory levels of performance.”¹¹⁶

From the initial coordination meetings of the APRT Study Group in 1979 and continuing throughout much of 1982, there were significant discussions throughout the US Army concerning the training and assessment of soldiers over 40 years of age.¹¹⁷ General Starry, TRADOC Commander, supported the concerns of the TRADOC surgeon with regard to the medical safety of soldiers over 40 taking the 3-event APRT. However, General Meyer (US Army Chief of Staff) insisted that all enlisted and officer personnel over the age of 40 would take the 3-event APRT. “The physiological deterioration which accompanies age can be slowed but not halted. There is no reason why persons over 40 should not maintain a degree of fitness commensurate with their age.”¹¹⁸ Four areas were identified that could slow the “deterioration” of aging: heredity, good health habits, exercise, and mental outlook. The level of confusion over this issue was evidenced by the special note in the Preface of FM 21-20, which warned commanders that soldiers over 40 were not authorized to take the push-up and sit-up events.¹¹⁹ As counterintuitive as it may seem today from a medical risk perspective, soldiers over 40 were only authorized to take the 2-mile run test. The ultimate compromise was a phase-in period where medical personnel would review the medical files of personnel over 40 prior to testing. Even with this concern resolved there were no scoring standards for soldiers 40 years and older in the new FM 21-20 (1980).¹²⁰

The 1980's evolved as arguably the most prolific decade for the development and dissemination of physical readiness doctrine in the history of the US Army. Motivated by Cold War pressures, the recent Soviet invasion of Afghanistan, gender integration issues, manpower issues, and public perceptions of soldier fitness and physical appearance, President Carter initiated a series of reviews designed to enhance the combat readiness of the Armed Services. With the majority of FM 21-20 (1980) completed by the USAIC study group, on 2 February 1980, President Carter directed the Department of Defense to review all military physical fitness programs.¹²¹ On 17-19 June 1980 the Secretary of Defense assembled a group of military and civilian "physical fitness experts" at Airlie House-Airlie, VA to review existing physical fitness policies and practices for the purpose of making short- and long-term recommendations.¹²² "Primary attention was given to the medical aspects of fitness, physical fitness programs and testing (especially for personnel over 40 years of age), advisability of establishing an Academy or Institute for Military Physical Fitness, weight control program(s), and nutritional aspects of physical fitness."¹²³ The two most significant outcomes of the two-day conference were a reaffirmation of physical fitness as a vital component of mission readiness and suggestions for improvements in "screening, research, leadership, and state-of-the-art service-wide programs in fitness as well as positive lifestyles."¹²⁴ The second symposium outcome prompted the formation of a Physical Training Study Group chaired by Colonel Travis Dyer. By December 1980 the Deputy Chief of Staff for Personnel (DCSPER) was already considering new "measures to strengthen and equalize penalties for officers and enlisted personnel who were overweight or out of shape".¹²⁵

One of the significant policy outcomes of the Department of Defense (DoD) Study of The Military Services Physical Fitness (which was not published until 1 April 1981) was the issuance of DoD Directive 1308.1, *Physical Fitness and Weight Control Programs* on 29 June 1981.¹²⁶ DD 1308.1 directed all services to implement a planned physical fitness program, which included a body weight/composition assessment and management program. "Physical fitness is a vital component of combat readiness and is essential to the general health and well-being of armed forces personnel."¹²⁷ The primary objectives of 1308.1 were:

- Physical fitness training and activities should be designed to develop skills needed in combat, enhance cohesion in units, promote competitive spirit, develop positive attitudes toward exercise, and promote self-confidence and self-discipline.

- Physical fitness programs must be carefully planned and supervised, follow the established principals of physical fitness training, and involve the participation of all personnel.
- Physical fitness programs should improve efficiency in the cardiorespiratory system and/or muscular strength and endurance when conducted with the appropriate amount of regularity, intensity, and duration.
- Provide a uniform system and standards for weight control and obesity; overweight status to be determined by the percentage of body fatness.
- The DoD weight control program will enhance the attainment and retention of good health, physical fitness, and a trim military appearance.¹²⁸

After taking office on 20 January 1981 President Ronald Reagan continued ongoing efforts to enhance and modernize the US Army's physical readiness training program. On 21 December 1981 Lieutenant General Julius Becton, Deputy Commander for Training-TRADOC, convened a meeting to discuss the way ahead for US Army physical readiness training. "Representatives attended from the Deputy Chief of Staff for Operations, The Surgeon General, Fort Benning, the Army War College, West Point, and the Soldier Support Center."¹²⁹ After significant discussion among these agencies consensus was achieved concerning the development of a stand-alone organization that would assume responsibility for physical fitness training doctrine. As a result of this meeting the Soldier Support Center at FT Benjamin Harrison was given proponency for physical fitness doctrine, the Army War College was tasked to develop a fitness research institute, and the Infantry Center at FT Benning was tasked to refine the physical fitness test. On 7 January 1982 a coordinating meeting was held at FT Ben Harrison and the Physical Fitness Task Force was established (the task force would soon evolve into the Soldier Physical Fitness Center).¹³⁰

In an attempt to revitalize the US Army's image following the Vietnam Conflict, Secretary of the Army, John O. Marsh, proposed the development of an annual US Army "theme" to emphasize some positive aspect of the US Army. Secretary Marsh designated 1982 as the Army's Year of Fitness.¹³¹ As part of the US Army's transition to a "schools" training model for solving major US Army problems and in conjunction with the "Year of Fitness", on 3 May 1982 Secretary Marsh formally created the US Army Soldier Physical Fitness Center (USASPFC) at Fort Benjamin Harrison. The operational element of the USASPFC was the US Army Soldier Physical Fitness School.¹³²

The readiness of the United States Army begins with the physical fitness of the Individual soldier and the non-commissioned officers and the officers who lead them. We are heirs of high standards that our predecessors established and sustained in peace and war. We will not forget this proud heritage. That is our charge today.¹³³

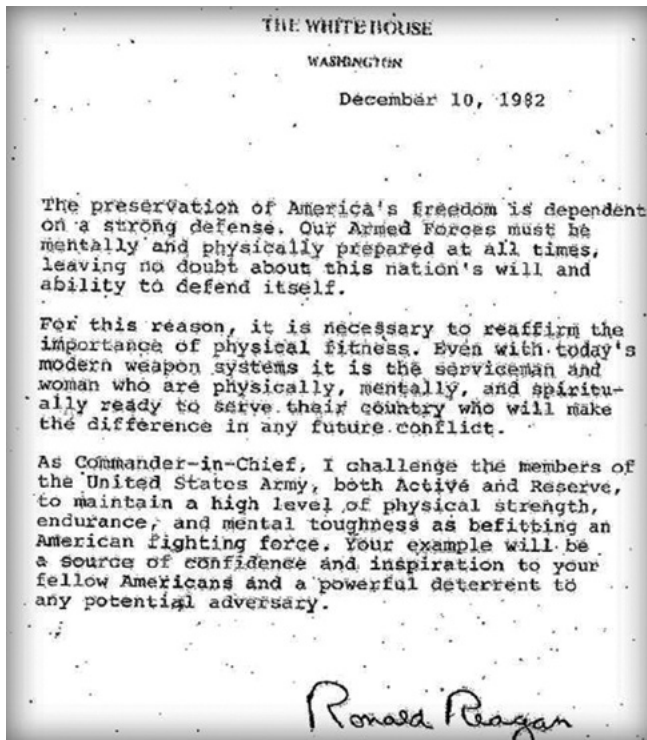


Figure 6.13. Message from President Ronald Reagan-DA PM 350-18, 1983.¹³⁴

Source: Photo from a government publication, 1983.

In an attempt to assuage the concerns of the US Army Infantry Center over the transition of proponentcy for PRT doctrine to FT Benjamin Harrison, on 8 April 1982 Lieutenant General Julius Becton brokered a memorandum of understanding between Major General Daniel French, Commander-USA Soldier Support Center and the Major General R.L.

Wetzel, Commander–United States Army Infantry School. While the USAIS would “assist” with program development, standards, and assessments, the USASPFC would “act as the focal point for the Army Physical Fitness System.”¹³⁵

The US Army Soldier Physical Fitness Center (USASPFC) began operations in mid-1982 with three officers, one non-commissioned officer, and two civilians and a budget of \$87,000.¹³⁶ As a subordinate organization to the Soldier Support Center, the USASPFC was task-organized into three divisions: (1) Training and Doctrine–training analysis, design, and development, (2) Physical Fitness Academy–institutional instruction for physical fitness training, and (3) Sports Division–prepare and implement military competitive activities. These divisions were similar in scope and function to the operational units recommended by the Military Services Physical Fitness study group.¹³⁷ For the first time the US Army was prepared to properly resource soldier physical readiness training, research, and education. The “Army Physical Fitness System” was to be composed of five elements: physical conditioning and testing, education, research, nutrition and diet, and weight control.

On 15 July 1982, in a preemptive move to separate the US Army’s physical fitness doctrine from the weight control doctrine, Headquarters, DA published *The Army Physical Fitness Program* (AR 350-15). AR 350-15 set forth the policies and responsibilities for implementing the US Army’s physical fitness program and superseded AR 600-9-Chapter 2–“Army Physical Program” (1976), effectively decoupling physical training regulations and body weight/composition regulations.¹³⁸ The Deputy Chief of Staff for Operations (DSCOPS) was given responsibility for the Army Physical Fitness Program. The objective of AR 350-15 was to develop and sustain five physical qualities in all soldiers: (1) stamina; (2) quick reactions, flexibility, coordination, and speed; (3) fighting spirit–will to win; (4) self-discipline; and (5) a health-enhancing lifestyle. Some interesting components to the program were the requirements to develop (1) an Army-wide database on physical fitness performance, (2) a medical excusal policy for soldiers on profiles (AR 40-501), (3) a heart disease screening for soldiers over 40, and (4) the requirement for the USMA Superintendent to provide technical advice/expertise to DA on physical training.¹³⁹ Section II: Implementing the Program outlined training requirements, special fitness programs, and testing requirements and standards. AR 350-15 was relative prescriptive for Initial Entry Training, identifying seven physical skills and describing the program of instruction (POI) as “carefully structured, progressive and challenging.”¹⁴⁰

Active component US Army members up to the age of 60 were required to take the Army Physical Readiness Test (APRT) twice per year with at least four months between tests. DA Form 705 was the designated “physical fitness scorecard” for the APRT. APRT failures were flagged and entered into a remedial physical training program. Repeated failures “(that is, failure of three consecutive record tests each a minimum of 4 months apart)” were subject to separation from the Service under the provisions of 635-100 (Officers) and 635-200 (Enlisted). Personnel attending military schools were required to pass an APRT in order to attain a certificate of graduation. In an attempt to encourage soldiers to continually improve their physical fitness, Commanders were encouraged to recognize and reward soldiers who scored between 275 and 300 on the APRT.¹⁴¹

To sustain the momentum initiated by the June 1980 DoD study of Military Services Physical Fitness and the December 1981 TRADOC fitness coordination meeting, the fledgling USASFC hosted a Physical Fitness Training Seminar on 19-23 July in Indianapolis, IN. Representatives from throughout the US Army (Surgeon General, USA Reserve, Infantry School, US MA, Army War College, etc.) were in attendance. Topics such as running shoes, fitness programs, nutritional drinks, and the Aerobics Institute program were discussed. There was also discussion on the new US Army regulation, *The Army Physical Fitness Program* (AR 350-15), which was published on 15 April 1982 and the pending changes to *The Army Weight Control Program* (AR 600-9).

As part of the Army Year of Fitness General Glenn K. Otis, Commander, TRADOC took a more active role in fitness development. In September 1982 General Otis sent a communiqué to all commanders outlining his position on soldier fitness. The message provided guidance on four issues: (1) units will teach soldiers about physical fitness as well as conduct physical readiness training, (2) all soldiers enrolled in initial entry training and US Army courses greater than 56 days will pass an APRT prior to graduation, (3) running shoes will be permitted for training and testing, and (4) the Soldier Physical Fitness School will prepare a fitness instructional package to be used to educate soldiers.¹⁴² At the same time a General Officer Steering Committee (GOSC) reported that the US Army was losing too many senior leaders to premature medical retirements and sudden cardiac death because “they were physically unprepared for the physical and mental demands of strategic leadership”.¹⁴³ To resolve these concerns, later in 1982 General Otis established the Army Physical Fitness Research Institute (APFRI) at the Army War College. APFRI’s mission was to provide research on and education for senior leaders attending the

US Army War College to ensure that strategic leaders would set the conditions for improving force readiness through improved physical fitness.¹⁴⁴

Following the recommendation of the DoD Military Services Physical Fitness study group (1981), in early 1983 the USASPFC created a program of instruction designed to develop subject matter experts in physical training.¹⁴⁵ The Master Fitness Trainer (MFT) course (with the associated “6P” Army Skill Identifier ASI) was a comprehensive, 4-week resident course taught at FT Ben Harrison by qualified fitness professionals. The program of instruction involved approximately 80 hours of classroom instruction and 80 hours of practical instruction.¹⁴⁶ The curriculum consisted of lessons on the skeletal system, the cardiovascular/respiratory systems, muscle physiology, exercise in extreme environments, sports medicine/injury prevention, strength and cardio-respiratory training, flexibility, and nutrition/body composition. The MFT course was also incorporated into Advanced Individual Training (AIT) for the “03C” military occupational specialty (Physical Activity Specialist). The MFT course was later offered via mobile training teams (MTTs) at CONUS and OCONUS installations inside and outside the United States and was also offered at the United States Military Academy by the Department of Physical Education in a three course 60 lesson format. From 1985–2002 approximately 10,000 officers received MFT certification at West Point.¹⁴⁷

On 15 April 1983 AR 600-9 *The Army Weight Control Program* was revised and published for the fifth time to accomplish two goals: (1) to complete the alignment with AR 350-15, which was published on 15 July, 1982, and (2) to fully comply with DoD Directive 1308.1, which was published two years earlier. Since AR 350-15 provided regulatory control for the US Army physical fitness program, in the 1983 AR 600-9 revision, Chapter 2 was deleted and AR 600-9 became the sole source document for the Army Weight Control Program (AWCP). The Deputy Chief of Staff – Personnel (DCSPER) was given responsibility for the Army Weight Control Program (AWCP).

In an attempt to differentiate between fat and fat-free mass, the new AWCP required that body composition (measured as a percentage of fat mass) be “determined for all personnel—(1) whose body weight exceeds the screening table weight in appendix A, or (2) when the unit commander or supervisor determines that the individual’s appearance suggests that body fat is excessive.”¹⁴⁸ There was no mention of how body composition was to be assessed. AR 600-9 stated that “percent body fat measurements will be accomplished by health care personnel (health care personnel are defined in the glossary).”¹⁴⁹ Although the DoD-wide body composition

goals were 20% for males and 26% for females, the maximum allowable body fat level ranged from 20-26% for males and from 28-34% for females depending upon age. Extensive guidance was provided to commanders and supervisors relative to proper exercise, nutrition, and weight loss while personnel were enrolled in the AWCP. Failure to make adequate progress was grounds for a bar against reenlistment or discharge from the US Army.¹⁵⁰

On 25 October 1983 the United States launched operation “Urgent Fury”, ostensibly to protect American interests in the Caribbean and rescue American students attending medical school in Grenada. Joint US forces composed of Marines, Army Rangers, and Navy Seals lead the initial assault.¹⁵¹ Due to the training and combat support by the Cuban Army, resistance was greater than expected. After the initial assault soldiers from the 82nd Airborne participated in “mop-up” exercises, US forces suffered 135 casualties: 19 KIA and 116 wounded.¹⁵² Although the mission was successful with relatively few casualties, there were significant after-action discussions relative to the effects of combat loads and heat on physical performance. One of the most glaring problems of the Grenada invasion was the failure by many commanders to maintain load discipline, which lead to ineffective combat soldiers. “We were like slow-moving turtles. My rucksack weighed 120 pounds. I would get up and rush for 10-15 seconds...and collapse. After a few rushes, I was physically unable to [do] more.”¹⁵³ Although the Grenada assault force was relatively small and composed primarily of elite troops, the experience served to reinforce the principle of “train as you fight” and the contribution of physical readiness to combat effectiveness.

1982 to 1990 was a period of dynamic growth and productivity for the USASPFC. On 15 October 1982 the Center developed and published the *Commanders Handbook on Physical Fitness* (DA PAM 350-15). Although the pamphlet focused on program design to enhance unit fitness, a comprehensive individual aerobic program chart was presented in Appendix D.¹⁵⁴ During 1983, the soldier Physical Fitness Center’s name morphed into the Soldier Physical Fitness School (SPFS) in order to more accurately reflect its assigned mission of educating the US Army in all aspects of physical fitness. On 1 May 1983 the SPFS developed and published the *Individual’s Handbook on Physical Fitness* (DA PAM 350-18). As proscribed in the forward: “this handbook was developed for you...read it now, do it now, tomorrow is too late”.¹⁵⁵ In November, 1984 the School developed and published *Family Fitness Handbook* (DA PAM 350-21). PAM 350-21 stressed the importance of the broader US Army family and how personal

fitness could enhance overall soldier effectiveness. The USASPFS also developed, revised, and published other US Army manuals and materials to support Army PRT and motivate soldiers to maintain their personal fitness: October 1983: *Nautilus Training Principles*; 4 November 1983: *You and the Army Physical Readiness Test (APRT)* (TC 21-450); 28 August 1985: *Physical Fitness Training* (FM 21-20); 30 December 1985: *Army Physical Fitness Program* (AR 350-15); September 1987: *Army Health Promotion Program—Nutrition & Weight Control*; 3 November 1989: *Army Physical Fitness Program* (AR 350-15).

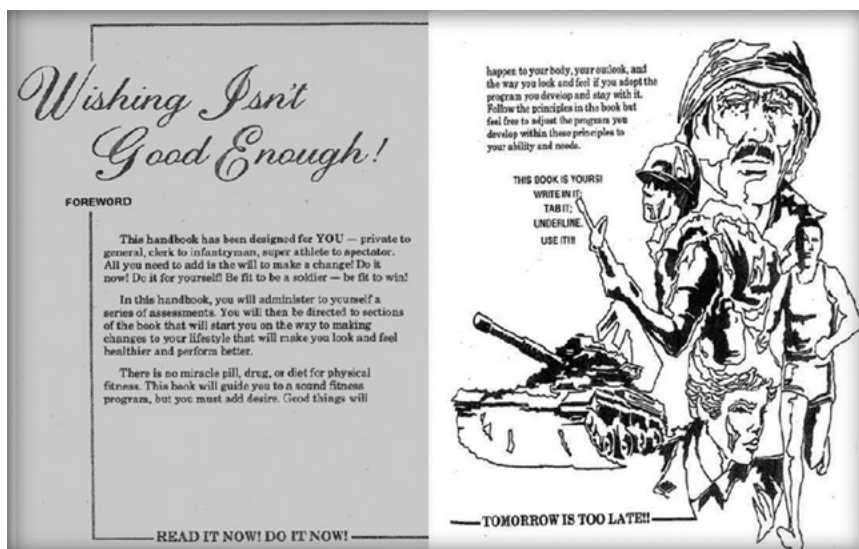


Figure 6.14. Introduction to DA PAM 350-18, 1983.

Source: Photo from a government publication, 1983.

Following long-standing concerns about combat loads (supported by anecdotal reports from Grenada), USASPFS continued their aggressive research program as School personnel (Dr. Michael Bahrke and Lt. Col. John O’Conner, Ph.D.) paired with USARIEM to study “soldier performance and mood states following strenuous road march”.¹⁵⁶ The Soldier Physical Fitness School and US ARIEM were tasked to provide new load-bearing guidelines in the next revision of *Physical Fitness Training* (FM 21-20). The SPFS advocated “a minimum of four physical training

sessions per week for light infantrymen. These include two sessions of muscular strength/endurance development, a cardio-respiratory workout, and a road march/load-bearing session, which makes increased demands for distance, load, speed, and terrain difficulty”.¹⁵⁷

During the summer of 1983, General William R. Richardson, Commander, TRADOC tasked the SPFS to study/update APRT standards. From October 1983–February 1984, soldiers were tested at FT Knox, FT Jackson, FT Ben Harrison, and Schofield Barracks. Data for over 4,000 soldiers were collected and utilized to formulate new testing standards by age and gender. Although the new APRT standards were never implemented other recommendations from this study found their way into PRT policy and doctrine including: 5-year age increments for APRT standards, standards for a fitness badge, and an extended APRT scoring scale.¹⁵⁸ During the standards review in the spring and summer of 1984 the SPFS also reviewed the three items in the current APRT (push-ups, sit-ups, and 2-mile run). After collecting data at FT Ben Harrison, FT Sam Houston, and FT Gordon, the SPFS recommended adding a fourth event to the APRT–pull-ups/flexed arm hang. They further recommended that TRADOC staff this proposal to the MACOMS, OCAR, NGB & DA, send a warning order to the field, and set an implementation date of July 1985, to coincide with the publication of the revised FM 21-20.¹⁵⁹

By 1985 the SPFS’s “table of organization and equipment” included 32 officers, 28 enlisted, and 38 civilian personnel with an annual budget of 5.9 million dollars. SPFS personnel edited and published the ninth revision of *Physical Fitness Training* (FM 21-20) on 28 August 1985. Based upon the proliferation of secular and military physical fitness research published between 1980 and 1985, one would have expected significant changes in the 1985 revision of FM 21-20. There were several new chapters–aerobics and running, muscle strength and endurance, and nutrition and fitness, and injuries and information on calculating a target heart rate and the physiological differences between men/women (see Appendix A and B), however there were no significant doctrinal changes in the 1985 revision.¹⁶⁰

In keeping with the paradigm shift from combat readiness to general physical fitness there were two changes to the US Army’s fitness test. First, the name “Army Physical Readiness Test” was changed to the “Army Physical Fitness Test” (APFT).¹⁶¹ Second, soldiers were approved to “wear attire that is appropriate for physical training (shorts, t-shirts, socks, running shoes)” when training for and taking the APFT.¹⁶² During the revision process, however, the SPFS was unable to convince US Army leaders to adopt new minimum performance standards. The only APFT

standards presented in the 1985 revision of FM 21-20 were in Figure 11-1, which depicted a copy of the October 1980 APRT “card” (DA 705).¹⁶³ Clearly the absence of new standards had to be resolved quickly, since completing the two-mile run in “running shoes” produced significantly faster times than running in combat boots.

To address another recommendation of the DoD Study of Military Services Physical Fitness, FM 21-20 (1985) provided an extensive discussion of “Soldiers with Profiles”. Profiles were classified as temporary or permanent. Soldiers on temporary profiles were scheduled for a 3-event APFT following the termination of their profile; soldiers were allowed two times the length of the profile not to exceed 90 days to rehabilitate their illness or injury and train for a record test. Soldiers with permanent profiles (i.e., permanently prohibited from performing the 2-mile run) were offered three alternate aerobic events: 800-yard swim, 6.2-mile stationary/conventional (1-speed) bicycle test, or the 3-mile walk. Minimum pass times for each alternate event were published in Figure 11-6 (page 11-10). For an APFT to be considered a valid, record test it had to contain an aerobic event.

On 30 December 1985 *The Army Physical Fitness Program* (AR 350-15) was revised and published for the second time. The Deputy Chief of Staff–Operations (DCSOPS) retained responsibility for the Army Physical Fitness Program and commanders were reminded to “make every effort to design and tailor programs according to what their soldiers may be expected to do in combat.”¹⁶⁴ There was a significant increase in specificity as the outcome objectives were increased from five to eight. The term “stamina” was defined as cardiorespiratory endurance, muscular strength and endurance, and anaerobic conditioning. Flexibility, complete spirit, self-discipline, adherence to body compositions standards, and a healthy lifestyle were the other five objectives. Through the SPFS, TRADOC was tasked to develop and field the US Army’s physical fitness doctrine, training, education programs, and performance standards. Two additional skills were added to the initial entry training POI; forced marching with loads (to include cross-country movement) and strength development (such as rope climbing, pull-ups, and resistance exercises).¹⁶⁵ By 1985 US Army leaders were already observing a transition in PRT from a focus on combat readiness to performing well on the 3-event APFT. Commanders were reminded that while physical fitness testing gives soldiers an incentive to stay in good shape, commanders should use these results only as general indicators of their unit’s fitness. “Physical fitness testing will not form the foundation of unit or individual fitness programs...Fitness testing is

designed to ensure the maintenance of a base level of physical fitness essential for every soldier in the Army.”¹⁶⁶

At the same time commanders were admonished not to allow the APFT to form the core of their PRT programs, the APFT continued to be a graduation requirement for most advanced military schools and a continuation of service. If personnel failed to achieve the minimum US APFT standards prior to graduation, the failure was noted in their final academic report and they were designated as non-graduates and returned to their units or to their next assignment. Repetitive APFT failures were subject to a bar from re-enlistment or separation from the US Army. “A repetitive failure occurs when a record test is taken and failed, the soldier provided adequate time and assistance to improve his performance, and fails the test again. It should take no longer than 8 weeks of conditioning for a soldier to achieve minimum passing standards on the APFT.”¹⁶⁷ Commanders were encouraged to incentivize APFT performance by recognizing soldiers who score over 270 on the APFT for outstanding performance.

From 1983 to 1984 the SPFS had attempted to answer US Army-wide concerns related to APFT scoring standards. There were three major concerns: (1) the scientific authenticity of the criterion-referenced standards that were used to convert raw scores to 100-point scale scores, (2) testing protocols and standards for soldiers over 40 years of age, and (3) the effects of uniform changes on athletic performance. These concerns were not resolved in time for the 3 August 1985 publication of FM 21-20; therefore Headquarters DA published Change No. 1 to FM 21-20 on 23 June 1986.¹⁶⁸ In Change 1 (1986) age group intervals were reduced from nine to five years, per the recommendation from the SPFS in 1984. By choosing a 5-year age interval, a 37–41-year-old interval was established, effectively breaking the sacred 40-year-old barrier. Minimum passing scores (60 points) for 17–21-year-old men and women change significantly for all three events, especially sit-ups for females and 2MR times for males and females.¹⁶⁹ Minimum 1986 performance scores were (1985 standards): Male—PU = 42 (40), SU = 52 (40), 2MR = 15:54 (17:55); Female: PU = 18 (16), SU = 50 (27), 2MR = 18:54 (22:14).¹⁷⁰

On 26 September 1986 Headquarters, DA published a consolidated regulatory document entitled *Training in Units* (AR 350-41). As stated in the Summary of Changes, AR 350-41 was designed to provide an overview of US Army training goals and philosophy, outline commanders responsibilities, outline training policy and minimum readiness requirements, highlight the training management process, standardize training requirements, and proscribe the “Common Military Training Program.” Per-

haps since AR 350-15 was already widely used throughout the US Army, little attention was given to physical readiness training in the new AR 350-41. Two paragraphs: “physical training” and “training for combat” were presented in Chapter 3: “Forces (Unit) Training”—Section 6: “Physical Fitness”. The key element in AR 350-41 for US Army PRT was the prescription for “innovative, demanding fitness programs oriented to the physical challenges of combat are essential to any unit physical training strategy.”¹⁷¹ The physical readiness/fitness training issues for the US Army were becoming obscured by multiple manuals and regulations. By the end of 1986 to fully understand every aspect of physical readiness training and weight control commanders had to have a working knowledge of DoD Directive 1308.1 (1981), AR 350-1 (1983), AR 350-15 (1985), FM 21-20 (1985), FM 21-20, Change 1 (1986), AR 600-9 (1986), and AR 350-41 (1986).

With the dramatic changes in minimum APFT standards (Change 1, 1986), it was not surprising that US Army leaders soon became concerned with soldier retention. Since the 100-point raw scores increased significantly, there were also “motivational” concerns relative to a soldier’s ability to earn the Army Physical Fitness Badge (APFB) or to “max” the APFT (achieve a total score of 300), which were established as incentives for exceptional performance. On several occasions during 1987 Lieutenant General Schwarzkopf (DCSOPS) expressed concerns that US Army height/weight and APFT standards were too stringent.¹⁷² “In 1988 the US Army Physical Fitness School (USAPFS) was once again tasked to review the current status of physical fitness in active US Army personnel (the 1988 Active Army Physical Fitness Survey). Staff members from US APFS and other US Army agencies visited 14 military installations across the United States and administered the Army Physical Fitness Test (APFT) to over 6000 soldiers.”¹⁷³ The study validated Schwarzkopf’s concerns that less than 5% of the US Army was achieving a maximum score on the APFT and less than 10% was earning the APFB.¹⁷⁴ Although women were found to perform significantly better than in 1984, data analysis showed higher failure rates among the youngest age groups in both genders. The most frequently failed event for the younger soldiers was the 2-mile run and older soldiers were passing at a higher rate. US APFS recommended new standards that were more age and gender equitable and proposed some recommended changes to the scoring standards. The Office of the Surgeon General non-concurred with the recommendation on the basis that: “moral impact on women, request for “criterion based” standards, increased risk for the 50+ year groups, psychological trauma on those who minimal-

ly pass, and a perception that the APFT will be used to downsize.”¹⁷⁵ The proposed, more equitable (for some more rigorous) standards were never approved.

The 3-event Army Physical Fitness Test (APFT) quickly became the *raison d'être* for many US Army commanders to the exclusion of battle-focused PRT. Incentives such as the Army Physical Fitness Badge and use of APFT scores on Officer Evaluation Reports (OERs) and Non-commissioned Officer Evaluation Reports (NCOERs) fueled an obsessive focus on the APFT. By the late 1980's US Army leaders began to recognize the folly of this pursuit. In 1987 Major Mark Hertling published a thesis at the Army War College entitled *Physical Training for the Modern Battlefield: Are We Tough Enough*. In Chapter 5 he provided a detailed analysis of US Army fitness levels, in particular addressing the flight from combat-related PRT and assessment to a more “corporate fitness” model.¹⁷⁶ Hertling was particularly critical of the focus of the Master Fitness Trainer curriculum, which he thought spent too much time addressing “unit weaknesses on PT testing and overweight or “special population” soldiers rather than the development of combat-specific training programs.”¹⁷⁷ Hertling concluded his analysis by posing three recommendations: (1) the US Army must deemphasize the current three-event PT test as a measure of physical readiness; (2) researchers must provide field commanders PRT programs that will prepare soldiers for contingency missions; and (3) the Master Fitness Trainer Course should be expanded from four to five weeks to increase the emphasis on physical “readiness” versus physical “fitness.”¹⁷⁸

On 10 June 1987 Headquarters DA published an extensive sixth revision of *The Army Weight Control Program* (AR 600-9). Incorporated in this revision was a detailed explication of the AWCP duties for Master Fitness Trainers (MFT). MFTs were tasked to prescribe proper exercises to assist soldiers assigned to AWCP in determining, achieving and maintaining an appropriate personal weight and assist commanders in developing proactive physical fitness programs.¹⁷⁹ There was also a significant change in who was permitted to assess body composition; in AR 600-9 (1983) percent body fat was measured by a “health care professional” (e.g., trained physician, nurse, dietician, etc.) ; in AR 600-9 (1987) percent body fat was measured “by company or similar level commanders (or their designee) in accordance with standard methods prescribed in Appendix B to this regulation.”¹⁸⁰ Soldiers will be measured by individuals of the same gender.”¹⁸¹

Company level commanders were directed to utilize measuring tapes to obtain the circumference measures. Detailed instructions were provid-

ed in Appendix B, “Standard Methods for Determining Body Fat Using Body Circumferences, Height and Weight”. After obtaining the soldier’s height and weight, the grader would take two circumference measures for men (neck and abdomen) and four circumference measures for women (neck, forearm, wrist, hip). The body fat worksheet (DA Form 5500-R and 5501-R) allowed the grader to convert raw circumference measures into standardized “factor” scores, which could then be used to calculate a soldier’s body composition (percent body fat). Maximum body fat standards were provided by age and gender and remained unchanged from AR 600-9 (1983).¹⁸² A second major addition to AR 600-9 was Appendix C–“Nutrition Guide to the Weight Control Program”. This eight-page appendix provided a myriad of information such as basic dietary strategies; obesity risks; what are calories, macro- and micronutrients; and portion control. Several 1200-calorie menus were also provided. The assessment of body composition and subsequent compliance with the Army Weight Control Program grew into a significant emotional issue for soldiers. Failure to meet body fat standards could result in a bar to re-enlistment or extension of enlistment. Soldiers were often flagged “for favorable actions” while on the AWCP. Failure to meet AWCP benchmarks could have negative implications for promotion, professional military or civilian schooling, or assignment to command positions.¹⁸³

On 3 November 1989 Headquarters DA revised and published *The Army Physical Fitness Program* (AR 350-15) for the third time. The DSCOPS retained responsibility for the Army Physical Fitness Program while TRADOC managed the specifics of training doctrine and standards. In the 1989 revision the overarching outcome objective was reversed to read: “enhance combat readiness by developing and sustaining a high level of physical fitness”. The number of program objectives was increased from eight (1985) to nine, with the addition of the “ability to cope with psychological stress.” HQDA retained the two tests/year APFT requirement and mandated an interval of at least 4 months between testing. In a move to align AR 350-15 with FM 21-20 (1985) alternate aerobic events were specified for soldiers on permanent medical profiles: 800-yard swim, 6.2-mile bike ride (stationary or 1-speed bike), or the 2.5-mile walk.¹⁸⁴

The APFT continued to serve as an incentive and a “threat”. Although authorized in mid-1986, the Army Physical Fitness Badge was formally introduced in the 1989 revision of AR 350-15. “Soldiers who score 290 or above on the APFT and meet body fat standards will be awarded the Physical Fitness Badge for physical fitness excellence in accordance to AR 672-5-1. Commanders are encouraged to commend soldiers who

score over 270 points on the APFT for outstanding performance.”¹⁸⁵ Active component US Army soldiers without a medical profile were required to remediate an APFT failure within three (3) months; Reserve component soldiers were allowed six (6) months. Soldiers who failed to achieve the minimum requirements on the APFT and “displayed no significant, continuing progress” were not allowed to graduate from advanced military schools, were flagged for favorable actions (AR 600-8-2), were barred from re-enlistment, and ultimately were subject to separation from the Service.

From 1985 to 1990 the US Army reached the zenith of support for physical readiness programming. The USASPFS was fully resourced by the US Army and USARIEM (Institute for Environmental Medicine) and CHPPM (Health Promotion/Preventive Medicine) provided significant research support for program development and assessment. The Master Fitness Trainer program was educating thousands of soldiers, Officers, and USMA cadets each year, to provide PRT subject matter expertise for unit commanders. Approximately 1000 active and 500 reserve component personnel enrolled in the 4-week resident MFT course at FT Benjamin Harrison during 1989 and mobile training teams delivered the curriculum to troops in Europe and Korea. TRADOC was even staffing the concept of adding the Master Fitness Trainer program to all US Army professional schooling for officers and NCOs in a move to further improve physical readiness training throughout the US Army.¹⁸⁶ However, as has been the case throughout US Army history, this renaissance in US Army PRT would not last.

Notes

1. Paul Cook, *How Did A Lack Of Strategic and Operational Vision Impair the Army's Ability to Conduct Tactical Operations in Korea in the Summer Of 1950?* (MA thesis, US Army Command and General Staff College; FT Leavenworth, KS, 2002), iii; Roy K. Flint, "Task Force Smith and the 24th Division: Delay and Withdrawal, 5-19 July 1950," in *America's First Battles 1776-1965*, ed. Charles E. Heller and William A. Stoff (Lawrence, KS: University Press of Kansas, 1986), 271.
2. William L. Worden, *General Dean's Story as Told by William F. Dean* (New York: The Viking Press, 1954), 12-16; Flint, "Task Force Smith", 269.
3. Gordon R. Sullivan, "A Trained and Ready Army: The Way Ahead," *Military Review* 71:11 (November, 1991): 9.
4. Max Hastings, *The Korean War* (New York: Simon and Schuster, 1987), 78, 81, 87, 94-95.
5. Jonathan House, *Toward Combined Arms Warfare: A Survey of 20th-Century Tactics, Doctrine, and Organization* (FT Leavenworth, KS: US Army Command and General Staff College, 1984), 149.
6. Note: although Task Force Smith had some WWII combat veterans only about one man in six had combat experience and most of the men were young, twenty years or less (Roy Appleman, *The US Army in the Korean War: South to the Naktong, North to the Yalu* (Washington, DC: Center for Military History, 1992), 61.
7. Theodore Fehrenbach, *This Kind of War: A Study in Unpreparedness* (New York: The MacMillan Company, 1963), 97-106; Clay Blair, *The Forgotten War: America in Korea 1950-1953* (New York: Times Books, 1987), 102.
8. Michael Cannon, "Task Force Smith: A Study in (Un)Preparedness and (Ir)Responsibility," *Military Review* 57 (February, 1988): 64; Cook, *How Did A Lack Of Strategic*, 12, 99; William J. Davies, *Task Force Smith--A Leadership Failure?* (Study Project, Carlisle Barracks, PA: US Army War College, 1992), 7,9; Flint, "Task Force Smith," 266; Michael D. Krause, "History of U.S. Army Soldier Physical Fitness," in *National Conference on Military Physical Fitness-Proceedings Report*, ed. Lois A. Hale (Washington, DC: National Defense University, 1990), 22.
9. Cook, *How Did a Lack of Strategic*, 20; Note: Cook was summarizing Cannon, "Task Force Smith", 73.
10. John F. Kennedy, "The Soft American," *Sports Illustrated* 12:26 (December 26, 1960): 15.
11. Cook, *How Did A Lack Of Strategic*, 117.
12. Unpublished Graduate Survey, conducted by the Department of Physical Education, United States Military Academy, October, 1951.
13. Francis Greene, *Physical Fitness and Physical Training in Korea--Survey of USMA graduates*; unpublished; 22 October 1951, 1.

14. Department of the Army, *Physical Readiness Training-FM 21-20* (Washington: US Government Printing Office, 1957), 10.

15. Note: On 26 October 1951 Changes No. 1 (C 1) to FM 21-20 (1950) was published; C1 provided a revision of the confidence obstacle course and the addition of Appendix II—a synopsis version of PRT including a restatement of the purpose, conditioning activities and drills.

16. Note: the US perception of technological superiority was crushed on 4 October 1957 when the Soviet Union successfully launched the satellite “Sputnik I” (see history.nasa.gov/sputnik).

17. Note: Hans Kraus would later become the personal physiotherapist to President John F. Kennedy; Ruth Hirshland was the former Ruth “Bonnie” Prudden, who would be an instrumental figure in movement education in the United States throughout the late 20th Century; the primary objective of their research on “hypokinetic disease” was to draw attention to posture and lower back problems in American youth; the connection between Kraus and Hirshland was their love of climbing.

18. Hans Kraus, and Bonnie Prudden, “Muscular Fitness and Health,” *Journal of the American Association for Health, Physical Education, Recreation* 24:10 (December, 1953): 17-19; Hans Kraus, and Ruth P. Hirshland, “Minimum Muscular Fitness Tests in School Children,” *Research Quarterly*, 25 (1954): 177-178.

19. R. H. Boyle, “The Report that Shocked the President,” *Sports Illustrated* (15 August 1955): 31; Note: Ruth “Bonnie” Prudden married her climbing partner Dick Hirschland in the 1940’s and originally published under the name Ruth P. Hirschland; in the early 1950’s Prudden divorced Hirschland and resumed the use of her maiden name Bonnie Prudden (see Laura Watermen and Guy Waterman, *Yankee Rock & Ice: A History of Climbing in the Northeastern United States* (Mechanicsburg, PA: StackPole Books, 2002), 141).

20. Julie Sturgeon and Janice Meer. *The First 50 Years 1956-2006—The President’s Council on Physical Fitness and Sports Revisits Its Roots and Charts Its Future*, (no date), 42 (document can be accessed at: <http://www.fitness.gov/50thanniversary/toolkit-firstfiftyyears.htm> (accessed 14 September 2011)).

21. Department of Defense, *Study of the Military Services Physical Fitness* (Washington DC, 3 April 1981), 3.35; Note: the US Army’s FY 1954 appropriation budget was cut approximately \$5.3 billion (41%).

22. “Move to Close Army School Scored.” *The Times-News*, 5 October 1953.

23. John F. Kennedy, *Remarks by Senator John F. Kennedy on Defense Department Appropriations Bill to the Senate on 17 June 1954*, JFK Presidential Library and Museum (1954): np; Note: this is a redaction of Kennedy’s original speech accessed 20 December 2011 at <http://www.jfklibrary.org/Research/Ready-Reference/JFK-Speeches/Remarks-by-Senator-John-F-Kennedy-on-Defense-Department-Appropriation-Bill-to-Senate-on-June-17-1954.aspx>.

24. “Move to Close Army School Scored.” *The Times-News*, 5 October 1953.

25. Department of the Army, *Physical Training-Women's Army Corps (FM 35-20)* (Washington, DC: US Government Printing Office, 1956), 5, 103.
26. Department of the Army, *Physical Readiness Training (FM 21-20)* (Washington, DC: US Government Printing Office, 1957), 58; Department of the Army, *Physical Conditioning (TM 21-200)* (Washington: US Government Publishing Office, 1957), 76.
27. Department of the Army, *Physical Conditioning (TM 21-200)*, 5-10.
28. Department of the Army, *Physical Conditioning (TM 21-200)*, 466-467; John P. Ladd, *US Army Physical Fitness Testing: Past, Present and Future* (Student paper written for the Communicative Arts Program, March 1971), 17-18; Note: the PETB and PAT were taken in utilities and boots.
29. Department of the Army, *Physical Readiness Training (FM 21-20)*, 11.
30. Note: there would ultimately be four more fitness "seminars": 1970, 1981, 1990, 2010.
31. *Physical Fitness Seminar Report* (FT Benning, GA United States Army Infantry School, April 1958), i.
32. *Physical Fitness Seminar Report* (1958), 2; Note: the Ranger Department at FT Benning assumed control of PRT doctrine after the Physical Training School at FT Bragg was closed in 1953.
33. *Physical Fitness Seminar Report* (1958), 4.
34. *Physical Fitness Seminar Report* (1958), 30.
35. *Physical Fitness Seminar Report* (1958), 31.
36. *Physical Fitness Seminar Report* (1958), 32.
37. *Physical Fitness Seminar Report* (1958), 33.
38. *Physical Fitness Seminar Report* (1958), 34.
39. Kennedy, "The Soft American", 16; for all practical purposes the national effort to enhance physical fitness ended with the death of President John Kennedy on 22 November 1963.
40. Ladd, *US Army Physical Fitness Testing*, 19; Department of the Army, *Physical Conditioning-TM 21-200, Change 1* (Washington: US Government Publishing Office, 1959), 1.
41. Note: Soldiers took the Physical Combat Proficiency Test in utilities and boots.
42. Department of the Army, *Physical Conditioning (TM 21-200), Change 2* (Washington: US Government Publishing Office, 1961), 6-7; Video #65675048110, 1967; Ladd, *US Army Physical Fitness Testing*, 20.
43. *Correspondence from the Master of the Sword to the Commandant of Cadets* (Subject: Proposed Curriculum Changes". West Point: United States Military Academy, 19 February 1960.
44. Department of the Army, *Your Individual Physical Fitness* (FT Benning, GA.: US Army Infantry School, no date), document cover; Note: this document was likely published locally in mid 1962; it references two Army publications AR 40-501-C6 (1961) and Army Circular 600-7, Weight Control (1962); AR 40-501-C7 was published in September 1962 and was the precursor to the Army Physical Fitness Program.

45. Department of the Army, *Your Individual Physical Fitness*, 7.
46. Ladd, *US Army Physical Fitness Testing*, 22.
47. Ladd, *US Army Physical Fitness Testing*, 22.
48. *Physical Fitness Seminar Report*, 1958, p. 32.
49. Department of the Army, *Physical Fitness Training Program for Specialist and Staff Personnel* (DA PAM 21-1) (Washington: US Government Publishing Office, 1963), 4.
50. Department of the Army, *Physical Fitness Program for Women in the Army* (DA Pamphlet 21-2) (Washington: Government Printing Office, 1963), 5; Note: the “5-10 Plan” outlined the exercise program for women that involved five exercises that were to be executed for 10 repetitions.
51. Change 1, AR 40-501, 1961, A3-1; Note: the maximum allowable weight for 18-20 year old women/men at 60”/72 inches in pounds respectively were: 139/163, 191/225.
52. Department of the Army, *Weight Control -AR 600-7* (Washington: US Government Publishing Office 1963), 2.
53. “The US Army in Vietnam,” in *American Military History*, ed. Vincent H. Demma (Washington, DC: Center of Military History, 1898), 641.
54. Department of the Army, *Army Physical Fitness Program-AR 600-9* (Washington, DC: US Government Printing Office, 1965), 1.
55. Department of the Army, *Physical Fitness Program for Women in the Army* (DA Pamphlet 21-2) (Washington: Government Printing Office, 1965), 5.
56. Department of the Army, *Weight Control-AR 600-7* (Washington: US Government Publishing Office 1965), 1.
57. Department of the Army, *Physical Training-Women’s Army Corps (FM 35-20)* (Washington, DC: US Government Printing Office, 1965), 2.
58. Department of the Army, “The Inclement Weather Physical Fitness Test,” *Continental Army Command Pamphlet 600-1* (FT Monroe: US Continental Army Command, 1966), 2.
59. Note: FM 21-20 (1969) represented the first time the term “Physical Readiness Training” was used for the Army’s premiere training and doctrine manual.
60. Department of the Army, *Physical Readiness Training-FM 21-20* (Washington, DC: US Government Printing Office, 1969), 9-11.
61. Note: these five principles were first published in the 1962 USAIS document “Your Individual Physical Fitness”.
62. Department of the Army, *Physical Readiness Training-FM 21-20* (1969), 12.
63. Note: there is a video of the administration of the PCPT at: http://www.criticalpast.com/video/65675048110_United-States-cadets_physical-fitness_drill-sergeant_physical-combat-proficiency-test; last accessed 12 March 2012.
64. Department of the Army, *Physical Readiness Training-FM 21-20* (1969), 213-258.
65. Ken Cooper, *Aerobics* (New York: M. Evans in association with Lippincott, Philadelphia, 1968), 1.

66. Note: on 1 December 1969 the Selective Service conducted two draft lotteries (by birth date and last name) to determine order of call to military service for the Vietnam War.

67. Pamela Cooper, *The American Marathon* (Syracuse, New York: Syracuse University Press, 1999), 157; Note: Merry Lepper's time for the Culver City Marathon was 3:37:07.

68. Charles C. Lovett, *Olympic Marathon: A Centennial History of the Games' Most Storied Race*, Westport, CT: Praeger, 1997, 125; Note: in 1966 women were not allowed to enter the Boston Marathon; however Gibb snuck onto the course and completed the 26+ mile race; the women's division was not opened until 1972.

69. Harry C. Beans, "Sex Discrimination in the Military," *Military Law Review*—VOL. 67; Headquarters—Department of the Army (Pam 27-100-67), Winter 1975): 68.

70. *Physical Fitness Symposium Report* (FT Benning, GA: United States Infantry School, 1970), 1.

71. *Physical Fitness Symposium Report* (1970), 2.

72. *Physical Fitness Symposium Report* (1970), 5.

73. *Physical Fitness Symposium Report* (1970), 40-42.

74. Department of the Army, *Army Physical Fitness Program-AR 600-9* (Washington, D.C.: Government Printing Office, 1971), 1.

75. Department of the Army, *Army Physical Fitness Program-AR 600-9*, 2.

76. Department of the Army, *Army Physical Fitness Program-AR 600-9*, 3.

77. Note: although not specified, the 1973 revision of FM 21-20 was most likely written by personnel at the USAIC, FT Benning.

78. Department of the Army, *Physical Readiness Training-FM 21-20* (Washington, DC: US Government Printing Office, 1973), 211.

79. Department of the Army, *Physical Readiness Training-FM 21-20* (1973), 211-284.

80. Department of the Army, *Physical Readiness Training-FM 21-20* (1973), 23.

81. Department of the Army, *Physical Readiness Training-FM 21-20* (1973), 25.

82. Richard P. Mustion, "Sustaining Our Army Then and Now," *Professional Bulletin of the United States Army Sustainment* PB700-09-06 41:6 (November-December 2009): 1; may be accessed online at http://www.almc.army.mil/alogs/issues/NovDec09/then_now.html (accessed 20 December 2011).

83. Mustion, "Sustaining Our Army Then and Now", 1.

84. Department of the Army, *Army Physical Fitness Program (AR 600-9)* (Washington, DC: US Government Printing Office, 1974), 2.

85. Department of the Army, *Physical Training-Women's Army Corps (FM 35-20)* (Washington, DC: US Government Printing Office, 1975), 5; Note: Figure 2 pictured two women running with a combat load during airborne training.

86. Department of the Army, *Physical Training-Women's Army Corps (FM 35-20)* (Washington, DC: US Government Printing Office, 1975), 174-202.

87. *Women Content in Units Force Development Test (MAXWAC Test)* (Alexandria, VA: US Army Research Institute for the Behavioral Sciences, 3 October 1977), I-1.

88. Bettie J. Morden, *The Women's Army Corps, 1945-1978* (Washington: Center of Military History, 2000), 371-372.

89. Brian P. Mitchell, *Women in the Military: Flirting With Disaster* (Washington, DC: Regnery Publishing, Inc., 1998), 108.

90. As quoted in James A. Vogel, et al., *A System for Establishing Occupationally-Related Gender-Free Physical Fitness Standards* (Report No. T 5/80) (Natick, MA: US Army Research Institute of Environmental Medicine, April 1980), 1.

91. Vogel, et al., *A System for Establishing Occupationally-Related*, 1.

92. *Department of the Army Historical Summary—Fiscal Year 1977*, ed. Karl E. Cocker (Washington, DC: Center of Military History, 1979), 23.

93. *Department of the Army Historical Summary—Fiscal Year 1977*, 24; *Department of the Army Historical Summary—Fiscal Year 1979*, ed. Edith M. Boldan (Washington, DC: Center of Military History, 1982), 24; Note: at the same time the mixed-gender IET project was underway, the US Army also instituted the One Station Unit Training (OSUT) program at FT Benning, GA (1977). Although initial trails were successful, Congress was not convinced that OSUT was more efficient or effective. From January-May, 1979 extensive trials were conducted at FTs Benning and Knox. As a result OSUT was found to be more cost efficient (resulted in an annual operating savings of \$7.3 million) and provided more effective training. OSUT was fully implemented by the end of 1979. (See *Army Historical Summary-1977*, 23 and *Army Historical Summary-1979*, 25, 26.)

94. Karl Friedl, James A. Vogel, Matthew W. Bovee, and Bruce H. Jones, *Assessment of Body Weight Standards in Male and Female Army Recruits* (Natick, MA: US Army Research Institute of Environmental Medicine Technical Report No. T15-90, 1989), 7.

95. Note: when the maximal allowable weight standards were first published in AR 600-9 (1976), the age classifications were removed; weights were listed by gender/height—the max allowable weight for women/men for 60/72" in pounds respectively were: 121/141, 172/203; maximum allowable weights were lowered by approximately 20 pounds per category over the AR 40-501 (1961) standards.

96. Department of the Army, *Army Physical Fitness and Weight Control Program-AR 600-9* (Washington, DC: US Government Printing Office, 1976), 1-1; Note: this statement follows the publication of the recommendations from the two Physical Fitness Seminars (1958)—Committee 3: Conclusion 11 (p. 32) and Physical Fitness Seminar (1970)—Conclusion 15 (p. 41).

97. Department of the Army, *Army Physical Fitness and Weight Control Program-AR 600-9* (1976), Section 1-3.a.2., 1-1.

98. Department of the Army, *Army Physical Fitness and Weight Control Program-AR 600-9* (1976), 1-1.

99. Note: based upon our current knowledge of exercise intensity, an exercise heart rate of 140 beats per minute would be considered a moderately strenuous work for a 60-year-old.

100. Department of the Army, *Army Physical Fitness and Weight Control Program-AR 600-9* (1976), 3.

101. Department of the Army, *Army Physical Fitness and Weight Control Program-AR 600-9* (1976), 3-1.

102. "Physical Fitness Policies and Programs," in *Assessing Readiness in Military Women: The Relationship of Body Composition, Nutrition, and Health* (Washington, DC: National Academic Press; 1998), 63.

103. "Physical Fitness Policies and Programs", 63; Michael L. Pollock, et al., "Position Stand: The Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory and Muscular Fitness, and Flexibility in Healthy Adults," *Medicine & Science in Sports and Exercise* 30:6 (June 1998): 501.

104. <http://www.army.mil/women/newera.html>; (accessed 13 March 2012); Note: by 1978 there were approximately 18,000 WACs serving in the Army Reserve and 25,000 in the Army National Guard. "In August 1982, the Secretary of Defense ordered the increase in Army enlisted women's strength from 65,000 to 70,000 and officers from 9,000 to 13,000, including medical personnel."

105. <http://www.army.mil/women/newera.html> (accessed 13 March 2012).

106. *Physical Fitness Symposium Report* (1970), 42.

107. Vogel, et al., *A System for Establishing Occupationally Related*, vi; Note: after women were admitted to the United States Military Academy initiated several physical training studies: Project 60—A Comparison of Two Types of Physical Training Programs on the Performance of 16-Year-Old Women (1976) and Project Athena—A Longitudinal Study of the Integration of Women into the Corps of Cadets (1976).

108. *Department of the Army Historical Summary—Fiscal Year 1980*, Edited by Lenwood Y. Brown (Washington, DC: Center of Military History, 1983), 45.

109. Stephen McGugan, *The Cadet Physical Fitness Test: Overachieving Or Overdemanding?* (Paper completed for LD720, American Military History, West Point, NY, 1997), 5.

110. Department of the Army, *The Army Physical Fitness Program-AR 350-15* (Washington: US Government Publishing Office, 1982), 1; *Soldier Physical Fitness Center: An Historical Review* (USAPFS Archived Historical Documents, undated) 42.

111. Department of Defense, *Study of the Military Services Physical Fitness* (Washington DC, 1981), 3-36.

112. Department of the Army, *Physical Readiness Training-FM 21-20* (Washington, DC: US Government Printing Office, 1980), E-3; Superintendents Annual Historical Review, 1981, p. 56; Hardyman, 1988, p. 48; McGugan, *The Cadet Physical Fitness Test*, 5.

113. Department of the Army, *Physical Readiness Training-FM 21-20* (1980), E-12, E-15.

114. Department of the Army, *Physical Readiness Training-FM 21-20* (1980), E-3; Note: the 2-mile run was run in boots, therefore the 60-point time standards were significantly higher than would be expected in running shoes

115. Hardyman, 1988, p. 48.

116. Department of the Army, *Physical Readiness Training-FM 21-20* (1980), 1-6.

117. Note: most civilian and military personnel who were involved with the Soldier Fitness School and the development of the 1980 and 1985 FM 21-20 attribute this attitude to concerns expressed by senior military leaders (i.e. general officers) relative to their ability to meet minimum Army fitness standards.

118. Department of the Army, *Physical Readiness Training-FM 21-20* (1973), 28.

119. Department of the Army, *Physical Readiness Training-FM 21-20* (1980), i.

120. Note: see Standards of Medical Fitness (AR 40-501, C35), 1987, p. 10-25 for additional information on the Army Physical Fitness Program for Active Members Age 40 and Over.

121. Department of Defense, *Study of the Military Services Physical Fitness*, 1-1; Krause, "History of US Army Soldier Physical Fitness", 23.

122. *Department of the Army Historical Summary-Fiscal Year 1980*, 46.

123. Department of Defense, *Study of the Military Services Physical Fitness*, 1-1.

124. *National Conference on Military Physical Fitness-Proceedings Report*, ed. Lois Hale (Washington, DC: National Defense University, 1990), 2.

125. *Department of the Army Historical Summary-Fiscal Year 1980*, 46.

126. Department of Defense, *Study of the Military Services Physical Fitness*, 3-13; Department of Defense, *Directive on Physical Fitness and Weight Control Programs* (Directive No. 1308.1) (Washington DC, 1981), 1.

127. Department of Defense, *Directive 1380.1* (1981), 1; Hodgdon, 1992, p. 57-58; James Hodgdon, *A History of the US Navy Physical Readiness Program from 1976 to 1999* (Arlington, VA: Office of Naval Research, 1999), 6.

128. Department of Defense, *Directive 1380.1* (1981), 1, Encl. 1, 1 Encl. 2, 1; James Hodgdon, "Body Composition in the Military Services: Standards and Methods," in *Body Composition and Physical Performance-Applications for the Military Services*, ed. Bernadette M. Marriott and Judith Grumstrup-Scott (Washington: DC: National Academy Press, 1992), 57-58; Hodgdon, *A History of the US Navy Physical Readiness Program*, 6.

129. *Soldier Physical Fitness Center: An Historical Review* (USAPFS Archived Historical Documents, undated), 42; Note: from additional materials to include a "Director Survey" form, this document appears to have been written/compiled by Dr. Mel Parks of the US Army Physical Fitness School.

130. *Soldier Physical Fitness Center* (1982) (USAPFS Archived Historical Documents, undated), 1.

131. *TRADOC Information Pamphlet: An Imminent and Menacing Threat to National Security*, (FT Monroe, VA: TRADOC Public Affairs Office, 2008), 8.

132. Note: throughout the 10-year tenure of the Soldier Physical Fitness School at FT Ben Harrison the “name” and acronym attributed to the center/school varied based upon the speaker; the “nom du jour” was most often the Physical Fitness School.

133. The Honorable John O. Marsh, Jr, Secretary of the Army, 8 February 1982, speaking before the Committee on Armed Services, House of Representatives, Second Session, 97th Congress.

134. Note: taken from the preface to *The Individual's Handbook on Physical Fitness*, DA P 350-18, 1983; published by the US Army Soldier Physical Fitness Center, FT Benjamin Harrison, IN.

135. Department of the Army, *Memorandum of Understanding between the US Army Soldier Support Center and the US Army Infantry School*, Subject: Army Physical Fitness System, signed 8 April 1982, Lieutenant General Julius Becton, Deputy Commander for Training.

136. *TRADOC Information Pamphlet*, 2, 8.; Note: by 1983 the USAPFCS staffing had increased to 9 officers, 6 NCOs, and 20 civilians.

137. *TRADOC Information Pamphlet*, 1.

138. Note: on 15 February 1983 AR 600-9 was reissued as “The Army Weight Control Program”.

139. Department of the Army, *Army Physical Fitness Program-FM 350-15* (Washington, DC: US Government Printing Office, 1982), 2-3.

140. Department of the Army, *Army Physical Fitness Program-FM 350-15* (1982), 4.

141. Department of the Army, *Army Physical Fitness Program-FM 350-15* (1982), 6.

142. USAPFS Archived Historical Documents: Soldier Physical Fitness School: An Historical Review, undated, p. 46; Note: the SPFS developed a package called the “Training Support Package–Physical Fitness Training: Total Fitness”, which was the principal supporting document in the mandatory 2-4 hour course on total fitness which was to be included in all TRADOC schools.

143. <https://apfri.carlisle.army.mil> (accessed 1 December 2011).

144. <https://apfri.carlisle.army.mil/web/aboutUs.cfm> (accessed 1 December 2011). Note: APFRI was shut down in late September, 2011; see Melissa Bower, *APFRI shutting down, services covered by others*, www.army.mil, 27 October 2011, accessed 18 August 2022.

145. Department of Defense, *Study of the Military Services Physical Fitness*, 3-20.

146. Personal communication with Colonel Gregory L. Daniels, Master of the Sword, 2 February 2012; Note: Colonel Daniels attend the 4-week residence course at FT Ben Harrison in March, 1985 as Second Lieutenant Daniels representing the 2/320th Field Artillery, 101st Airborne Division.

147. *Historical Records*, West Point, NY: Department of Physical Education, United States Military Academy (unpublished records).

148. Department of the Army, *Army Weight Control Program-AR 600-9* (Washington, DC: US Government Printing Office, 1983), 3.

149. Department of the Army, *Army Weight Control Program-AR 600-9* (1983), 3.

150. Note: in AR 600-9 the body weight table in the Appendix was no longer a criterion-referenced measure of “weight control” problems (i.e., they were no longer “maximum allowable weights”); the body weight table published in AR 600-9 was used as “screening” tool to identify those soldiers who required a body composition assessment; maximum allowable body weights for accession into the US Army were still published in AR 40-501; these criterion values differed by approximately 20 pounds by age/height/ gender; screening weights for 17-20 year old women/men for 60/72” respectively were: 111/132, 190/160.

151. Reynold A. Burrowes, *Revolution and Rescue in Grenada: an Account of the US Caribbean Invasion* (New York: Greenwood Press; 1988), 79.

152. Dorothea Cypher, “Urgent Fury: *The US Army in Grenada.*” In *American Intervention in Grenada: The Implications of Operation “Urgent Fury”*, ed. Peter M. Dunn and Bruce W. Watson (Boulder, CO: Westview Press; 1985), 106.

153. James M. Dubik., and T.D. Fullerton, “Soldier Overloading in Grenada,” *Military Review* 66 (January, 1987): 39; Stephen J. Townsend, “The Factors of Soldier’s Load” (Master’s thesis, Command and General Staff College, Fort Leavenworth, KS, 1994), 1.

154. *The Commander’s Handbook on Physical Fitness* (Washington: Government Printing Office, 1982), 25.

155. *The Individual’s Handbook on Physical Fitness* (Washington: Government Printing Office, 1983), ii.

156. Joseph J. Knapik, et al., *Soldier Performance and Mood States Following a Strenuous Road March* (Natick, MA: US Army Research Institute of Environmental Medicine, 1990), 1.

157. *Department of the Army Historical Summary–Fiscal Year 1988*, ed. Cherly Morai-Young (Washington: Center of Military History, 1993), 41.

158. *History of the Present APFT*, (USAPFS Archived Historical Documents, undated), 4.

159. *History of the Present APFT*, (USAPFS Archived Historical Documents, undated), 5. Note: the pull-up/flexed arm hang were never added to the APFT.

160. Department of the Army, *Physical Readiness Training-FM 21-20* (1985), A-1, B-1.

161. Department of the Army, *Physical Readiness Training-FM 21-20* (1985), 11-1; Note: the sample score card (DA705) presented in Figure 11-1 pp. 11-2 and 11-3 still used the term Army Physical Readiness Test.

162. Department of the Army, *Physical Readiness Training-FM 21-20* (1985), 11-2.

163. Department of the Army, *Physical Readiness Training-FM 21-20* (1985), 11-3.

164. Department of the Army, *Army Physical Fitness Program-FM 350-15* (1985), 4.
165. Department of the Army, *Army Physical Fitness Program-FM 350-15* (1985), 4.
166. Department of the Army, *Army Physical Fitness Program-FM 350-15* (1985), 5.
167. Department of the Army, *Army Physical Fitness Program-FM 350-15* (1985), 6.
168. Note: DA Form 705—the Army PFT card was subsequent reissued in June 1986.
169. Note: 2-mile run times decreased significantly to reflect the advantage of running in running shoes instead of combat boots.
170. Note: the 1986 APFT standards remained norm-referenced with no empirical link to performance of any soldier tasks; there remained a fundamental lack of understanding of the physiological differences between men and women soldiers. This is most evidenced by the ~16% delta between the men's and women's 2-mile run times, which we know today to be about 10-11% for aerobic endurance.
171. Department of the Army, *Army Forces Training-FM 350-41* (Washington, DC: US Government Printing Office, 1986), 9.
172. H. Norman Schwarzkopf, *It Doesn't Take a Hero* (New York: Bantam Books, 1992), 271.
173. Joseph J. Knapik, et al., *Army Physical Fitness Test (APFT): Normative Data on 6022 Soldiers* (Technical Report No. T94-7) (Natick, MA: US Army Research Institute of Environmental Medicine, 1994), 2; John S. O'Connor, Michael S. Bahrke, and Robert G. Tetu, "1988 Active Army Physical Fitness Survey," *Military Medicine* 155:12 (1990): 579.
174. Knapik, et al., *Army Physical Fitness Test (APFT)*, 13; Note: extrapolating from the raw data on pages 14 and 22 for 17-21 year-old soldiers, the following percentages would tab/max by event in 1988: Men—PU—7.5%/2%, SU—4%/<1%, 2MR—10%/1%; Women: PU—7.5%/2%, SU—5%/<1%, 2MR—7%/4%.
175. Louis F. Tomasi, P. Rey Regualos, Gene Fober, and Matthew Christenson, *Age and Gender Performance on the US Army Physical Fitness Test* (FT Benning, GA: Army Physical Fitness School, 1995), 1.
176. Mark Hertling, *Physical Training and the Modern Battlefield: Are We Tough Enough?* (Fort Leavenworth, KS: School of Advanced Military Studies Monograph, US Army Command and General Staff College, 1987), 35.
177. Hertling, *Physical Training and the Modern Battlefield: Are We Tough Enough?*, 35.
178. Hertling, *Physical Training and the Modern Battlefield: Are We Tough Enough?*, i.
179. Department of the Army, *Army Weight Control Program-AR 600-9* (1987), 3.

180. Department of the Army, *Army Weight Control Program-AR 600-9* (1987), 3; Note: body weight screening values for 17-20 year old women/men for 60/72” respectively were: 116/132, 190/167, which represented a slight increase in screening weights for women published in AR 600-9 (1983).

181. Department of the Army, *Army Weight Control Program-AR 600-9* (1987), 4.

182. Note: maximum allowable percent body fat standards for 17-20 year old soldiers were: men = 20%, women = 28%.

183. Department of the Army, *Army Weight Control Program-AR 600-9* (1987), 11.

184. Department of the Army, *Army Physical Fitness Program-FM 350-15* (1989), 5.

185. Department of the Army, *Army Physical Fitness Program-FM 350-15* (1989), 6.

186. *Department of the Army Historical Summary—Fiscal Year 1989*, ed. Vincent H. Demma (Washington: Center of Military History, United States Army, 1998), 253.

Chapter 7

Return to Combat-Focused Physical Readiness Training

Due to declining federal revenues in 1988 and 1989, which were exacerbated by the financial costs of the first Gulf War (1990-91), the US Army was forced to consider several cost-saving initiatives. During the initial Base Closure and Reallocation Commission (BRAC) hearings of 1989, it seemed likely that FT Benjamin Harrison would be closed. In April 1990 Headquarters–Department of the Army (HQDA) initiated Project Vanguard and in May 1990 the Vanguard Task Force, led by Major General John R. Greenway, began assessing ways to improve effectiveness and lower operating and sustainment costs. With FT Ben Harrison's closure imminent the Vanguard TF recommended closing the USASPFS and reassigning its duties to the Academy of Health Sciences at FT Sam Houston. After much discussion with HQ TRADOC, the decision was made to reduce USASPFS's manpower and mission and place it under the command of the US Army Infantry Center (USAIC) at FT Benning.¹ Along with significant reductions in personnel, the resident Master Fitness Trainer course and associated "6P" US Army skill identifier were also eliminated.² Under the direction of the USAIC and now relocated at FT Benning, PRT focus began a slow but inexorable shift away from health-related fitness to combat-focused fitness. The name of the United States Army Soldier Physical Fitness School changed slightly during this transition to the US Army Physical Fitness School.

On 30 September 1992 *Physical Fitness Training* (FM 21-20) was revised and published for the tenth time. The 1985 chapter on "fitness leadership and instructor training" was deleted and the information was moved to Chapters 1 and 10 (Introduction and Developing the Unit Program). The 1992 edition added two new chapters on Body Composition (Chapter 5) and Physical Training During Initial Entry Training (Chapter 11). Chapter 6–Nutrition and Fitness was significantly expended from 1985 and included a section on nutrition for optimal performance.³ The materials from the "Additional Activities" chapter (1985) were relocated into Chapters 7-9; Circuit Training and Exercise Drills, Obstacles Courses and Additional Drills, and Competitive Fitness Activities. FM 21-20 (1992) grew from 11 to 14 chapters.

The 3-event APFT was continued in the 1992 revision. The total performance score was determined by converting raw scores to a 100-point scale-scoring table for each event. The point scale was adjusted based on age and gender. The maximum score a soldier could earn on each event

was 100 points for a total score of 300 points. All soldiers were required to score at least 60 points on each of the three test events to pass the APFT. Soldiers who failed a record APFT were required to retest within 3-months. Soldiers failing to remediate an APFT failure on a “90-day” retest were subject to a bar from reenlistment or separation from the Army. The minimum scores (60 point score) for 17-21 year old men and women remained unchanged from the 1986 scoring revision: Male—PU = 42, SU = 52, 2MR = 15:54; Female: PU = 18, SU = 50, 2MR = 18:54.

On 19 March 1993 *Training in Units* (AR 350-41) was revised for the second time. AR 350-41 (1993) marked the termination of the stand-alone Army Physical Fitness Program regulatory document, which had been in existence since the early 1960’s. In this consolidation effort, the contents from AR 350-15 were published in their entirety as AR 350-41, Chapter 9—“Physical Fitness”. Physical fitness, which provides the foundation for combat readiness and unit readiness, “begins with the physical fitness of soldiers and the Noncommissioned Officers and Officers who lead them.”⁴ AR 350-41 (1993) reiterated that commanders and supervisors must conduct exercise periods with sufficient intensity, frequency, and duration to attain the overarching objective of enhancing combat readiness. This objective was to be measured by nine criteria: cardio-respiratory endurance, muscular strength and endurance, anaerobic conditioning, flexibility, body composition, competitive spirit to win, self discipline, ability to cope with psychological stress, and a healthy lifestyle. All personnel in the active US Army, the US Army National Guard and US Army Reserve were required to participate in year-round collective or individual physical fitness training programs. Active Army personnel, full-time Guardsmen, and full-time Reservists were required to participate in vigorous physical fitness training 3 to 5 times per week during the unit’s normal duty-day.⁵ The initial entry training “skills list” presented in Section 8 (AR 350-15, 1989) was incorporated into Section 9-6-a of AR 350-41 as the military skills list critical to support the unit’s mission essential task list (METL). Active duty, Guard, and Reserve soldiers were required to take an APFT at least twice each year with a minimum of four months separating record tests. Profiled soldiers were encouraged to rehabilitate their illness or injury and take a record 3-event test. Alternative aerobic events were specified for soldiers on permanent medical profile. AR 350-41 reiterated the ancillary role of the APFT as an assessment tool to be used by Commanders to establish a baseline level of fitness for all soldiers. This baseline level, according to Col. Stephen D. Cellucci, Commandant, USAPFS “is the minimum physical capacity required to wear the green uniform.”⁶ Cellucci further stated

that US Army leaders at every level need to understand the role of the APFT as one baseline field fitness test. Unit programs must be designed to help soldiers gain and maintain optimal levels of performance required in combat.

In late 1991, as part of TRADOC's "Women in the Army" initiative, General Frederick Franks, Commander, TRADOC directed the Physical Fitness School to again study and review the APFT standards. The purpose of this study was: (1) to ensure the APFT measured baseline US Army physical fitness; (2) to provide scientific review of the APFT; and (3) to assess gender equity in the scoring standards. The USAPFS established an APFT Update Study Committee to conduct the review. Participating agencies included: the United States Army Research Institute of Environmental Medicine (USARIEM), Army Research Institute (ARI), and the Office of the Surgeon General. The Army Physical Fitness School repeated the 1988 "Active Army Physical Fitness Survey" using a random sample of 2,588 active-duty soldiers stratified by age, gender, and MOS. The researchers measured APFT performance between September 1994 and March 1995 at various test sites throughout the US Army. USAPFS personnel also measured heights and weights and calculated body mass indexes for the soldiers.

Average performance by all soldiers had increased significantly since 1984. Only 12.5% of the sample failed the APFT, with a relatively equal failure rate for men and women. A disproportionate percentage of soldiers less than 27 years of age failed (29.7%), while only 8.5% of career soldiers greater than 27 years of age failed. Tomasi, et al. reported that men "maxed" the push-up event at greater rate than women and that the women's sit-up and 2-mile run standards were too low. Women "maxed" the 2-mile run (i.e., scored 100 points) at twice the rate of men. Tomasi and colleagues made eight recommendations; the more salient were: (1) adjust the "effort scales" to ensure "equal effort" by both genders, (2) move towards one performance standard for both genders, (3) relax the APFT Badge standards from 290 to 270-90-points in each event, and (4) establish scoring standards for soldiers 52-56, 57-61, and over 61 years of age.⁷ In response to the results of this survey, a recommendation was submitted to the Army Chief of Staff to modify the requirements for passing the US Army PFT. The proposal included a slight increase in the minimum push-up standard for men and women, equalizing the minimum sit-ups standard for men and women, and decreasing the minimum 2-mile run standard for men and women. Approved changes were to be published in the 1998 revision of FM 21-20.⁸ The authors concluded that the US Army needed to

recognize the physical capabilities of women and establish standards that reflect an “equal level of effort.”⁹

On 1 October 1998 *Physical Fitness Training* (FM 21-20) was revised for the eleventh time and published as Change 1-1992. The 3-event APFT remained unchanged and there were no changes in PRT content or doctrine. In accordance with AR 350-41 (1993), all soldiers were required to take a record APFT two times a year. A record APFT must at a minimum include an aerobic event. FM 21-20 (1998) prescribed three alternate aerobic events (800-yard swim, 6.2-mile bike, 2.5-mile walk) for those soldiers who are unable to run due to a permanent or long-term medical condition. The proscribed uniform for the APFT was the US Army physical fitness uniform (APFU) and running shoes. The recommended changes to the APFT scoring standards made by the 1995 USAPFS study group were generally ignored. The only change in APFT standards (1998) was for 17-21 year old women soldiers when the 60-point push-up standard increased from 18 to 19 repetitions.

Developing PRT Doctrine for the 21st Century

The most comprehensive revision of US Army physical training doctrine occurred with the publication of *Physical Fitness Training* (FM 21-20) in 1985. Although FM 21-20 was re-issued in 1992 and again 1998, the changes were primarily cosmetic. Throughout the 1990's there was constant turmoil relative to the mission, authority, responsibilities and even existence of the US Army Physical Fitness School and support for the physical readiness mission by the US Army. Similar to the reductions in force that occurred following WWI and WWII, during the Clinton administration there were significant reductions in US Army manpower. “Since Bill Clinton assumed office, Department of Defense (DoD) employment has fallen 152,500 or 17 percent. DoD employment has fallen from 32 percent of total federal employment in 1989 to 27% today. Of every 100 federal jobs eliminated over the past four years, 94 were military personnel.”¹⁰ These reductions took a significant toll on the USAPFS in both civilian and military personnel.

As early as 1975 the Headquarters–Department of the Army (HQDA) published AR 350-1: *Army Training*. This regulation provided the conceptual framework for US Army training and was divided into chapters regarding the Army Training System, Army Training Management, Common Military Tasks, the Army Standardized Program, etc. To fill the gaps in US Army doctrine, from 1975 to 2000 various “commands” produced command-specific versions of 350-1. In October 1998 and again in Octo-

ber 2002 FORSCOM published FORSCOM Regulation 350-1: *Training–Active Duty Training for FORSCOM Units*. In Chapter 3-6 FORSCOM provided broad guidance relative to physical training. Physical Fitness Training (PFT) programs were directed to address the “wartime mission needs as defined by the battle focus process and unit and individual METL tasks.”¹¹ Program criteria were aligned with the nine objectives published in AR 350-41: *Training in Units* (1993) with one additional objective of smoking cessation. Forces Command directed that all soldiers and leaders were to participate in their unit PRT programs “except for medical [profile] or remedial considerations that require an individually tailored program.”¹² Even though the resident Master Fitness Trainer (MFT) program was in the process of being terminated, leaders were encouraged to make maximum use of MFTs to design “well-rounded, innovative, and imaginative unit PFT programs.”

Similar to FORSCOM, the US Army in Europe (USARUER) published its version of AR 350-1: *Training–Training in the Army in Europe* in November 2000 (July 2002 and October 2005). *Training in the Army in Europe* was considerably more sophisticated and Chapter 4-4(d) outlined physical fitness training expectations for USARUER units. Physical fitness programs (PFPs) were designed to promote combat readiness and enhance overall fitness. All personnel were required to take a record APFT biannually and commanders were required to ensure the safety of PFPs by employing MFTs under the supervision of an officer or senior NCO. The reference documents for USARUER PFPs were FM 21-20, AR 350-1, AR 600-9, and Command Policy Letter 8.¹³

In a second move to streamline US Army regulations by merging regulatory documents, on 9 April 2003 Headquarters-DA revised and renamed AR 350-1, *Army Training and Education*. Materials from *The Army Physical Fitness Program* (AR 350-15, 1989), *Training in Units* (AR 350-41, 1993), and *Army Training* (AR 350-1, 1983) were merged into the updated AR 350-1 (2003) and AR 350-41 (1993) was terminated.¹⁴ Policies governing the Army Physical Fitness Program were presented in Chapter 1-21, individual fitness standards were presented in Chapter 3-9, and policies governing unit PRT were presented in Chapter 4-9. AR 350-1 (2003) maintained the nine overarching objectives of the Army Physical Fitness Program (APFP) published in AR 350-41 (1993) and added a 10th objective: motor efficiency—coordination, agility, balance, posture, speed, power, and kinesthetic awareness.¹⁵ There were no changes in the nine military skills required for unit physical training (4-9, p. 72). The APFP was administered by Deputy Chief of Staff-G3 with support from the

Deputy Chief of Staff–G1 (weight control), Office of the Surgeon General, TRADOC, Army War College, and others.

The USAPFS had begun work on a new PRT doctrine soon after the 1998 revision of FM 21-20 (Change 1, 1992) was published. Their intent was to publish a significantly revised PRT doctrine in a new field manual under the rubric FM 3-25.20. During the fall 2000, the USAPFS suffered additional personnel cuts, which further exacerbated attempts to meet its doctrinal and training mission. By the end of FY 2001 they could no longer resource the 6P (Master Fitness Trainer) Army Skill Identifier (ASI) and all resident instruction and the mobile training teams were terminated. The MFT course, which taught the basic science of exercise as well as the application of PRT doctrine, was the hallmark of US Army fitness doctrine and training since its inception in 1983 at Fort Benjamin Harrison.¹⁶ With a significant portion of the new PRT field manual (FM 3-25.20) completed and ready for publication, two events delayed the publication of FM 3-25.20 for nearly eight (8) years. The first event was the attacks of 11 September 2001 and the subsequent deployment of US combat troops to Afghanistan as part of Operation Enduring Freedom (OEF). The second event was a somewhat innocuous request from Lieutenant General Van Alstyne, Deputy Commanding General for Initial Entry Training, TRADOC for the Physical Fitness School to propose a new physical readiness test to accompany FM 3-25.20.¹⁷ In early 2003 the USAPFS proposed a 6-item physical readiness test as a potential replacement for the 3-event APFT. The six test items proposed in an “in progress review” briefing to the TRADOC Commander were: standing long jump (2 trials), power squats (max repetitions in 1-min), heel hook (max repetitions in 1-min), agility run (12x25 yards), push-up (max repetitions in 1-min–no rest), and 1-mile run. Test items were to be administered sequentially with a minimum of five minutes and a maximum of 10 minutes rest between each event. The test required four soldiers in a “testing cohort” (1-scorer, 1-timer, 2-spotters) and had to be completed in a maximum of two hours.

After the briefing to the TRADOC Commander, the proposed test found its way onto the internet and went “viral” throughout the US Army. Although the USAPFS had never intended to develop or staff a new physical readiness test as part of FM 3-25.20 revision, feedback from US Army was so negative and vociferous that the publication of FM 3-25.20 was temporarily suspended. During this hiatus the historical struggle between TRADOC and the US Army Infantry School over who “owned” physical readiness doctrine resurfaced. In late 2005 General Wallace, Commander, TRADOC concluded that housing the USAPFS at FT Benning exacerbat-

ed the confusion over who controlled PRT doctrine. To eliminate further confusion over PRT doctrine proponentcy, the decision was made to move the USAPFS to FT Jackson in 2007. In addition to delineating proponentcy, the move to FT Jackson would also incorporate the USAPFS into the emerging nexus of the Victory University and the Directorate of Basic Combat Training under the Physical Fitness Division.

On 13 February 2006 Headquarters-DA revised and published *Army Training and Leader Development* (AR 350-1), which superseded AR 350-1 (9 April 2003). Most notable in this revision was the inclusion of regulatory policy related to the US Army combatives training program (Section 1-23). Combatives was defined as “instruction of hand-to-hand and rifle-bayonet fighting and is key in ensuring soldiers are mentally prepared to engage and kill the enemies of the United States in close combat.”¹⁸ AR 350-1 (2006) established FM 3-25.150, Combatives (2002) as the US Army’s instructional guide for combatives training. Physical training regulations were presented in Section 1-24.¹⁹ The major change from the 2003 revision was the reduction in APFT testing requirement for US Army Reserve forces from twice to once per year. Additional guidance was provided concerning APFT testing for soldiers 55 years and older and physical training programs for deploying units.

On 27 November 2006 Headquarters-DA issued a change to *The Army Weight Control Program* (AR 600-9), which was just published in September 2006 as a revision to AR 600-9 (1987). Basic policies and procedures did not change. The two primary objectives were designed to ensure soldiers: (1) were able to meet the physical demands of their combat mission, and (2) presented a trim military appearance. The Deputy Chief of Staff, G1 retained proponentcy of the AWCP with support from the Surgeon General, while commanders and supervisors implemented the AWCP. Body composition was assessed using multiple circumference measures with a measuring tape. Although commanders could “tape” a soldier based upon a visual inspection, body weight measures in excess of “screening weights” were generally the impetus to “tape” a soldier. Criterion-referenced body weights were presented in Table 3-1.²⁰ There was one significant change from AR 600-9 (1987) in the circumference measures used to compute body composition for women. In AR 600-9 (1987) there were four circumference measures for women: neck, forearm, waist, and hips; in the 2006 revision there were only three approved circumference measures for women: neck—just below the larynx, waist—anatomical waist at the narrowest point below the ribs, and hips—over the greatest protrusion of the gluteal muscle (buttocks). Maximum allowable body fat per-

centages by age/gender (M/F) were: 17–20 years: 20%/30%, 21–27 years: 22%/32%, 28–39 years: 24%/34%, and 40 years & older: 26%/36%.²¹ Failure to make progress in the AWCP had significant implications for Enlisted and Officer personnel relative to re-enlistment, promotion, civil schooling, and selection for command.

In early 2005 with the publication of FM 3.25-20 delayed and the soldier Fitness School preparing to depart FT Benning for FT Jackson, based on post-9/11 programming and lessons learned from four years of war, the 75th Ranger Regiment established a center to develop a new physical readiness training program for the Ranger Regiment. Considering the lessons learned during Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), the Ranger leadership recognized the need to revise their physical training model and chose as their archetype the “combat tactical athlete”. In response to the perceived need for higher levels of combat readiness demonstrated by engagements such as the Battle of Takur Ghar (Roberts Ridge), 75th Ranger Regiment leaders initiated the “Ranger–Athlete–Warrior” (RAW) program.²² The initial RAW objectives were to control PRT injuries, optimize physical performance, and consolidate PRT efforts into a single program of instruction. In 2006 a planning team produced a RAW training manual (RAW v.1.0) with initial objectives and lessons learned. In 2007 the planning team produced RAW v.2.0, which addressed feasibility, acceptability, and suitability. In 2008 the regimental commander assembled a training staff that included physical and occupational therapists, a dietitian, and an exercise physiologist to facilitate the development and implementation of the “Ranger Athlete Warrior” (RAW) program. The training staff proposed a “master fitness training” model to “train representatives” from each battalion (one per company) to become PRT subject matter experts (SMEs). These SMEs, along with the BN physical therapists, would serve as the primary resources within the BN for RAW training, scheduling, and assessments.²³ The end-state objectives of the RAW program were designed to ensure all Rangers: (1) achieve a level of physical fitness commensurate with the physical requirements of Ranger missions (functional fitness); (2) understand and choose sound nutritional practices (performance nutrition); (3) employ mental toughness skills to enhance personal and professional development (mental toughness); and (4) receive screening/education for injury prevention and prompt, effective, and provide thorough treatment/rehabilitation of injuries when they do occur (sports medicine). The training staff established a conceptual PRT framework, which was presented in the Infantry Task/Physical Component Matrix.²⁴

In January of 2008, senior Ranger leaders approved a battery of RAW athletic and tactical assessment “tasks”. These assessments were implemented across the Regiment to provide data that would guide future changes in the program.²⁵ The 10 assessment “tasks” were designed to measure strength, endurance, and mobility:²⁶

1. Illinois Agility test—quickness and agility.
2. 4kg medicine ball toss—total body power.
3. Metronome Push-up—muscular endurance of upper body/core.
4. Pull-up—strength and endurance of grip and upper body (overhand grip).
5. 300m Shuttle Run—anaerobic endurance.
6. BEEP test—aerobic endurance.
7. Heel Clap—strength and endurance of grip/pulling/core.²⁷
8. 185-pound bench press—upper body push strength.
9. 254-pound Ground-based Dead Lift—total body lift strength.
11. Ranger Physical Assessment Test (RPAT)—all components of tactical fitness; 3 mile run + combat focused obstacle course (including a 185 SKEDCO pull), to be completed in one hour.

As a result of the surge in US Army manpower needs associated with Operation Enduring Freedom and Operation Iraqi Freedom from 2001-2005, there was a significant increase in the number of marginally fit soldiers accessed into the US Army.²⁸ These marginally fit soldiers were significantly more likely to become injured during initial and advanced military training. By 2005 there were a plethora of research studies and working groups focused on resolving the PRT “injury” problem. In 2006 the Department of Defense Injury Prevention and Performance Optimization Research Initiative allocated \$5.3 million to fund research to determine injury reduction protocols for the Air Assault course at Fort Campbell, KY. The typical injury rate at the two-week Air Assault course was about 53%. In an attempt to reduce training injuries, the 101st Airborne Division entered into a partnership with the Neuromuscular Research Laboratory (NMRL) at the University of Pittsburgh. After collecting data on strength, flexibility, aerobic capacity, and balance the NMRL, lead researcher Dr. Scott Lephart concluded that there were fundamental flaws in the 101st Airborne Division’s physical training program. By early 2009, Lephart had developed the Eagle Tactical Athlete Program (ETAP), which resulted in significant improvements in overall functional fitness. “Division-wide implementation of ETAP began in May 2009 utilizing the “Train the Trainer” strategy...utilizes an Instructor Certification School

(ICS), which is a 4-day school designed to teach Non-Commissioned Officers (NCOs) how to implement ETPA with their respective units.”²⁹



<div>Infantry Task/Physical Component Matrix</div>						
Task	Strength	Muscular Endurance	Aerobic Endurance	Anaerobic Endurance	Flexibility	Motor Efficiency
Footmarch	X	XXX	XXX	X	x	X
Climbing	XXX	XX	X	XXX	XX	XXX
Sprints to Cover	XX	X	X	XX	XX	XXX
Crawl	XX	XXX	X	XXX	XX	XXX
Carrying	XXX	XX	X	XX	X	XX
Run	x	XX	XXX	X	X	X
Total	12	13	10	12	9	13
<div>X = Low Demand XX = Moderate Demand XXX = High Demand</div>						

Figure 7.1. Ranger-Athlete-Warrior Task Matrix.

Source: “Slide” was produced by the 75th Ranger Regiment entitled “RAW Introduction–Further, Faster, Harder;” also, it can be found in: McMillian, Danny. “RANGER ATHLETE WARRIOR: A Systematic Approach to Conditioning,” *Infantry* (May/Jun 2007; 96, 3), 5.

In the fall of 2007 the USAPFS moved its headquarters to FT Jackson, SC. There were further reductions in personnel and the director’s billet was changed from an Active Component Army officer to a civilian GS13 (formerly an AC-O6 billet, which had been down-graded to an AC-O5 billet in 1999). During 2007 the Physical Fitness School continued to work on the revised PRT field manual and produced a final draft of FM 3-25.20 dated December 2007; however, the draft was never approved for publication. During the summer of 2009 TRADOC established a revised command group for Initial Military Training (IMT). Lieutenant General Mark Hertling was selected as the deputy commanding general (DCG) in charge of Initial Military Training (IMT), which gave him command responsibility for the USAPFS. Based upon his lifetime interest in physical readiness training to include a master’s degree in exercise science from

Indiana University, a 3-year tour of duty in the Department of Physical Education at the United States Military Academy, and a PRT master's thesis at the Army War College, Hertling's initial guidance to the USAPFS Director, Mr. Frank Palkoska, was to complete and publish the PRT manual. After several attempts to identify a proper product type and series, Lieutenant General Hertling finally approved the publication of a new PRT manual as a training circular—TC 3-22.20 *Army Physical Readiness Training*. The “training circular” product was historically linked to the “training manual” designator used in the 1957 revision of FM 21-20, which resulted in the publication of the extensive training manual, *Physical Conditioning* (TM 21-200).

On 18 December 2009 *Army Training and Leader Development* (AR 350-1) was revised and superseded AR 350-1 (2006). There were several minor administrative changes that pertained to fitness assessments for various reactivated or recalled soldiers. Recalled retirees on a temporary assignment were required to take an APFT and soldiers over 55 were permitted to take an alternate cardio event without a medical excusal. Section 1-25, “Modern Army Combatives Training” was significantly enhanced. The US Army Combative School (a tenant of the US Army Infantry School—FT Benning) had proponency for US Army combatives training. “Combatives training is a fundamental building block for preparing soldiers for current and future operations and must be an integral part of every soldier's life.”³⁰ Four levels of instructor certification were established to ensure the development of a professional combatives instructor cadre that is essential to sustaining the combatives program.

During 2010, the 75th Ranger Regiment revised their PRT manual and published RAW PT v.4.0 in April 2011.³¹ There were no fundamental changes in scope or philosophy; however, there were significant changes to the fitness assessment “tasks”. Two items were deleted (bench press, and “BEEP” test) and two new tasks were substituted; the 5-10-5 Pro Agility test was substituted for the Illinois Agility Run test and the standing broad jump was substituted for the 4kg medicine ball toss. Lastly the dead lift weight was lowered from 254 to 225 pounds (as measured in repetitions to fatigue), which completed the eight (8) item RAW assessment “task” battery the Rangers designed to measure strength, endurance, and mobility. The first seven “tasks” were tested during a single, 90-minute PT session. The Ranger Physical Assessment Test (RPAT) was to be administered once per training/deployment cycle and separate from any athletic assessment by at least two days.³²

1. 5-10-5 Pro Agility test—quickness and agility.
2. Standing Broad Jump—total body power.
3. 225-pound Dead Lift (repetitions to fatigue)—total body lift strength.
4. Pull-up—strength and endurance of grip and upper body (overhand grip).
5. Metronome Push-up—muscular endurance of upper body/core.
6. Heel Clap—strength and endurance of grip/pulling/core.
7. 300m Shuttle Run—anaerobic endurance.
8. Ranger Physical Assessment Test (RPAT)—obstacle course-type test designed to measure all components of tactical fitness; 2-mile run + combat focused obstacle course (including a 185 SKEDCO pull) + 1-mile run (to be completed in one hour).

RAW 4.0 provided numerous exercises designed to improve the six components of the Physical Tasks matrix. Following the base-build-peak periodized training model developed by Tudor Bompa and popularized by Joe Friel, RAW 4.0 presented detailed multi-week training programs for the “transition” phase (3 weeks), foundation phase (4-12 weeks), and various endurance and strength build phases. The basic workout model consists of three components: “preparation”, exercise, and “recovery”, which followed the exercise model presented in TC 3-22.20.³³ Perhaps the most significant addition to RAW 4.0 was the section on performance nutrition. Dietary meal plans based upon a total energy intake of 3,000 and 4,000 kcal per day were presented based upon a macronutrient ratio of: 65% carbohydrate, 20% protein, and 15% fat.³⁴ RAW 4.0 emphasized the benefits of rest and recovery and, despite the elimination of the majority of the commonly held principles of exercise from TC 3-22.20, retained a robust list of eight principles of exercise: regularity, progression, overload, variety, recovery, balance, specificity, and precision.

On 1 March 2010, Training Circular 3-22.20 was published by Headquarter, Department of the Army under the signature of General George W. Casey and superseded FM 21-20 (1992) and Change 1 (dated 1 October 1998). This manual was the approved physical readiness training doctrine for the active US Army, US Army National Guard, and US Army Reserve. TC 3-22.20 represented a comprehensive revision of US Army PRT with a focus on preparing soldiers, leaders, and units for the physical challenges of fighting in the full spectrum of operations. “Combat readiness is the US Army’s primary focus as it transitions to a more agile, versatile, lethal and survivable force.”³⁵ TC 3-22.20 supported the AFORGEN (Army Forces Generation) model and utilized the “train/ready”, “avail-

able”, and “reset” phases to frame readiness training. Soldiers are trained to standards in mobility, strength, and endurance in the initial conditioning phase (future soldier), toughening phase, and the sustaining phase. The three overarching principles of PRT training were precision (adherence to optimal execution standards), progression (systematic increase in intensity, duration, and volume), and integration (using multiple training activities to achieve balance and appropriate recovery).

TC 3-22.20 provided detailed guidance on conducting physical training. Leaders were to prepare soldiers for physical training using the Preparation Drills (harkening back to the Turnverein exercises). These 10 exercises are designed to warm and stretch muscles and prepare the body for vigorous exercise.³⁶ Chapter 9 presented various strength and mobility activities and Chapter 10 presented activities for endurance and mobility. Upon completing a vigorous exercise session, soldiers used the five Recovery Drills exercises for passive stretching and to bring the body back to a steady-state condition. Supplemental conditioning programs were provided for special circumstances and populations such as weight control, prolonged deployments, APFT improvement, reconditioning, etc. The 3-event US Army Physical Fitness Test was retained as the physical fitness test for the US Army, see Appendix A.³⁷



Figure 7.2. OEF/OIF Physical Readiness Training.

Source: Photos are left to right, and top to bottom. Photo 1. Found in an article from <http://www.army.mil/article/44021/flight-school-leaders-incorporate-cross-fit-to-diversify-pt/>. Photo 2. Soldiers stationed at the National Training Center lift perform the “step up” exercise during a Physical Readiness Training familiarization course at Fort Irwin, CA, on 10 March 2011. The exercise is part of the US Army’s new PRT program which is designed to improve trunk strength, stability, and movement in the battlefield. Photo taken 10 March 2011, ID:376594, VIRIN: 110310-O-#####-862, Fort Irwin, CA, DIVIDS Media services. Photo 3. Commanders with 1st Brigade Combat Team, 4th Infantry Division lift weights during the weightlifting portion of the ‘Raider Six’ physical training with Col. Jeffrey Martindale, commander of 1BCT, 4th Infantry Division, 24 December 2010 in the Kandahar province. Photo taken 24 December 2010, ID: 353379, KANDAHAR, Airfield, DIVIDS Media services. Photo 4. Is from the photo files, Department of Physical Education, United States Military Academy.



Figure 7.3. OEF/OIF Combat Readiness Training.

Source: Photos are left to right, and top to bottom. Photo 1. and 5. Both training photos came from Fort Jackson, Basic Combat Training website, <http://www.jackson.army.mil/sites/bct/>. Photo 2. 1-73 Cav's "Stress Shoot" competition at Fort Bragg, NC, 15 July 2009, ID 188099, VIRIN: b090715-A-#####-002, Fort Bragg, NC. Photo 3. The obstacle course at Camp Rilea during the 1st Squadron, 82 Cavalry Regiment, Spur Ride contest, 19 March 2011, ID 442847, VIRIN 110319-A-#####-095, Salem, OR. Photo 4. US Army soldiers conduct simulated medical training during the Cultural Support Assessment, 12 May 2011, ID 424874, Camp Mackall, Hoffman, NC. Photo 6. Army soldiers conduct a ruck march during the Cultural Support Assessment and Selection program, 8 May 2011, ID 424890, Fayetteville, NC.

Notes

1. Richard P. Mustion, "Sustaining Our Army Then and Now," *Professional Bulletin of the United States Army Sustainment* PB700-09-06 41:6 (November-December 2009): 1; may be accessed online at http://www.almc.army.mil/alog/issues/NovDec09/then_now.html (accessed 20 December 2011), 1; *Department of the Army Historical Summary, Fiscal Years 1990 and 1991*, ed. Scott W. Janes (Washington: United States Army, Center for Military History, 1997), 31.

2. *Department of the Army Historical Summary, Fiscal Years 1990 and 1991*, 65, 124.

3. Department of the Army, *Physical Fitness Training (FM 21-20)* (Washington, DC: US Government Printing Office, 1992), 99.

4. Department of the Army, *Training in Units-FM 350-41* (Washington, DC: US Government Printing Office, 1993), 16.

5. Department of the Army, *Training in Units-FM 350-41* (1993), 16.

6. Louis F. Tomasi, et al., *Age and Gender Performance on the US Army Physical Fitness Test* (FT Benning, GA: Army Physical Fitness School, 1995), 2.

7. Tomasi, et al., *Age and Gender Performance*, 8-9.

8. Tomasi, et al., *Age and Gender Performance*, 1-2, 8-9; "Physical Fitness Policies and Programs," in *Assessing Readiness in Military Women: The Relationship of Body Composition, Nutrition, and Health* (Washington, DC: National Academic Press; 1998), 65.

9. Tomasi, et al., *Age and Gender Performance*, 1.

10. Stephen Moore, and James Carter, *The Strongest Economy in a Generation--If You're a Government Worker*, 15 November 1996, on http://www.cato.org/pub_display.php?pub_id=6254 (accessed 15 March 2011).

11. Department of the Army, *Training: Active Duty Training for FORSCOM Units-FORSCOM Regulation 350-1* (FT McPherson, Georgia: United States Army Forces Command, 2002), 19.

12. Department of the Army, *Training: Active Duty Training for FORSCOM Units*, 19.

13. Department of the Army, *Training: Training in USAREUR-USAREUR Regulation 350-1*, (Heidelberg, Germany: United States Army Europe Command, 2002), 31.

14. Note: AR 350-15 (Army Physical Fitness Program) had already been superseded by AR 350-41 (1993)

15. Department of the Army, *Army Training and Education-Army Regulation 350-1* (Washington: Government Printing Office, 2003), Section V: 1-21, 11.

16. Note: in actuality some form of the Master Fitness Training program of instruction had been taught in and out of the US Army since 1915, not including physical education instruction at West Point, which began in earnest with the hiring of Herman Koehler in 1885.

17. Personal correspondence from Mr. Frank Palkoska, Director, USAPFS, 18 September 2011.

18. Department of the Army, *Army Training and Leader Development—Army Regulation 350-1* (Washington: Government Printing Office, 13 January 2006), 11.

19. Department of the Army, *Army Training and Leader Development (AR 350-1)*, 13.

20. Department of the Army, *Army Weight Control Program (AR 600-9)* (Washington, DC: US Government Printing Office, 2006), 4; Note: body composition screening weights for 17-20 year old women/men for 60/72" respectively were: 128/132, 184/190, which represented significant increases in the maximum screening body weights for women from AR 600-9 (1987)

21. Department of the Army, *Army Weight Control Program-AR 600-9* (2006), 4-5.

22. Note: during the Battle of Takur Ghar, a Ranger Quick Reaction Force (QRF) was deployed to rescue troops under attack at a forward observation post that had been overrun by insurgents; the second element of the Ranger QRF was off-loaded on Takur Ghar about 800m east and 2000m below the summit; fighting over rough terrain with several feet of snow, through a barrage of mortar and small arms fire, the Ranger QRF fought their way to the summit to rescue US troops.

23. *RAW PT, v.3.0*, (FT Benning, GA: 75 Ranger Regiment, 2008), 1; *Further, Faster, Harder* (RAW Historical Briefing Slides) (FT Benning, GA: 75 Ranger Regiment, 2011), Slides 2, 16.

24. *Further, Faster, Harder*, Slide 4; Danny McMillian, "Ranger Athlete Warrior Program: A Systemic Approach to Conditioning," *Infantry* 96:3 (May-June 2007): 7.

25. <https://www.benning.army.mil/tenant/75thRanger/physical.htm> (accessed 1 September 2011); *RAW PT v.3.0*, 13 May, 2008, p. 72

26. *RAW PT, v.3.0*, 72-79.

27. Note: this test event was developed by the US Army Physical Fitness School in 2003 and was called the "heel hook" and is similar to the "ankles to the bar", a test event used at the United States Military Academy; can be accessed at: <http://www.youtube.com/watch?v=-0Lywt1YDfk> (accessed 3 January 2012).

28. Note: during the summer surges of 2003 and 2004 approximately 10% of all soldiers reporting to FT Jackson failed the 1-1-1 (1-min push-ups, 1-min sit-ups, 1 mile run) initial physical fitness test; this could amount to as many as 150 soldiers per week.

29. <http://www.pitt.edu/~neurolab/research/dod/dod.htm> (accessed 10 January 2012); Allison M. Heinrichs, "University of Pittsburgh Strengthens Army Training," *Tribune-Review*, 23 August, 2009; Jack Kelly, "Training to Prevent Injuries Gains Strength at an Army Base," *Pittsburgh Post-Gazette*, 2 September 2009; Note: by the fall of 2011 over 1300 NCOs had enrolled and been certified through the 101st Airborne Instructor Certification School.

30. Department of the Army, *Army Training and Leader Development—Army Regulation 350-1* (Washington: Government Printing Office, 2009), 13.
31. *RAW PT*, v.4.0, (FT Benning, GA: 75 Ranger Regiment, 2011), 1.
32. *RAW PT*, v.4.0, 69-72.
33. Note: a camera-ready copy of FM 3-22.20 was circulated in December 2007, however it was never authorized for dissemination
34. *RAW PT*, v.4.0, 102-3.
35. Department of the Army, *Army Physical Readiness Training—TC 3-22.20* (Washington: Government Printing Office, 2010), xvii.
36. Note: some form of “warm-up” drill has been used by the US Army since 1885 when Herman Koehler introduced “setting up” exercises at the United States Military Academy and Water Camp introduced his “daily dozen setup” during World War I.
37. Headquarters, Department of the Army. Training Circular 3-22.20, *Physical Readiness Training*, March 2010.

Chapter 8

A New Physical Fitness Paradigm

The individual soldier is the Army's most lethal weapon. Highly trained, disciplined, and fit soldiers build cohesive squads...My Squad. Multi-domain operations require the highest level of readiness that only comes from intense physical training and testing. The Army Combat Fitness Test will enhance lethality and mental toughness to close with and destroy the enemy in close combat.

—Cmd. Sgt. Maj. Michael Grinston, 16th Sergeant Major,
US Army

Shortly after the publication of TC 3-22.20 in 2010, Lieutenant General Mark Hertling, Commander, US Army Center for Initial Military Training provided additional guidance relative to the revision of the Army Physical Fitness Test (APFT). During a visit to the United States Military Academy, where Hertling served on a panel to review the final “senior” project for the Class of 2010 Kinesiology majors, he discussed his plans for a new US Army physical readiness test. By June 2010 the USAPFS established a process for the revision of the APFT. On 26-27 October 2010 the Physical Fitness School hosted an APFT Working Group at FT Jackson, SC for the purpose of revising the APFT. The agenda included an overview of US Army physical readiness training (PRT), a discussion of physical readiness attributes, defining physical readiness measures, defining test constructs, and developing potential courses of action for a new physical fitness test. Nineteen exercise and fitness professionals, representing all Armed Forces Services, the US Service Academies, civilian universities, USARIEM, Army Public Health Command (APHC), and the Army War College, attended the working group conference. The deliverable of the working group was a plan to study predictors of soldier physical readiness to provide a framework for a new physical fitness test.

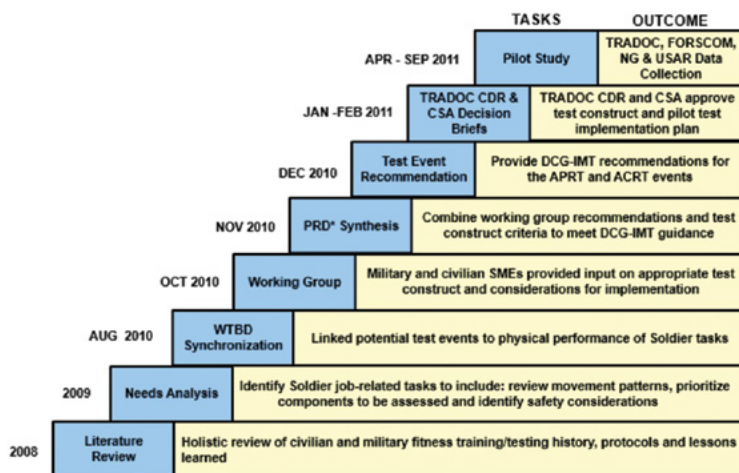
Following an overview of “Army Physical Readiness Training” by Mr. Frank Palkoska, Director-US Army Physical Fitness School, Dr. Jim Morrow, North Texas State University and Dr. Matt Mahar, East Carolina University provided an extensive overview of “Physical Fitness Test Construction,” i.e., how to build a field-expedient physical fitness test. After presentations by Mr. Tim Bockleman, USMC and Dr. Neal Baumgartner, USAF, Dr. Whitfield East conducted a developmental exercise to identify potential “Physical Readiness Attributes” of physical readiness. For the

remainder of Day 1, the working group identified the most salient physical attributes and field-expedient fitness test events associated with those key attributes. On Day 2, the 19 fitness professionals worked on defining “Physical Readiness Measurements”, “Testing Constructs”, and “Standards Development.” Based on in-depth discussions at the October meeting, working group members proposed the development of Army Physical Readiness Test (APRT) and Army Combat Readiness Test (ACRT), similar to the 2-test fitness testing model used by United States Marine Corps (USMC). The purpose of the APRT was to measure physical capacity and the ACRT was to measure functional or occupational capacity. Based on a report from the APFT Advisory Group, the CG, USACIMT revised his guidance to ensure the physical fitness test was:

- *Valid and Reliable*: Accurately measure what we want it to measure?
- *Functional*: Test events relate to WTBDs?
- *Replicable*: Can it be administered Army-wide?
- *Acceptable*: Reflects US Army doctrine (how we fight) and is acceptable by the US Army?
- *Feasible*: Units conduct the test with minimal resources (equipment, personnel, cost, time)?

The product of the conference was an initial draft of two proposed US Army fitness tests—the Army Physical Readiness Test (APRT) and the Army Combat Readiness Tests (ACRT) and a timeline/process to finalize test construction and standards development.

The review and development process were initially scheduled for late 2010 and 2011; however, when Lieutenant General Hertling was selected as the new Commander, US Army in Europe and Seventh Army, the development timeline for the new APRT/ACRT was significantly accelerated short-circuiting most of the development process. With the US Army Physical Fitness School (USAPFS) as lead, a five-item physical readiness test emerged in December 2010 when Lieutenant General Hertling briefed General Martin Dempsey, Commanding General-TRADOC. The five test items were: standing long jump (2 trials)—explosive power, rower (1-min with no rest)—abdominal endurance, shuttle run (60 yards)—explosive power and agility, push-ups (1-min with no rest)—upper body muscular endurance, and the 1.5-mile run—cardiorespiratory endurance. Beginning in early 2011, the USAPFS initiated a feasibility pilot study for the 5-event Army Physical Readiness Test (APRT) at US Army installations across the country. Over 5,000 data records were collected.



* PRD – Physical Readiness Division – US Army Physical Fitness School

Figure 8.1. Proposed Development Timeline for Physical Readiness Test Pilot Testing.

Source: Decision Brief Slides for General Robert W. Cone, Commanding, US Army Training and Doctrine Command, “Baseline Soldier Physical Readiness Requirements Study.” Briefing conducted by Maj. Gen. Richard Longo, Commanding, US Army Center for Initial Military Training, on 2 February 2012, slide 10.

In late March 2011, while the APRT pilot study was ongoing, Major General Richard Longo replaced Lieutenant General Hertling as the Deputy Commanding General, Initial Military Training (DCG-IMT), TRADOC. Major General Longo expressed serious concerns about the validity of the 5-event test battery and initiated a formal review of the pilot study results to formulate a recommendation for the proposed new APRT. In late 2011, significant concerns emerged relative to the development and efficacy of the 5-event APRT (Army Physical Readiness Test) and the feasibility of the companion functional ACRT (Army Combat Readiness Test), to include concerns expressed by the Command Sergeant Major of the Army, Raymond F. Chandler. On 21 November 2011, Major General Longo prepared a briefing for General Robert Cone, Commander, TRADOC on the formal APRT review. In the review, Major General Longo suggested the proposed 5-event APFT was not a significantly better predictor of combat readiness than the current APFT. General Cone then directed an “outside” review of the proposed test events by independent subject matter experts.

As issues around a new fitness test continue to foment, Major General Bradley May assumed the duties as Deputy Commanding General, TRADOC, US Army Center for Initial Military Training on 2 March 2012. Following General Cone's guidance, he requested a pause in the APRT implementation in order to facilitate further external review. Major General May requested a supplementary external review by USARIEM, the Department of Physical Education—United States Military Academy-West Point, and an independent university consultant. Reviewers were asked to respond to four questions concerning the proposed APRT:

- Question 1. Is this the right test?
- Question 2. Are the five events the right events?
- Question 3. Do these five test events measure what we (the US Army) need to test?
- Question 4. Is the APRT fair?

Each reviewer expressed varying levels of concern about the developmental process and the potential five test events. West Point SMEs provided a particularly interesting response to the question of "fairness."

Combat requires a variety of physical skills and abilities and there is no way to predict the full extent to the level of any engagement; i.e., who/what/when/where a soldier will come into contact with the enemy and/or the physical extent of that contact. Therefore, PRT assessments should be sufficiently rigorous to ensure mission success and personal safety/survivability. Combat is pass/fail and the only way to ensure soldiers are prepared for combat is to establish a combat-focused test with criterion-referenced standards. Clearly, we must account for physiological differences by age and gender; however, this accountability should come during the "evaluation" phase, not during the assessment phase. Combat is not fair and when we interject "fairness" into the development of physical readiness assessments we jeopardize the overall mission.¹

The concerns expressed by the three reviewing organizations were sufficient to convince TRADOC to terminate the 2010 effort to field a new APRT/ACRT and to initiate a comprehensive empirical study of baseline soldier physical readiness requirements. Guidance from US Army leadership was to link the performance assessment events to the physical requirements of Warrior Tasks and Battle Drills (WTBD) and Common Soldier Tasks (CST). Mr. Michael Haith from Human Dimension Integration (TRADOC) and Dr. Whitfield East from the Department of Physical

Education (United States Military Academy-West Point) were selected as the co-leads for the baseline study and were temporarily assigned to the US Army Center for Initial Military Training. On 2-3 October 2012 a planning group, with representatives from US Army Public Health Command, US Army Research Institute of Environmental Medicine, United States Military Academy and Uniform Services University of Health Sciences, met at FT Eustis for a 2-day working session to outline the study design and timeline. In December, 2012 General Cone (Commanding General, TRADOC) approved a 3-part Soldier Physical Readiness Requirements Study (SPRRS).

Part One of the SPRR study directed researchers to conduct of a systematic review of current scientific research on physical training and assessment, to include injury prevention, physical standards development, physical training and assessment doctrine, and best practices within the US Army, sister services, and other militaries and vocations. Special attention was given to these topics as they related to age and sex. The findings of the systematic review were intended to influence the assessment of baseline physical readiness, inform current US Army physical training practices and doctrine, suggest ways to mitigate performance injuries, and shape the Master Fitness Trainer certification curriculum and instruction.² Part Two of the SPRR study directed researchers to identify the physical requirements of WTBDs and CSTs and potential general and functional fitness assessments that could be used to measure these tasks. Part Three directed researchers to validated soldier task measurements through rigorous empirical assessments, which would yield a final battery of fitness assessment events. Once the final fitness events were approved, the study team would undertake a performance analysis to establish criterion-referenced standards to be applied to all soldiers. The entire baseline Soldier Physical Readiness Requirements study was expected to take 2 ½ years.

Occupational Physical Assessment Test

As the Soldier Physical Readiness Requirements Study began to take shape in late 2012, on 24 January 2013, the Secretary of the Army, the Honorable John M. McHugh rescinded the 1994 Direct Ground Combat Definition and Assignment Rule (DGCAR). As published in HQDA EXORD 112-13, Physical Demands Study (PDS), 05 April 2013, the intent was for the US Army to integrate women into all military occupational specialties (MOS) to include combat arms occupational specialties as expeditiously as possible without sacrificing warfighting capability. TRADOC was designated the US Army lead for the PDS. Initially the US Army intended to

integrate women into all positions no later than 1 January 2016, however it was not until 3 January 2017 that the first enlisted women shipped to Infantry and Armor One Station Unit Training (OSUT) at FT Benning, GA. Four primary guiding principles were published in EXORD 112-13: (1) ensure the success of our nation's warfighting forces by preserving unit readiness, cohesion, and morale; (2) ensure our men and women are given the opportunity to succeed and are positioned for success with viable career paths; (3) retain the trust and confidence of the American people in the defense of this nation by promoting policies that maintain the best quality and most qualified people; and (4) validate occupational performance standards, both physical and mental, for all military occupational specialties (MOS), areas of concentration (AOC) and skill identifiers, specifically for those categories that are currently closed to women.

In April 2013 Secretary McHugh published a plan for the integration of female leaders and soldiers into all US Army military occupation specialties.³ There were four lines of effort (LOE) in the plan:

- LOE 1—Open positions previously restricted to women based on the DGCAR.
- LOE 2—Validate Gender-Neutral Occupational Standards.
- LOE 3—Conduct a Gender Integration Study.
- LOE 4—Develop a plan for Special Operations/Long Range Reconnaissance.⁴

As of 2013, the US Army had never required any type of physical fitness test to access into the US Army or into any specific MOS. Recruits were only required to complete a medical examination and take the Armed Services Vocational Aptitude Battery (ASVAB). No physical assessment was conducted to assess a recruit's baseline physical fitness, the physical requirements of Initial Entry Training (IET) or the physical demands of an MOS. While Basic Combat Training (BCT) had the same physical task requirements for all trainees, Advanced Individual Training (AIT) had significantly different physical requirements depending on the occupational specialty. With the rescission of the ground combat assignment rule, it became imperative to ensure recruits had a sufficient level of baseline physical fitness to safely and effectively engage in initial entry training and successfully perform the physically-demanding tasks required of their MOS. As lead for the Physical Demands Study, TRADOC arranged for a research team from the US Army Research Institute of Environmental Medicine (USARIEM) to execute the Physical Demands Study as part of Soldier 2020. The initial objective was to develop a criterion-referenced

physical screening assessment for entry into the seven physically-demanding combat arms MOSs.

Beginning in October 2013, six PDS/Soldier 2020 working groups were established to review and resolve policy issues associated with Soldier 2020. The recommendations and solutions from these working group were intended to help US Army senior leaders address issues related to pre-enlistment physical fitness and the integration of women into previously closed MOSs. The six working groups were: (1) Accessions, (2) Information Sharing and Collaboration, (3) Retention, (4) Injury Rates/Success Rates, (5) Initial Physical Tests and Continuation Tests, and (6) Assignment Policy.

In order to develop a screening assessment for the seven Combat Arms MOSs, in JAN 2013 TRADOC tasked each MOS proponent (School) to develop an annotated list of high physical-demand occupational tasks and standards required of all soldiers in that MOS. These tasks were reviewed by senior leadership and subsequently modified. One example was the Infantry (11B) tactical ruck march standard, which initially required a soldier to move 24 kilometers in 24 hours carrying 128 pounds. After a failed attempt to meet this ruck march standard by trained infantry soldiers, the load weight was reduced to 103 pounds and the distance was reduced to 19 kilometers.⁵ While few MOS tasks changed, many of the initial standards were modified. Ultimately TRADOC developed a list of 32 physically demanding tasks for the seven combat MOSs. During the summer and fall 2013 USARIEM researchers visited three Army Corps installations (FT Bragg–XVIII Airborne Corps, FT Hood–III Corps, and FT Lewis–I Corps) to observe combat arms soldiers executing the common physically-demanding tasks (e.g., load the TOW missile launcher on a Bradley Fighting Vehicle (BFV), carry/emplace the H6 40-pound cratering charge, transfer ammunition with a M992 Field Artillery Ammunition Support Vehicle, etc.). As expected, these tasks were time and equipment intensive.

From late 2013 through March 2014 each combat MOS was studied to produce an optimized physical performance task list. USARIEM researchers then completed three studies to develop a valid, safe, and legally defensible physical performance batteries to predict a soldier's ability to serve in each combat MOS. Study 1 involved measuring and identifying the physiological requirements of each of the tasks. From these data, a set of criterion tasks were developed, which accounted for the physiological demands of all tasks. Study 2 involved determining the reliability of these criterion tasks. Finally, once reliable criterion tasks were developed, test

batteries using cost, space, and time-effective prediction tests were developed in Study 3 for screening entrants into the MOS. The observations in Study 1 and 2 allowed researchers to develop proxy tasks for the actual occupational tasks that would be used in the Physical Demands Study. From these observations, a set of 2-6 tasks were identified for each MOS to capture the most physically-demanding tasks of that MOS (see Figure 8.2.). Ultimately eight occupational tasks captured the physical demands of all seven MOSs.⁶

	11B, 11C, 12B, 13F, 19D	13B	19K
Load Carriage	Foot March		Foot March
Repeated Lift and Carry	Prepare a Fighting Position	Transfer Ammo – FAASV	Stow Ammo – Abrams
Heavy Drag	Casualty Drag	Casualty Drag	Casualty Drag
Heavy Lift	Casualty Evacuation	Transfer Ammo – FAASV	Casualty Evacuation
Controlled Heavy Transfer			Load Main Gun – Abrams
Agility	Move Under Direct Fire		Move Under Direct Fire

Figure 8.2. Most Physically Demanding Tasks of the 7th Combat Arms MOSs.⁷
Source: Created by author.

Once the eight tasks were identified, it was necessary to develop criterion measure task simulations (CMTS). Each simulation was designed safely and efficiently measure a unique MOS skill with minimal experience or learning. In order to test large numbers of soldiers, simulations were designed to minimize administration time and equipment.

1. Foot March (11B, 11C, 12B, 13F, 19D, 19K):
 - Task: foot march 4 miles, wearing the basic soldier uniform, personal protective equipment (to include weapon), and 24-hour sustainment load (approximately 103lb).

- Standard: 1 hr. 47min (based on an 80% of the 4 km/hr (~2.49 mi/hr) standard, with the final 20% improvement achievable with pre-mission training).
2. Prepare a Fighting Position-Sandbag Carry (11B, 11C, 12B, 13F, 19D):
 - Task: lift and carry 16 sandbags weighing 40lb 10m while wearing a fighting load minus the weapon (approximately 71lb).
 - Standard: 16 minutes (based on 26 minute to move 26 sandbag standard).
 3. Move Under Fire (11B, 11C, 12B, 13F, 19D, 19K):
 - Task: wearing fighting load (approximately 83lb) and carried a simulated weapon at the ready, execute 15 6m rushes to knee and prone for a total of 100m.
 - Standard: as fast as possible (all soldiers who complete the task are considered passing).
 4. Casualty Evacuation (11B, 11C, 12B, 13F, 19D, 19K):
 - Task: evacuation a casualty from a Bradley Fighting Vehicle.
 - Standard: Lift 103.5lb load from below 'deck level' of a Bradley turret; based on a 2-person lift standard of 207lb.
 5. Casualty Drag (11B, 11C, 12B, 13B, 13F, 19D, 19K):
 - Task: Drag casualty (approximately 270lb) 15 meters while wearing a fighting load with a weapon (approximately 83lb).
 - Standard: Drag 15m in 60sec.
 6. Transfer Ammo with a FAASV (13B):
 - Task: Transfer Ammunition (M795 HE Rounds, approximately 100lb) with an M992 Field Artillery Ammunition Supply Vehicle (FAASV) while wearing approximately 30lb of task specific equipment
 - Standard: 30 rounds in 15 minutes.
 1. Load Main Gun (19K):
 - Task: Load the 120mm Main Gun on an Abrams Tank while wearing 37lb of task specific equipment, soldiers loaded five 120mm MPAT rounds (approximately 55lb each) into a simulated breach of the Abrams tank main gun as quickly as possible.
 - Standard: 5 Rounds in 35 sec.
 2. Stow Ammo (19K):
 - Task: Stow Ammunition on Abrams Tank while wearing a fighting load minus the weapon (approximately 71lb); move 18-120mm MPAT rounds (approximately 55lb each) from ammunition point onto a platform simulating the deck of an Abrams tank.
 - Standard: 36 rounds in 20 minutes.

The final planning step for the Physical Demands Study was the selection of field-expedient physical fitness test events that could be used to predict performance on the CMTS. Predictor test events were used to predict future success on high-demand soldier tasks without the required time, equipment, training or risk associated with criterion task performance. Fifteen common physical fitness test events were selected: upright pull, biceps curl, squat lift, standing long jump, hand grip, medicine ball put, resistance pull, powerball throw, 300m sprint, arm ergometer, 1-min push-ups, 1-min sit-ups, beep test, step test, and Illinois Agility Test).⁸ One confounding problem for the Physical Demands Study research team was US Army senior leaders (ASL) failed to provide guidance on when and where the pre-accessions physical fitness test would be administered. This made the selection of predictor test events extremely problematic. During the execution of the PDS, ASLs considered administering the pre-accessions fitness test at the recruiting centers, the Military Entrance Processing Station (MEPS) and the Reception Battalion at the Army Training Centers. Due to a myriad of issues related to MOS selection, time to train, liability, lost training seats, etc., ASLs ultimately decided to administer the pre-accessions test at the recruiting centers after the recruit had signed an enlistment contract and in-processed at the MEPs, to include the MEPs physical.

Physical and occupational performance data were collected on active-duty soldiers from four US Army installations: Ft. Hood, TX (July 9-18, 2014), Ft Carson, CO (February 23-March 13 2015 and April 6-20, 2015), Ft. Stewart, GA (May 26-June 9, 2015), and Ft. Riley, KS (June 21-27, 2015). 877 complete datasets were used to initially develop the test battery for each combat MOS. After an in-depth job analysis, researchers determined that five of the seven MOS (11B, 11C, 12B, 13F, 19D) had similar critical high physical-demand tasks, while two MOS (13B and 19K) had additional or different tasks with heavy physical demands. Ultimately, however, in order to reduce costs, simplify and streamline testing, additional analyses were run to determine if a common battery of physical performance tests could be used for all seven combat MOS without a significant loss in the predictive power.⁹

Based on the data from the four installations, three courses of action for a gender-neutral, criterion-referenced assessment were developed for the combat arms MOSs.

- Test Battery 1: medicine ball put, squat lift, beep test, standing long jump, arm ergometer. Includes upper and lower body power, muscle

strength, muscle endurance and aerobic capacity assessments with $R^2=0.80-0.85$ predictive power and 87-90% correct identification.

- Test Battery 2: medicine ball put, squat lift, beep test, standing long jump. Includes upper and lower body power, muscle strength, and aerobic capacity assessments and utilizes easily accessible equipment with $R^2=0.79-0.81$ predictive power and 85-90% correct identification.
- Test Battery 3: standing long jump, 1-minute push-ups, 1-minute sit-ups, 300m sprint, Illinois agility test. Includes only lower body power, muscular endurance, and agility assessments, with $R^2=0.58-0.71$ predictive power and 81-82% correct identification.
- USARIEM researchers concluded that Test Batteries 1 and 2 had adequate and similar predictive power, while Test Battery 3 had much lower predictive power. Factoring in the reduced cost, in equipment and time required to implement Test Battery 2 vs Test Battery 1, USARIEM researchers recommended Test Battery 2 be adopted for the US Army pre-accessions physical fitness test.

The four test events selected for the physical demands test were: strength deadlift (SDL), standing long jump (SLJ), seated power throw (PWT), interval aerobic run (IAR—i.e., beep test). Up to this point in the PDS, the research objective had been to develop a test battery for combat arms MOSs. As the study entered into the third year, two concerns arose: (1) there were other US Army MOSs with physically demanding tasks that were as high or higher than some combat arms MOSs, and (2) US Army senior leadership were concerned with creating an additional accession requirement for combat arms MOSs.¹⁰ Specifically, certain tasks required for 88M (Motor Transport Operator), 91B (Wheeled Vehicle Mechanic), 68W (Combat Medic Specialist) and 31B (Army Military Police) had higher physically demanding tasks than 11- and 19-series MOSs. As these discussions matured, US Army senior leadership came to the understanding that a pre-accessions physical fitness test should be required to access all recruits. Once the 4-event test battery was established and the decision was made to require the pre-accessions physical fitness test for all MOS, the next phase was to determine criterion-referenced standards for over 100 MOSs. During the Physical Demands Study the research team identified varying levels of physical demands associated with different MOSs. For example, the high physical demands of a 19D—Cavalry Scout were significantly different than a 68P—Radiology Specialist. The 19D is required to secure and prepare ammunition on scout vehicles, load, clear and fire individual and crew-served weapons, perform navigation during combat, and collect data to classify routes, tunnels and bridges. 19Ds generally perform

these tasks under load and duress. The 68P is required to perform medical imaging in a military clinic or hospital, operate X-ray imaging and other related equipment in order to get photos of human anatomy to make the proper diagnosis. 68Ps generally perform these tasks in a hospital or clinical setting. These disparate levels of physical demand are partially normalized by the common denominator require of all soldiers, Common Soldier Tasks (CST).¹¹ Some of the CSTs have low physical demand—071-COM-1008, measure distance on a map; some have high physical demand—081-COM-100, evacuate a casualty. Ultimately, TRADOC leaders determine it was unrealistic to establish a separate standard for each and every MOS, and therefore developed a strategy to “tier” MOSs into three levels (moderate, significant and high demands). In 2015 all TRADOC schools and proponents for Military Occupational Specialties were directed to identify the high physical demand tasks associated with each MOS and layer those demands over the universal physical demands of CSTs. TRADOC leadership directed MOS proponents to assign each MOS to a performance “category.” Since common soldier tasks were deemed to be no-less-than moderately demanding, the other two categories were scaled up from “moderate.” The three physical demand categories (PDC) were given a designator and color modifier; moderate (Gold), significant (Gray) and heavy (Black). Examples of MOS in the three categories are: Gold—42A, Human Resource Specialist, Gray—68W, Combat Medic, and Black—11B, Infantryman. A comprehensive listing of all MOSs and their PDC for Enlisted, Officers and Warrant Officers may be found in DA PAM 611-21.¹²

Prior to the approval of the physical demands test by the Secretary of the Army, Chief of Staff General Mark Milley (CSA-39) directed US Army Recruiting Command, TRADOC to start field testing the physical demands test at recruiting centers across the United States and the world. The test was designated the Occupational Physical Assessment Test (OPAT). The OPAT could only be administered by an active-duty recruiter, following the testing manual and standards prepared by US Army Center for Initial Military Training. With concerns over potential negative impacts on the US Army’s recruiting mission for FY17, the “heavy” PDC standards were set first at the lowest limit of required performance, and the standards for the moderate and significant PDCs were scaled down from there. For the initial standards see Figure 8.3.

Early 2nd quarter, FY16 test results were not encouraging. In the first trials reported up to the Assistant Secretary of the Army for Manpower and Reserve Affairs (ASA/M&RAs) in April 2016, only 80% of men and

27% of women qualified for their MOS.¹³ Three considerations were presented to the ASA for these poor results: (1) all OPAT tests administered to date were designated as “diagnostic” tests, so there was no incentive to optimize performance, (2) a lack of training and experience with the four test events, and (3) recruits often only took one “diagnostic” OPAT. Since the former Secretary of the Army, the Honorable John M. McHugh, had already rescinded the DGCDAR in 2013, there was no alternative but to make the pre-ship physical demands test work. Over the summer of 2016, as it became apparent the OPAT was not ‘going away’, test score began to improve and by the fall, 2016 approximately 70% of men and women achieved their MOS required standard on the first record test attempt. Interestingly, over 80% of the women retested to achieve the Gold standard, while over 80% of men retested to achieve the Gray or Black standard. By the end of 2016, less than 1% of recruits could not achieve at least the Gold standard.

	Moderate (Gold)	Significant (Gray)	Heavy (Black)
Strength Deadlift (pounds)	120	140	160
Standing Long Jump (cm)	120	140	160
Seated Power Throw (cm)	350	400	450
Interval Aerobic Run (intervals)	36	40	43

Figure 8.3. Occupational Physical Assessment Test Initial Standard.

Source: Created by author.

As the lead for HQDA EXORD 112-13, TRADOC tasked the US Army Center for Initial Military Training (CIMT), in conjunction with USARIEM, to work with MOS subject matter experts to validate the MOS physical demand categories assignments and develop criterion scoring standards for each test event. These recommendations and criterion standards were presented to US Army leadership in a series of briefings throughout the fall 2016. On 9 December 2016, Secretary of the Army, the Honorable Eric K. Fanning approved the use of a gender-neutral pre-ac-

cessions physical fitness assessment called the Occupational Physical Assessment Test (OPAT). The goal of the OPAT was to identify the “right soldier for the right job,” select recruits with the physical capacity to train for and perform high-demand physical tasks (HDPTs) of their MOSs. Second and third-order effects of the OPAT were to motivate recruits to engage in adaptive physical training while in the delayed entry program (DEP) and reduce injuries and unprogrammed attrition in initial entry training. In the approval letter Secretary Fanning stated:

As leaders of the Department of the Army, we must recruit, train, and equip the strongest and most capable force possible. That requirement includes taking steps to ensure that incoming soldiers are set up to succeed. The Occupational Physical Assessment Test (OPAT) is intended to help the Army assess the capacity of incoming soldiers to succeed in their assigned specialty, and to prevent or minimize injuries by increasing their readiness for training.¹⁴

The Occupational Physical Assessment Test transitioned to full operating capability on 3 January 2017.

Baseline Physical Readiness Requirements Study

Following the demise of the 2010 effort to revise the APFT, Major General Bradley May directed the US Army Center for Initial Military Training to reengage on the APFT revision project. Throughout the summer of 2012 a small group of US Army SMEs and USACIMT personnel conducted periodic discussions in preparation for a major study planning conference in the fall 2012. A product of this planning group was the development of a draft Department of the Army execution order for a soldier physical readiness assessment study. On 2-3 October 2012, the US Army Center for Initial Military Training hosted a planning conference at FT Eustis, VA to develop guidelines for an APFT revision study. Ten fitness and testing professionals from across the Department of Defense attended the 2-day conference with representatives from US Army Public Health Command (4), US Army Research Institute of Environmental Medicine (3), United States Military Academy (2) and Uniform Services University/Consortium for Health and Military Performance (CHAMP) (1). There were four elements to the planning conference: (1) purpose of the study, (2) current testing status, (3) study leadership and participation, and (4) way ahead. Participants identified seven measures of success for the study:

- Identify baseline soldier physical readiness requirements to perform WTBD that are criterion-based and incorporate principles of functional fitness.
- Develop valid authentic field-expedient assessment tools for commanders that predict a soldier's ability to execute WTBD as a baseline level of physical preparedness.
- Develop an assessment that measures all 3 components of US Army Physical Readiness—endurance (muscular and cardio-respiratory), muscular strength, and mobility (anaerobic endurance/power).
- Select test events that are highly correlated to physical demands of combat and WTBD.
- Determine criterion thresholds of success (standards of performance) for all soldiers, independent of age or gender.
- Ensure standards and test protocols align with TC 3-22.20, Army Physical Readiness Training (PRT).¹⁵
- Determine results that inform knowledge, skills, abilities and other characteristics (KSAO) review of fitness requirements for specific branch/MOS/ job/unit performance.

Planning Committee members discussed five components to the soldier physical readiness requirements study: (1) study plan development, (2) Warrior Tasks and Battle Drills physical demand analysis, (3) test event selection, (4) test event validation, and (5) test event standards. On Day 2, the Planning Committee developed four courses of action (COA) for the study. Ultimately COA#4 was selected with six elements and associated timelines:

- Part 1-Task development-Systematic review (6 months).
- Part 2-Task analysis (6-9 months) concurrent with Part 1.
- Survey workforce.
- Stakeholder input-focus groups.
- WTBD/common soldiering task analysis.
- WTBD Field Test Observations (instrumented field data collection).
- Part 3-Test development (6 months):
- Finalize WTBD simulations.
- Select Field-expedient tests.
- SME/Army/IRB approval of research protocol.
- Predictive Validation data collection (3 months):
- WTBD-ST assessment.
- Field-expedient test assessment.
- Leader assessment of soldier performance.
- Predictive data analysis.

- Sequential Validation data collection (3 months):
- WTBD-ST and predictive test battery assessment.
- Establish minimally acceptable WTBD performance.
- Identify most predictive field-expedient tests.
- Submit fitness test battery to CG, TRADOC for approval (2 months).

On 25 October 2012, USACIMT hosted a teleconference with the SPRR study Planning Committee to review the pending US Army baseline study EXORD and finalize the study methodology, terminology, and timelines. The initial study design consisted of three parts and five phases. The three parts were (with associated timelines): (1) Task Development—human use review and systematic review (6 months); (2) Task Analysis—WTBD review, task qualifications and parameters (8 months), and (3) Test Development—criterion event validation, test event validation and standards (14 months). Success on the SPRR study was linked to careful coordination between the USACIMT team, military subject matter experts, and exercise and testing scientists. Additional guidance from US Army senior leadership required researchers to ensure study results would produce a predictive fitness test with gender-and age neutral standards consisting of a battery of common field-expedient fitness test events. Senior leadership removed the 40-year-old prohibition on testing time and equipment. The guidance on equipment was, “if you can buy it at Dick’s, you can use it in the study,” however nothing esoteric, fragile, excessive costly or requiring calibration was permitted. In anticipation of the HQDA EXORD, the SPRR study Planning Committee defined the purpose of a new PT test, outlined data gathering support from TRADOC and FORSCOM, and finalized resourcing, equipment and personnel requirements. The committee acknowledged the proposed timeline could increase substantially depending on the number and complexity of tasks selected. In the likely event the physical standards “exclude” more females than males (i.e., an “adverse impact”), an additional study may be required to determine how to revise the current physical training program for women to increase their likelihood of passing the test.

After the initial study design was reviewed by Dr. Matt Mahar, East Carolina University, on 17 December 2012, General Cone (Commander, TRADOC) approved the 3-part study plan. Mr. Michael Haith from Human Dimension Integration (USACIMT) and Dr. Whitfield East from the Department of Physical Education (West Point) were appointed as the co-leads for the study. To ensure the baseline study had greater US Army-wide support, on 27 DEC 2012, General Raymond T. Odierno, 38th Chief of Staff of the Army (CSA), published HQDA EXORD 041-13,

Baseline Soldier Physical Readiness Requirements Study.¹⁶ The Baseline Soldier Physical Readiness Requirements Study (BSPRRS) was designed to determine the baseline physical requirements for soldiers in a combat environment.¹⁷ The researchers were directed to identify physically demanding, commonly occurring and critical Warrior Tasks and Battle Drills (WTBD) and Common Soldier Tasks (CST) as proxies for tasks in a combat environment. There were three objectives: (1) determine the baseline physical requirements of WTBD/CST; (2) determine combat task performance variability explained by the Army Physical Fitness Test (APFT); and (3) determine if there were other field-expedient physical fitness test events that were more predictive of WTBD/CST performance. The BSPRRS study followed the original SPRRS and PDS study designs with three parts and multiple phases. The initial BSPRRS timeline was 25-28 months, however the actual date of completion was August 2015, approximately 35 months after the initial planning conference.¹⁸

Part 1.1 of the BSPRRS study (Task Development) included two phases. Phase I was a systematic review of current scientific research on physical training, to include injury prevention, physical standards development, physical training and assessment doctrine, and practices within the US Army, sister services, and other militaries and vocations. Special attention was given to these topics as they relate to age and gender. The findings of the systematic review were used to determine how to assess baseline physical readiness, inform current US Army physical training practices and doctrine, suggest ways to mitigate performance injuries, and shape the Master Fitness Trainer certification curriculum and instruction.

In Part 1.2, from September to December, 2013, the BSPRRS research team prepared the research protocol for the Institutional Review Board (IRB). In consultation with US Army Public Health Command (PHC), the decision was made to utilize the Medical Research and Material Command (MRMC) institution review board (IRB) as the IRB of record, and Public Health Center as the sponsoring agency. An experienced researcher on the BSPRRS team, MAJ David DeGroot (US Army Public Health Center), served as the principal investigator for the IRB process. Following the IRB protocols developed for the Physical Demands Study/Soldier 2020, separate BSPRRS IRB protocol documents were developed for the predictive validation and sequential validation phases (Parts 2 and 3 of the study). After the USAPHC Scientific Review committee reviewed and approved the protocols, they were submitted to the MRMC IRB for approval. The predictive validation phase was assigned MRMC IRB number M-10408 and was approved on 08 September, 2014; the sequential

validation phase was assigned MRMC IRB number M-10432, approved on 08 March, 2015.

In 2013, the US Army Center for Initial Military Training conducted a force-wide Warrior Tasks and Battle Drills survey. The purpose of the survey was to gather information about the operational relevance and importance of the individual WTBDs. Although these data were collected annually, the 2014 survey provided particularly salient background data for the BSPRRS study. Approximately 12,740 Officers and 14,284 Enlisted soldiers responded to the survey. Respondents were asked to indicate how important it was for all soldiers to be trained and proficient in each Warrior Task and Battle Drill. Additionally, respondents were asked to indicate if “Blue Force Tracker” should be added as a Warrior Task.¹⁹ Respondents were asked to indicate how frequently they performed each WTBD in combat (based on their own combat experience), how physically demanding each WTBD was to perform, which physical skills are necessary for executing the WTBDs, and the extent to which current Army Physical Readiness Training (PRT) successfully develops those skills. In a series of open-ended items, respondents were asked to indicate what (if any) additional Warrior Tasks and/or Battle Drills should be trained in IMT, and which should be eliminated.

In addition to indicating how important it was for all soldiers to be trained and proficient in the WTBDs, respondents were asked to indicate how frequently select WTBDs were performed in a combat environment, and how physically demanding/challenging those WTBDs were.

1. Importance:
 - Most-Maintain, Employ, Engage with Assigned Weapon, Perform Immediate Lifesaving Measures, and Evacuate a Casualty.
 - Least-React to Chemical or Biological Attack/Hazard, Employ Hand Grenades, Perform Combatives.
2. Frequently Executed:
 - Most-Establish Security, Maintain, Employ, Engage with Assigned Weapon, Adapt to a Changing Operational Environment.
 - Least-Employ Hand Grenades, Perform Combatives, React to Chemical or Biological Attack/Hazard.
3. Physically Demanding:
 - Most-Perform Combatives, Move Under Fire, React to Ambush (Near).
 - Least-React to Chemical or Biological Attack/Hazard, Maintain, Employ, Engage with Assigned Weapon, Employ Hand Grenades.

Respondents were asked to rank order key physical abilities in terms of how important those skills were for executing WTBDs. The order of most important were: (1) jump or leap over obstacles, (2) move with agility and coordination, (3) carry heavy loads, (4) drag heavy loads, (5) move long distances and burst movements (6) climb over obstacles and lift heavy obstacles off the ground, and (7) low/high crawl.²⁰ These results would later be incorporated into the Baseline study focus group materials and scripts.

In May 2014, the BSPRRS study began Part 2–Task Analysis. Part 2.1 began on 14–16 May 2013 when USACIMT held a working group conference at FT Eustis to identify and analyze the high demand common soldier tasks. The purpose of the conference was to:

1. Finalize a detailed study plan with timeline, tasks, and suspenses to subordinate elements.
2. Utilize the WTBD Physical Readiness Training survey to deconstruct the common soldier tasks into component functional and physical tasks (e.g., lifting, carrying, climbing, etc.).
3. Confirm WTBD/Common soldier Tasks task requirements and establish the percentage physical effort.

Working groups, composed of 4–5 soldiers and researchers, reviewed 113 common soldier tasks. Each group spent approximately two days aligning initial systematic review and survey data to the physical task requirements. Their first objective was to determine if a task was physically demanding, commonly occurring and critical. Eleven (11) common soldier tasks were determined to meet these criteria. Subsequently the 11 tasks were deconstructed into constituent physical components. Working group members determined that five (5) basic constructs represented all 11 tasks. These constructs were identified as: move long distances over unimproved terrain under load; mover over, under, around, and through obstacles; build a hasty fighting position, conduct hand-hand combat (employ progressive levels of force), and extract and evacuate a casualty. As a final deliverable, each conference working group produced a “word picture” for each common task construct and the proposed proxy simulation test for that construct.

Between 31 May and 27 June 2013, the BSPRRS Study team conducted focus groups with cadre at three US Army Training Centers, FT Jackson, FT Leonard Wood, and FT Benning primarily for the purpose of validating the five common task “word pictures.” Independent Focus Group Facilitators were provided by the US Army Public Health Command. Each member of the focus group had significant combat experience

through multiple deployments and represented male and female service members from the Enlisted and Officer Corps. The Focus Group Facilitator explained the intent was to establish baseline physical requirements that all soldiers should be expected to accomplish after one year at their first unit of assignment (FUA). Participants were asked to analyze and respond to the “word pictures”. The nexus of the focus group discussions was at what point do we assume a soldier will meet the baseline standards for WTBD/CSTs? The research team set that time to be near the end of the first year in the soldier’s first unit of assignment (FUA). With this benchmark date in mind and considering the “baseline” nature of the study, the focus groups made one primary recommendation: reduce the ruck load and tactical foot movement (TFM) distance. There was relative consensus that dismounted movement to an objective was rarely over 3-5 kilometers. The initial fighting and sustainment weights of 85lb and 103lb, respectively, were judged excessive for baseline measures, especially considering soldiers would be observed executing the baseline tasks without assistance. Based on recommendation of the focus groups, the TFM distance was reduced to 10 kilometers and the fighting and sustainment loads were reduced to 46 and 66 pounds respectively (weights varied depending on uniform and body armor plate size).



Figure 8.4. “Word Picture” for Movement-Mobility Task Initial Simulation.
Source: Created by the US Army Center for Initial Military Training.

In addition to additional conducting focus groups with active component soldiers, during the trip to FT Benning, a supplementary focus group was conducted at the US Army Combatives School on 26 June 2013. Perform hand-hand combat (employ progressive levels of force)

was identified in the 2013 soldier survey as the most physically demanding warrior task. While it was inappropriate to have soldiers “fighting” as part of the proxy simulation test, it was important to capture the physical requirements associated with hand-hand combat. The US Army Combatives School instructors identified four physical tasks: explosive front drive (legs), grip strength, rotational or torque drive, and sustained lower body drive. These four tasks were incorporated into the “perform combatives” word picture and simulation.

During this time period, the US Army Public Health Command took the lead to complete the BSPRRS systematic review of physical readiness. Eleven PHC professionals divided the subject matter into four areas: (1) correlation of physical fitness assessments and task performance, (2) physical fitness testing, (3) performance and injury, and (4) fitness and injury. The systematic review identified over 57,000 records through the systematic database search. After removing duplicates and extraneous records the PHC team reviewed 383 associated articles. The reviewers identified 13 core soldier tasks, such as: lift and carry; pull and push; scale and jump; squat and stand; climb, scale and jump; march and walk; etc. These tasks were deconstructed to identify the associated fitness components, i.e., strength, endurance, agility, etc. The PHC team then reviewed 175 articles pertaining to reliability and validity of field expedient fitness tests. Test events were categorized by fitness domain and equipment. This review established the base of common fitness test events selected for the BSPRRS study.

On 01-02 July 2013 a subgroup of the BSPRRS study team, with representatives from USACIMT, USMA, and USAPHC, meet at FT Eustis to review and revise the “word pictures” for the five task constructs based on the focus group comments and recommendations and the USAPHC systematic review.²¹ As a result, the five field simulations were finalized as the criterion proxy measure of baseline WTBD/CSTs. Once these revisions were complete, the subgroup set about merging the five proxy tasks into a single simulation test—the Warrior Tasks and Battle Drills Simulation Test (WTBD-ST). The WTBD-ST was designed to simulate a combat mission that required the five common task constructs: (1) movement to contact, (2) contact—move to cover, (3) react to direct fire—build a hasty fighting position, (4) react to close contact—hand-hand combat, and (5) extract and evacuate a casualty to safety. The five vignettes that comprised the WTBD-ST were originally sequenced in this order. The WTBD-ST began with a 10K foot movement under a modified sustainment load. Soldiers started the WTBD-ST at various intervals to ensure a “0-time” transition

from the foot movement to the four field task elements. Once a soldier completed the foot movement, they dropped part of the sustainment load, enter the “field course” and negotiated the four field task elements: move over-under, around obstacles, build a hasty fighting position, employ progressive levels of force (hand-hand combat), and extract and evacuate a casualty. The four field task elements were constructed on a 100m relatively flat, grass field.

Required Military Physical Fitness Components And Associations to Example Military Tasks						
Physical Requirement Areas And Fitness Components ^{1,2,3}			Primary Physical Fitness Sub-Components and Definitions ⁴		Example Associated Military Tasks/Activities ⁵	
(anaerobic-aerobic)	AEROBIC	ENDURANCE	CARDIO-RESPIRATORY ENDURANCE	→ Stamina "Aerobic fitness"	Ability to sustain high repetition low intensity muscle contractions for long duration	<ul style="list-style-type: none">* Patrolling/marching with a ruck* Continuous bouts of high intensity efforts with little or no breaks (e.g., lift, carry, fill, push, pull, drag, sprint/change direction, march) over extended time
			MUSCULAR ENDURANCE ⁴	→ Dynamic Strength (element of "Speed")	Ability to conduct high intensity muscle contractions repeatedly continuously for relatively short periods of time	<ul style="list-style-type: none">* Lift & carry equipment/ammunition/supplies* Dig and fill sand bags* Short sprint (e.g., while running for cover)
		→ Trunk Strength Endurance		Ability to conduct repeated high intensity trunk muscle contractions for relatively short periods of time		
		ANAEROBIC	STRENGTH	MUSCULAR STRENGTH ⁵	→ Static Strength	Ability to exert maximal force against a fairly immovable object for a short time
	→ Explosive Power (element of "Speed")				Ability to expend a maximum of energy to rapidly project or move an object or the body in one burst or a series of bursts	<ul style="list-style-type: none">* Jump/climb (over walls, logs, fences)* Short sprint (e.g., while running for cover)
	MOBILITY (and AGILITY)		FLEXIBILITY	→ Extent Flexibility	Ability to stretch, flex or otherwise lengthen various parts as far as possible.	<ul style="list-style-type: none">* Stop/change direction (e.g., while running cover to cover) with and without load* March/run/walk/carry; with and without load* Shoot
				→ Dynamic Flexibility	Ability to stretch, flex or otherwise lengthen various parts quickly (speed component) as far as possible	
			COORDINATION	→ Gross body coordination	Ability to synchronize simultaneous movement of a number of body parts.	
			BALANCE	→ Static	Ability to maintain body at equilibrium (stable posture) in a fixed position when static	
	→ Dynamic	Ability to maintain body equilibrium (stable posture) when moving.				

Figure 8.5. Required Military Fitness Components and Associated Tasks.

Source: Hauschild V., DeGroot D., Hall S., Deaver K., Hauret K., Grier T., and Jones B. *Correlations between Physical Fitness Tests and Performance of Military Tasks: A Systematic Review and Meta-Analyses*, US Army Public Health Command, PHR No. 12-02-0614, June 2014.

During July 2013, researchers finalized the WTBD Simulation Test (Part 2.2) in preparation for field testing. They first established the WTBD-ST equipment requirements and built many of the obstacles that were used in the proxy simulation test. Once the simulation test was finalized,

the BSPRRS Study team scheduled two field test observations: (1) US Army Drill Sergeant Academy, FT Jackson, SC (August 2013) and (2) 4th BCT/4th ID, FT Carson, CO (September 2013). At each location, soldiers executed the four WTBD-ST field task elements in the Army Physical Fitness Uniform (APFU) and Army Combat Uniform (ACU). The four WTBD-ST field tasks were executed individually and as a composite task in ACUs and in a modified fighting load. Ultimately the four WTBD-ST field tasks were executed as a composite task following a 10km foot movement in a modified sustainment load. Following each testing session, soldiers completed an extensive AAR on the events, distances and loads.

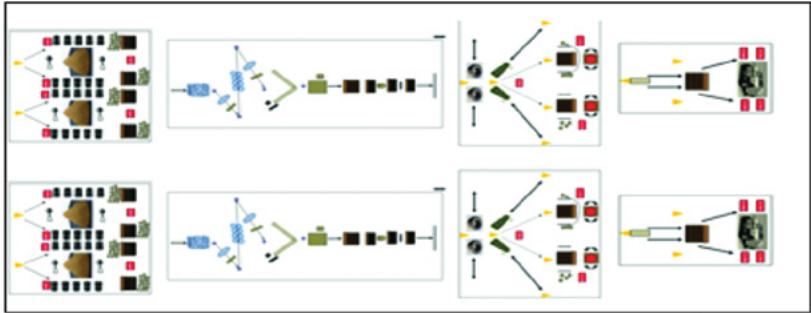


Figure 8.6. Warrior Tasks and Battle Drills-Simulation Test Schematics.

Source: Photos top to bottom. Photo 1. Created by Mr. Don Goddard, US Army Public Health Center. Photo 2. Created by author.

Following the field observations at the Drill Sergeant Academy, researchers changed the order of the four field task elements. The initial WTBD-ST was designed to simulate a continuous 100-120-minute field operation; there were no designed breaks or rest periods. Once a soldier completed the 10k ruck movement, they were to proceed directly to the four field test elements. Soldiers started the 10k ruck movement in buddy

teams about every five minutes to prevent a backup on the field task elements. Due to the significant variations in performance times on the “build a hasty fighting position” (the 2nd element), some soldiers “caught up” with the soldier ahead of them and were forced to rest for 5-10 minutes. To ensure soldiers moved continuously through the WTBD-ST, the “build a hasty fighting position” element was repositioned as the first element of the four “field test elements.” This change allowed research to improve time movement through the WTBD-ST and prevent unplanned rest periods. In the final phase of Part 2.2, male (n=243) and female (n=47) soldiers at FT Carson, CO participated in refining the WTBD-ST. Additional minor WTBD-ST modifications were made following the FT Carson field test observations to include structural changes to the casualty evacuation element.



Photos taken by author.

Figure 8.7. Warrior Tasks and Battle Drills-Simulation Test Field Observations, Fort Carson, CO, October 2013.

Source: Photos by author.

Following the field observations at FT Carson, CO, researchers determined the 10km foot movement did not provide a sufficient pre-fatigue to simulate “approach” conditions in multi-domain operations. The 10km foot movement was also extremely difficult to manage in a field test environment, specifically to ensure a “0-time” transition from the foot movement to the hasty fighting position element. The objective was to simulate an approach on the objective, followed by direct action. To achieve these conditions, required minimizing the transition time from the foot movement to the field task elements. As a result of insufficient pre-fatigue (rates of perceived exertion ranged between 10-14 on the 20-point scale and time management issues, foot march times ranged from 71-150 minutes), the BSPRRS research team changed the 10km foot movement to a 1600m ruck run/walk similar to the start of the Ranger Physical Assessment Test (RPAT).²² This change was successfully field tested in April 2014 with a platoon from the 3/75 Ranger Regiment. As part of the initial Part 3 analysis, researchers compared WTBD-ST completion times of disparate groups of soldiers (combat arms vs. combat support) to determine the discriminate validity of the WTBD-ST as a criterion measure of Warrior Tasks and Battle Drills and Common Soldier Tasks.²³

The US Army Center for Initial Military Training held monthly in-progress reviews for the BSPRRS study throughout the fall 2013 and the research team conducted extensive after-action reviews of the FT Jackson and FT Carson WTBD-ST field observations. On 21 November 2013 Major General Ross Ridge assumed command of the US Army Center for Initial Military Training. 15 January 2014 marked the end of Part 1 and Part 2 of the BSPRRS study. The study team conducted an update with senior TRADOC leaders to discuss the progress and findings and seek guidance on Part 3—Test Development. The two most significant planning topics were the final WTBD-ST field trial with the 3/75 Ranger Regiment and the selection of the FORSCOM field validation test site. TRADOC senior leadership approved the final Part 3 plans and the study team prepared to test all changes to the WTBD-ST and final selection of the common physical fitness test events. Finally, on 26 February 2014 the BSPRRS working group consisting of 14 military and civilian SMEs meet at FT Eustis to: (a) review HQDA EXORD 041-13; FRAGO#1; FRAGO#2, (b) brief the working group on changes to the WTBD-ST; (c) conduct an initial scrub of potential field-expedient fitness test events, and (d) conduct initial planning for Part 3 a., b., c.

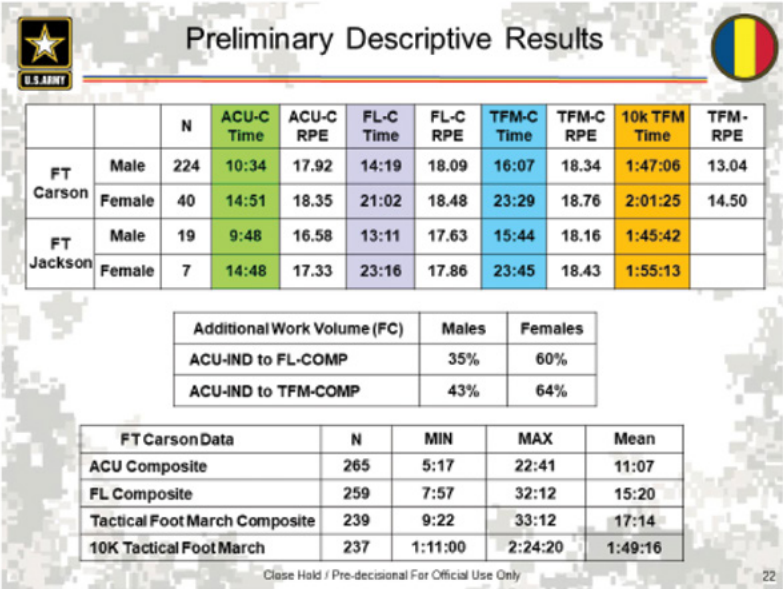
In the final phase of the BSPRRS Part 2, researchers conducted two focus groups to re-validate the modified WTBD-ST and solicit input for

field-expedient physical fitness test events to be used as predictor variables in the criterion validation. On 25-26 March 2014 researchers conducted focus groups at FT Lewis, WA, and on 01-04 April 2014 at Aberdeen Proving Grounds, MD to provide a representative sample from the broader US Army. Specifications for the composition of the WTBD-specific focus groups (e.g.; rank, experience, deployment history) were provided to FORSCOM leaders. Two groups were used at each site: junior/senior enlisted personnel and company-grade officers with significant deployment experience. The groups were provided with an overview of the project (including WTBD/CSTs) and the importance of their input into the process. There were three objectives to the focus group process: (1) to determine if the WTBD/CST list was comprehensive and confirm prioritization by “common, critical, physically demanding”; (2) to validate through visual observations (video) that the WTBD as executed accurately depict reality; and (3) to rate the influence/contribution of each physical/motor domain to the optimal execution of a WTBD/ CST. No personally identifiable information (PII) was requested other than to ensure the groups represented the desired demographic composition. The primary outcome of the focus groups was a confirmation of the WTBD-ST tasks and recommendations for common physical fitness test events to be included in the predictive validation phase.

BSPRRS Predictive Validation Analysis

Part 3 of the BSPRRS study began in APR 2014 with a review of data from Parts 1 and 2, specifically a task analysis of the WTBD-ST. From these data, researchers identified five basic constructs of high demand WTBD performance: (1) move quickly over, under, around, through obstacles; (2) lift, carry, drag heavy loads; (3) generate and apply force; (4) execute submaximal work for long periods; (5) move long distances over uneven terrain under heavy loads. In late April 2014, FORSCOM informed USACIMT the predictive validation site would be FT Riley, KS. On 04-05 June 2014, 18 military and civilian SMEs meet to finalize the testing plans for the predictive validation. Primary among their tasks was the selection of a group of field-expedient fitness test events—-independent variables. A common method of assessing predictive validity is to regress concurrent performance of the dependent criterion measure-y (WTBD-ST) on independent predictive measures-x (common physical fitness test events). The predictive validation was conducted to assess the concurrent validity of the Army Physical Fitness Test (APFT) and to determine if other common physical fitness test events better explained performance variations in the WTBD-ST. This methodology is commonly used to iden-

tify field-expedient measures that can serve as proxy assessments for more time-, equipment-, and labor-intensive occupational task measures (e.g., skinfold measures as a proxy for DEXA body composition, 2-mile run as a proxy for laboratory measures of peak VO₂, etc.). Since a criterion measure for WTBD/CSTs performance did not exist, researchers developed the WTBD-ST and established face and content validity with strong external responsiveness in Part 2 of the BSPRRS study.²⁴



Slide developed by author

Figure 8.8. Warrior Tasks and Battle Drills-Simulation Test Performance Times, Fort Jackson, SC, and Fort Carson, CO, 2013.

Source: Created by the US Army Center for Initial Military Training.

After the USAPHC Scientific Review committee reviewed and approved the research protocols, they were submitted to the MRMC IRB for approval. The predictive validation phase was assigned MRMC IRB number M-10408 and was approved on 8 September, 2014; the sequential

validation phase was assigned MRMC IRB number M-10432, approved on 8 March 2015.

BSPRRS Part 3.a. The predictive validation analysis was initially designed to establish a list of “predictor” variables that were highly correlated to WTBD/CST performance. Through the 2013 US Army-wide PRT survey, BSPRRS focus groups and working group meetings with military and civilian SMEs, the BSPRRS Study team identified 23 common field-expedient physical fitness test events. The BSPRRS study team expected some combination of these predictor variables to move accurately predict a soldier’s ability to perform high-demand WTBD/CSTs. There was also concern expressed that the APFT failed to meet the baseline testing requirements of DOD-I 1308.3-DOD Physical Fitness/Body Composition Program.²⁵ The predictive validation process utilized a linear stepwise model to regress the WTBD-ST performance on the 23 common physical fitness test performance. Physical performance data for 324 soldiers from the 1st ID Brigade Combat Team (BCT) and Combat Aviation Brigade (CAB) at FT Riley were used in this analysis. Soldiers were divided into two groups and physical performance data were collected over five days, two sessions per day, from 15-19 September and 22-26 September 2014. Soldiers trained on and executed the WTBD-ST each morning and 4-5 physical predictor test events each afternoon. There was a minimum of 4 hours rest/recovery between the two sessions. Morning and afternoon sessions were sequenced to minimize conflicts in exercise intensity and physiological interactions. The uniform for the morning sessions was: US Army combat uniform (ACU), boots, US Army combat helmet (ACH), improved outer tactical vest (IOTV), hydration bladder, and weapon. Fighting load weights averaged between 40-50lbs (including ACU and boots) and sustainment load weights (for the 1600m run/walk) averaged between 55-65lbs. The uniform for the afternoon sessions was the Army Physical Fitness Uniform (APFU). Male (278) and female (46) soldiers completed the WTBD-ST, the Army Physical Fitness Test (APFT) and 23 common physical fitness test events to determine the regression prediction model.

The descriptive statistics were presented by event for males (M), females (F), and combined (C). These data were unremarkable and represented performance ranges expected by healthy, young adults. Run times (minutes) for the four field elements ranged from: Fighting Position—4:30 to 9:00, Move Over-under-around-through (OUAT)—1:30 to 4:30, Progressive Force—1:30 to 4:30, Casualty Evac—1:00 to 3:30, and Total Time—9:00 to 22:00. The average run times for the 1600m loaded ruck run/walk were: men = 12:05, women = 15:04. For reference, the average 1600m loaded

ruck run/walk times for the Ranger sample from 3rd Battalion/75th Ranger Regiment (3/75) was 9:37 minutes.

1. Movement to contact.



2. Build a hasty fighting position.

3. Move over-under-around-through obstacles on uneven terrain.



4. Employ progressive levels of force (man-man contact).



5. Extract – Evacuate a casualty.



Photos taken by author.

Figure 8.9. Warrior Tasks and Battle Drills-Simulation Test Lane Elements.

Source: Photos by author.

The first step in the predictive validation analysis was to finalize the criterion score (dependent variable). Researchers ran two test trials of the WTBD-ST in fighting load (with and without pre-fatigue). Since the bi-variate correlation coefficient between the WTBD-ST in fighting load and

WTBD-ST in fighting load following the pre-fatigue (1600m ruck run/walk) was $r = 0.833$, either trial could have served as the dependent variable. However, there was significant discussion among the researchers and soldiers about which trial best represented general WTBD/CSTs performance at the point of contact. There was a slight performance difference for the two conditions (fighting load = 13:26; pre-fatigue + fighting load = 14:42). Since some missions require soldiers to dismount and fight at the point of contact, while others require soldiers to move some distance over uneven terrain to an objective before executing the mission, both WTBD-ST conditions represent potential operational scenarios. To provide the most representative measure of WTBD/CSTs performance, researchers computed the average run time for the two trials (modified fighting load with no pre-fatigue, modified fighting load with pre-fatigue carrying a modified sustainment load) as the WTBD-ST dependent criterion variable.

In the first analysis, WTBD-ST scores were regressed against the three Army Physical Fitness Test (APFT) events. The generally accepted industry standard for explained variance in multiple regression models (R^2) is $> .70$, or 70%. For the FT Riley sample, a combination of the three APFT events was a moderately low predictor of high-demand WTBD/CST performance as measured by the WTBD-ST ($R^2 = 0.423$). In the second analysis, WTBD-ST scores were regressed against the 23 physical common fitness test events. The stepwise linear regression model identified eight variables that were a relatively high predictor of WTBD-ST performance ($R^2 = 0.737$).²⁶ The eight variables were: sled drag, standing power throw, 2-mile run, deadlift, sled push, leg tuck, kettlebell squat, and push-up.²⁷ While high predictive validity was critical, it was equally important to the US Army to produce a model that assessed all components of fitness to drive a transformation in physical readiness training and reduce musculoskeletal injuries (MSKI). After reviewing the FT Riley results, US Army leadership were concerned by the lack of an anaerobic endurance test event. This issue was more problematic since the 400m sprint loaded in the full regression model when only the fighting load trial was used.²⁸ Therefore, the 40lb kettlebell squat was replaced by the 300yd shuttle run and forced into the regression model. In the full model regression with eight predictor variables $R^2 = 0.737$: sled drag, 2-mile run, sled push, deadlift, push-up, leg tuck, 300yd shuttle run, standing power throw.

BSPRRS Sequential Validation Analysis

BSPRRS Part 3.2. Following the completion of the predictive validation analysis at FT Riley, KS, the BSPRRS Study team conducted a

2-day working group meeting at FT Eustis, VA on 4-5 NOV 2014 to plan the sequential validation analysis research protocol. The purpose of the sequential validation was to answer four questions:

1. Could graders successfully administer the 8-item test battery?
2. What are the administrative problems associated with an 8-item test battery, particularly with graders and time?
3. What were the performance implications for the 2-mile run following seven relatively demanding test events?
4. How did administering the eight test events sequentially with no program rest effect the predictive validity?²⁹

Eleven military and civilian SMEs meet to discuss the results of the FT Riley data analysis and to finalize the testing protocol and construct assurance for the sequential validation. In conjunction with the Physical Demands Study, the BSPRRS working group identified five requisite physical fitness constructs: muscular strength, muscular endurance, cardiorespiratory/aerobic endurance, speed/agility (anaerobic endurance), and explosive power (anaerobic power).³⁰ There was significant discussion by the military and civilian SMEs concerning construct assurance of the predictor variables and their physiological interaction when administered sequentially as a “test.”

Most of the discussions centered on the fact that the predictor variables for the FT Riley sample were collected over multiple days. This issue was manifest when both the 2-mile run and the 40lb kettlebell squat repetitions to fatigue (RTF) loaded in the model. Although the 2-mile run is primarily a measure of aerobic endurance, there is an inherent lower body muscular endurance component similar to the 40lb kettlebell squat RTF. US Army leadership was also concerned that these eight fitness test events did not represent all components of physical fitness and therefore would not drive a comprehensive change in physical readiness training to increase combat lethality and potentially reduce musculoskeletal injuries (MSK-I).

From early 2012 to 2014, US Army senior leadership continued to move forward with a renewed commitment to physical fitness and readiness. While there were various endeavors, this effort primarily centered around the concept of holistic health and physical fitness. To facilitate continued progress, the US Army published HQDA EXORD 021-15, Optimized Physical Fitness on 08 November 2014. The 021-15 mission as stated was: “(U) Mission. Effective immediately, TRADOC facilitates a community of practice forum (consortium) of the right subject matter

experts to enable the development of an army physical fitness plan that will optimize soldier physical readiness while reducing injuries and unprogrammed attrition.”³¹ Listed below is the background information provided in the EXORD.

1. (U) Situation. 1.B. The Army requires a more holistic view of physical fitness that encompasses the latest and most comprehensive information available to improve the strength and conditioning of the force. Physical fitness program enhancements should focus on muscular strength, muscular endurance, mobility, power, speed, agility, and work capacity as it relates to warfighter requirements. Subcomponents of this broad-based program should include performance nutrition, body composition management, psychological and emotional health, performance enhancement, sleep, and sports medicine contributions for optimal physical performance. Review of best practices from initiatives, such as, the tactical human optimization, rapid rehabilitation and reconditioning (THOR3) program, the Ranger Athlete Warrior program (raw), the warrior athletic trainer, combative training, Performance Triad, Baseline Soldier Physical Readiness Study, Physical Demand Study, Mountain Warrior Program, the Master Fitness Trainer and any like initiatives and programs is needed for a holistic view of physical fitness.³²

A product of the 4-5 November 2014 working group was a draft of the human use protocol for Part 3.2 of the BSPRRS study. In late spring 2015, the USAPHC Scientific Review committee reviewed and approved the Part 3.2. testing protocol. The protocol was submitted to the MRMC IRB for approval. The sequential validation analysis protocol was approved on 8 MAR 2015 and was assigned MRMC IRB number M-10432. The sequential validation testing took place at FT Benning, GA from 16-19 March 2015. Soldiers from 3rd Infantry Division (stationed at FT Benning) and the Maneuver Center of Excellence participated in the study. The sample consisted of n male = 136, n female = 16, n total = 152. All soldiers volunteered to participate in the study and provided informed consent as required in the research protocol. On Monday morning, 16 March 2015 soldiers participated in a WTBD-ST talk-train-practice session. The 8-item physical fitness test battery was administered on Monday afternoon, 16 MAR and again on Thursday afternoon, 19 March. The descriptive statistics for the eight test events were unremarkable and represent performance ranges expected by healthy, young adults.³³

On Tuesday afternoon, 17 March 2015, participants ran the WTBD-ST field elements (hasty fighting position, move OUAT, combatives, and casualty evacuation) as a composite task in ACU/boots. On Wednesday afternoon, 18 March, participants ran the WTBD-ST field elements as a composite task in ACU/boots and a modified fighting load. Average WTBDs run times (minutes) for ACU/boots = 5:49 to 13:16; and for ACU/boots/fighting load = 6:26 to 15:08.

Since subjects were untrained on the eight physical fitness test events, to maximize external validity of the regression analysis, the eight test event scores from Monday and Thursday were averaged to formulate the independent variables. Although distributions for the independent and dependent variables varied from slight to moderate skewed, they were representative of the population distributions for soldiers. Therefore, researchers conducted a full model regression analysis utilizing the empirical raw scores. The full regression model for all eight (8) fitness test events was: $R^2 = 0.835$.³⁴

An important aspect of physical performance assessment is the repeatability of the measures over time, i.e., inter-rater reliability. During the sequential validation analysis at FT Benning, soldiers ($n = 152$) were administered the eight physical fitness test events sequentially, with no programmed rest, on Monday and again on Thursday. The predictor tests were administered over a 90-minute period each day at the same time/location, in the same order, using the same testing procedures and graders. The Cronbach's alpha reliability values ranged from a low value of 0.839 for the Sled Push and a high value of 0.991 for the Power Throw. All the Cronbach's alpha statistics exceeded the .70 criterion level "rule of thumb" for acceptable reliability.³⁵

On 3 July 2015, Major General Anthony Funkhouser took command of USACIMT. One of his first actions was to craft the final Baseline Study report for TRADOC senior leadership. The BSPRRS researcher team presented five conclusions and five recommendations to TRADOC senior leaders in late July 2015:

Conclusions:

1. Soldiers must be prepared to perform in all five basic constructs of common soldier tasks.
2. To ensure successful performance on common soldier tasks, the US Army's physical fitness test must measure all components of fitness to include: muscular strength and endurance, aerobic and anaerobic en-

duration, anaerobic power (speed), and skill-related fitness flexibility, agility, coordination, and dynamic balance.

3. The comprehensive physiological and anatomical balance of the test battery will change the focus of physical readiness training to enhance combat lethality and mitigate musculoskeletal injuries.
4. The US Army should replace the APFT with the new 8-item test battery.
5. The 8-item test battery will require additional time, equipment and personnel to support test administration.

Recommendations:

1. The name for the 8-item fitness test battery is the Army Physical Readiness Test (APRT)
2. The US Army has not changed the record physical fitness test for 40 years. Any changes to the record test must be approached slowly, allowing soldiers time adapt to new training and testing requirements.
3. Since the APRT was validated against common soldier tasks required of all soldiers, the APRT should be the test of record for the entire US Army and should follow senior leader guidance and NDAA requirements for gender-neutral standards. The APRT standards should follow the tiered approach (Heavy, Significant, Moderate) used in the Occupational Physical Assessment Test.
4. The US Army can significantly improve predictive power for combat task performance by including fitness test events that assess muscular strength, anaerobic endurance and explosive power.
5. While the eight (8) fitness test events identified in this study require some equipment, this equipment is extremely durable, which reduces long-term costs. The potential to reduce injuries through more focused and progressive physical readiness training may further reduce testing costs through injury cost recovery.

US Army Combat Fitness Test Implementation

From late summer 2015 until mid-spring 2016, there were a myriad of intervening factors related to the Baseline Soldier Physical Readiness Requirements Study and the Army Physical Readiness Test. The most distracting factor for the BSPRRS study team was the approval and fielding of the Occupational Physical Assessment Test (OPAT).³⁶ In October 2015 USARIEM presented their initial findings from the Physical Demands Study (PDS).³⁷ They recommended the US Army consider one of two 4-item test batteries for use with recruits prior to shipping to basic training. Although the Physical Demands study team still planned to execute

a final validation of the 4-item battery, senior leadership was anxious to field the OPAT. Members of the USACIMT BSPRRS study team assisted with the OPAT validation testing and standards development. Ultimately, OPAT testing started in US Army recruiting centers in early summer 2016 and the OPAT became the accessions test of record for the US Army on 3 January 2017.³⁸ The second intervening factor was the increased interest in the concept of holistic health and fitness. Following the publication of HQDA EXORD 021-15 and efforts by the Combined Arms Center Human Dimension team, senior leaders began to see the holistic health and fitness effort as a way to resolve the US Army's growing readiness issues. The third intervening factor was the difficulties staffing the BSPRRS study results with US Army senior leadership. In the year following the conclusion of the BSPRRS study, US Army senior leadership engaged in numerous discussions pertaining to changes to the doctrinal "test of record" for the US Army. The BSPRRS study team was asked to review and resolve three primary concerns: (1) administration time, (2) equipment costs, and (3) number of test events.

When Major General Anthony Funkhouser took command of CIMT in 2016, it marked the end of the Baseline Physical Readiness Requirements Study and a transition to the APRT implementation. The "baseline" study team began to reframe the decision-making process for final APRT event selection. Although the first step in event selection was to establish the predictive validity of the test battery, the ultimate selection process was a multi-factorial process, with each factor bearing different weighting throughout the decision process. There were three primary factors: (1) predictive validity (accuracy of the test battery), (2) content validity (providing a comprehensive measurement of physical fitness), and (3) injury reduction (the potential to drive down injuries and attrition through better training).

A variety of regression models, i.e., concurrent/predictive validation, were computed for various test events. The results were consistently above the industry standard R^2 of 0.70, thus establishing that some combination of the independent BSPRRS variables were significantly better than the predictive validity for the 3-event APFT. Pursuant to these regression models, two supplementary discussions ensued to ensure the APRT test battery was a "comprehensive" measure of physical fitness and that more comprehensive and referent training would help address the pervasive "injury" problems of the US Army. For the comprehensive measurement (i.e., content validity) discussion the Baseline study team identified three anatomical regions: upper body, lower body and core and three fitness

domains: strength, endurance and power. A comprehensive test battery could theoretically require a minimum of 27 test events; clearly this number of test events was unsustainable. During the Warrior Tasks and Battle Drills–Simulation Test analysis, it was determined that projecting strength, endurance and power in specific anatomical regions was sufficient to adequately predict high demand WTBD-CST performance and drive comprehensive physical fitness training. Finally, to ensure better content validity the Baseline study team review other US Military Service and International Army physical fitness tests to ensure higher face validity for the APRT. There were specific linkages to the Occupational Physical Assessment Test, the Ranger Athlete Warrior Assessments and the US Air Force Operator (ALO-TACP) Physical Fitness Test.³⁹ Test event overlap with these three fitness tests was significant and reinforced the predictive validity of the APRT.

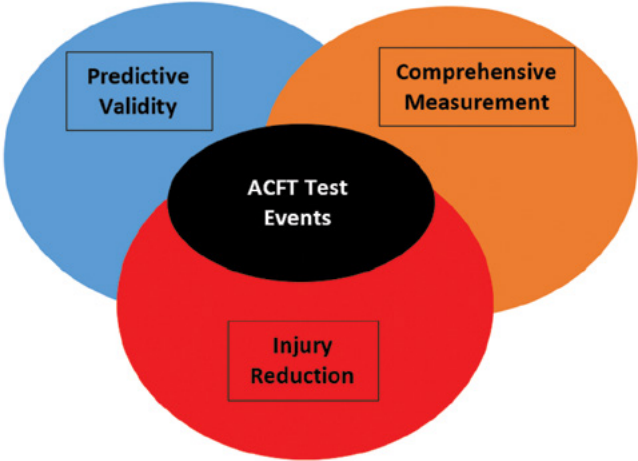


Figure 8.10. Army Physical Readiness Test Event Selection Criteria.

Source: Created by the US Army Center for Initial Military Training.

The discussions on injury prevention focused on the most prevalent and debilitating injuries in the US Army; i.e., the lower back, hip and shoulder, and lower back injuries were the costliest and most debilitating. Since the advent of widespread physical fitness testing in the 1940's, the US Army has struggled to operationalizing a comprehensive physical

readiness training program. This is evidenced by the necessity for a statement in AR 350-1 cautioning commanders not to ‘train to the APFT’. As example of this training problem, core strength exercises, e.g., Climbing Drills, were codified in US Army training doctrine and published in TC 3-22.20 and FM 7-22.⁴⁰ “Doctrine provides a systematic body of thought describing how US Army forces intend to operate as a member of the joint, multinational, or interagency force. This in turn provides a common body of knowledge for education, training, and coordination with unified action partners.”⁴¹ US Army doctrine is intended to drive training—it is not a recommendation. The leg tuck (LTK) event requires training of the upper body posterior chain, core/abdominal flexor muscles, and hip flexors. Training for the LTK helps ensure shoulder stability (especially anterior to posterior balance) and core strength and stability. The LTK is also a significant multiplier in functional military tasks: moving over/under/around and through obstacle, vertical and horizontal rope climb, extracting and evacuating casualties, load carriage, etc. As published in TC 3-22.20 and FM 7-22, “climbing drills” in general and the leg tuck specifically have been specified in US Army training doctrine for over 10 years, however in initial APRT testing a significant number of soldiers were unable to execute even one repetition of the leg tuck exercise. From a comprehensive training-injury prevention perspective, the Baseline study team considered the leg tuck test event as the most important event to reinforce core strength training and therefore mitigate potential MSK-Is.

Fitness Domains	US Army (OPAT)	US Army (APFT)	US Navy (PFT)	US Army (ACFT)	US Army Ranger RAW Assessments	US Ranger Physical Activity Test (RPAT)	US Service Academies	US Marine Corps (PFT+CFT)	US Air Force (ALO-TACF)
Agility/Speed				Sprint-Drag-Carry	5-10-5 Pro Agility 300-yd Shuttle Run	200m sprint	40m Shuttle Run	Zig-zag Run	3-cone Drill
Explosive Power	Long Jump Power Throw			Standing Power Throw	Standing Long Jump	8ft Vial Scale	Basketball Throw	Grenade Throw	Medicine Ball Toss Farmers Carry
Muscular Strength	Deadlift			Deadlift	Deadlift	28-ft rope/ladder climb 100m SKEEDOO drag		Buddy Carry Casualty Drag	Grip Strength Deadlift
Muscular Endurance		Push-ups Sit-ups	Push-ups Curl-ups	Hand-release Push-up Plank	Pull-up 3-min Push-up Cadence Push-up 2-min Sit-ups Heel Claps		Pull-ups Push-ups Crunches	Pull-ups Push-ups Crunches Ammo Can Lift	Pull-ups Weighted Lunges Crunches
Aerobic endurance	Interval Aerobic Run	2-mile Run	1.5-mile Run	2-mile Run	2-mile Run 5-mile Run	2-mile Run Int'lite 1-mile Run Ex'lite	1-mile Run	3-mile Run	1K Erg Row 1.5-mile Run

Figure 8.11. Comparison of US Military Service Physical Fitness Tests.

Source: Created by author.

During discussions on content validity and injury prevention, TRA-DOC leadership expressed concerns over the number of test events (eight) and cost of equipment (specifically the prowler sleds and associated weight plates). In an attempt to address these concerns, following a working group

session in mid-February 2016, the Baseline study team suggested consolidating three test events to reduce the number of events from eight to six, which would also significantly reduce the amount and cost of equipment by eliminating the prowler sled. Since three test events measured some aspects of anaerobic power and anaerobic endurance, these events were the most logical to consolidate. Researchers proposed a hybrid test event that combined portions of the sled drag, sled push, and 300yd shuttle run to form the 250m Sprint-Drag-Carry (SDC). The SDC was comprised of: 50m sprint, 50m sled drag, 50m sprint, 50m farmers carry, 50m sprint.⁴² To evaluate the influences of the consolidated variable on the explained variance in the full regression model, researchers modeled a composite variable based on the standardized values of the sled push, sled drag, and 300yd shuttle run. Using the 2015 FT Benning data, the six (6) test event battery, which included the SDC model event, remained a high predictor of WTBD/CSTs performance; $R^2 = 0.795$.

Once researchers determined the concurrent regression model using the SDC composite variable was sufficiently predictive of WTBD-ST performance, the Baseline study team socialized the change with TRADOC senior leaders. Ultimately the composite SDC variable solved all three primary concerns for senior leadership. The development of the SDC reduced the number of test events from eight to six; reduced administration time from approximately 90 minutes to 75 minutes; and significantly reduced equipment costs by eliminating the ‘prowler’ sled (push), the ‘speed’ sled (pull) and associated weight plates.⁴³

During the last quarter of FY16 and the first three quarters of FY17 the Baseline study team transitioned the majority of their efforts to fielding the OPAT. In late 2016, frustrated with the pace of change for APRT transition, General Robert “Abe” Abrams, Commander, US Army Forces Command (FORSCOM) directed his staff to develop a “functional” alternative to the APRT, called the Soldier Readiness Test (SRT). The SRT was designed to replace or supplement the APRT. The SRT was designed to test high-demand warfighter tasks in a more occupationally-relevant environment. The concept of a physical fitness test and a functional fitness test followed the testing model used by the US Marine Corps with their Physical Fitness Test (PFT) and the Combat Fitness Test (CFT). On 17 March 2017, FORSCOM briefed US Army senior leadership on the Soldier Readiness Test. Soldiers conducted the SRT in Operational Camouflage Pattern (OCP) and boots.⁴⁴ The SRT consisted of three timed phases: (1) high intensity anaerobic endurance, (2) moderate intensity endurance and explosive power, and (3) low intensity aerobic endurance. Soldiers

were scored on each task in each phase to a performance and time standard: Phase 1: 2 minutes (tire flips, T-agility drill, casualty drag), Phase 2: 3 minutes (unit-centric task like 200m farmers carry and 40-lb sandbag toss), and Phase 3: 18 minutes (1.5-mile run over unimproved terrain). The total time to complete the SRT test was 23:00. During the SRT pilot year a myriad of issues arose: administrative problems (course design and cost, course set-up and testing through-put), training implications (soldiers tend to train what and how they are tested), and the numerous ways to fail the SRT (failure to execute the specified number of repetitions or distance, or failure to meet any of the four time standards). Ultimately, as the APRT gained traction in 2018 and General Abrams was selected as Commander of the United Nations Command, the Combined Forces Command, and of United States Forces Korea (UNC/CFC/USFK) ; further work on the SRT was suspended.⁴⁵

Although the Baseline Soldier Physical Readiness Requirements Study was essentially complete in 2016, with no decision from US Army senior leadership, Major General Funkhouser directed the Baseline study team to develop a strategy to continue the transition from the APFT to the APRT. Due to confusion TRADOC leadership made the decision to change test name from the Army Physical Readiness Test to the Army Combat Fitness Test (ACFT). The most salient reason was to differentiate between the APRT and the SRT. These messaging efforts culminated in May, 2017, when CIMT leadership briefed the Holistic Health and Fitness concept and Army Combat Fitness Test (ACFT) at the TRADOC Commanders Forum at Fort Leonard Wood, MO. This was the first “public” briefing of the ACFT to wider US Army audience. As part of the annual TRADOC Commanders Forum, senior leaders gave a warning order to TRADOC commanders on the upcoming FY18 field validation trials.

On 19 July 2017 Major General Malcolm Frost assumed command of USACIMT. To maintain continued momentum MG Frost directed the “ACFT study team” to develop a phased implementation plan with three phases: FY18-ACFT Field Testing, FY19-ACFT Initial Operating Capability, and FY20-ACFT Full Operating Capability. MG Frost reasoned that the phased approach would allow the US Army to adapt to the new fitness test events, change training programs and execute adaptive physical training. A significant part of this plan was the publication of a new FM 7-22, Army Physical Readiness Training, under a new title and format. The strategic plan also consisted of conducting field test validations with different groups of soldiers (male-female, officer-enlisted, Compo 1-2-3),

During 2017–2018 the ACFT study team conducted six field tests for the ACFT. There were five objectives for the field validation trials: (1) finalize testing protocols, (2) maintain ACFT transitional momentum, (3) socialize the ACFT to a broader soldier population, (4) assess ACFT performance for a broader soldier population, and (5) educate the force on anticipated changes to physical readiness training programming. Over the next nine months, field validation testing was conducted at six locations:

- 02–04 August 2017–WAARNG and 2/75 Ranger soldiers (n = 80).
- 12–14 September 2017–AIT Cadre and AIT students FT Lee, VA (n = 121).
- 17–19 October 2017–IET Cadre at FT Leonard Wood, MO (n = 283).
- 15 November 2017–Cadre at AMED-C&S San Antonio, TX (n = 50).
- 16–18 April 2018–1-1AD soldiers and USASMA students at FT Bliss, El Paso, TX (n = 120).
- 21 April 2018–“Forty over Forty”, USMA, West Point, NY (n = 39).

One objective of the field validation trials was to finalize the six ACFT test event order, especially since the SDC was not a “test event” during the predictive or sequential validation studies. Three different orders were considered and discussed at various locations, especially among testing team members. The test event order was also justified against the principle of physiological interference—i.e., sequentially ordering test events to minimize load in a component of fitness or physiologic loading. Before the field validation trails even began, TRADOC senior leadership directed the ACFT test administration would begin with a 10-minute Preparation (Prep) Drill and a 10-minute maximum deadlift (MDL) warm-up designed to prepare soldiers for high-demand physical exertion. The 10-min MDL warmup forced the MDL into the first test event slot. The standing power throw (SPT) was always coupled to the MDL to provide lower body loading prior to an explosive power event. Since the first two test events were lower body strength and power, researchers moved the hand release push-up (HRP), upper body muscular endurance, to the 3rd position. In order to separate the two muscular endurance test events, the HRP and the Leg Tuck (LTK), the SDC was placed in the 4th slot, followed by the LTK. Due to the wide range of 2-mile run (2MR) times, the 2MR was always planned as the 6th test event.⁴⁶ While there were logical arguments for various testing orders, the consensus during the Field Validation trials was: Prep Drill, MDL Warm-up, (1) MDL, (2) SPT, (3) HRP, (4) SDC, (5) LTK, and (6) 2MR. The expectation at this time was the ACFT could be administered in 1.5 hours or 90 minutes, given the proper number of lanes and equipment and a trained and experienced group of graders.⁴⁷

In early January 2018, Secretary of the Army, the Honorable Mark Esper scheduled an ACFT demonstration brief and diagnostic test at FT Eustis, VA. An unexpected snow storm prevented Secretary Esper's travel to FT Eustis. To make up for the missed ACFT demonstration brief to the SECARMY, MG Malcolm Frost, Commander for US Army Center for Initial Military Training scheduled a desk-side briefing to Secretary Esper for 09 January 2018. Subsequently, CSA-39 General Milley joined the briefing. This was the first ACFT briefing directly to the SECARMY and CSA, and ACFT study team considered this meeting to be the turning point in the strategic messaging plan to senior leadership. During this briefing the ACFT Study team received direct guidance from the CSA and SECARMY about the implementation timeline, test events and scoring standards for the Army Combat Fitness Test.⁴⁸ Ultimately SECARMY Esper was successful in visiting US Army Center for Initial Military Training at FT Eustis, VA and took his first ACFT on 18 March 2018.

The ACFT Study team had just completed the field validation testing when General Stephen Townsend assumed command of TRADOC on 02 March 2018. Either by fiat or predilection, General Townsend soon became an enthusiastic supporter of the ACFT. Within several weeks of taking command, he had taken a diagnostic ACFT and begun work on a strategic plan to ensure a successful transition from the APFT to the ACFT.⁴⁹ Within two short months, General Townsend persuaded General Abrams to suspend work on the SRT, support the transition to the ACFT and secured a decision briefing with General Milley, CSA-39 for 02 MAY 2018. Over a secure network from FT Sill, OK, General Townsend briefed US Army senior leaders on his vision and support for the Army Combat Fitness Test. As a result, the CSA-39 approved the 6-event ACFT to replace the 40-year-old APFT and the outline of a three-year implementation plan. These actions marked a dramatic return to physical training and assessment for combat readiness.

Following the approval of the six ACFT test events in May 2018, the CSA directed TRADOC/CIMT to conduct a formal ACFT brief and demonstration at the annual Senior Leader Readiness Forum (SLRF) on 27-28 June 2018. During the 2-day SLRF Conference, leaders were introduced to and practiced the six ACFT test events. On Day 2 Major General Malcolm Frost, USACIMT Commander, presented a strategic messaging video and an event-by-event briefing on the ACFT test events. One of the briefing objectives was to provide leaders the empirical research conducted during the BSPRRS study and the evidence-based rational for the test events.



Photo taken by CIMT PAO: CSM Edward Mitchell, SECARMY Mark Esper, MG Malcolm Frost—First ACFT, 18 May 2018.



Photo taken by CIMT PAO: SECARMY Mark Esper, Sprint-Drag-Carry, 18 May 2018.



Photo taken by CIMT PAO: SECARMY Mark Esper, First ACFT, 18 May 2018.

Figure 8.13. Secretary of the Army Mark Esper, Army Combat Fitness Test.

Source: Photos top to bottom. Photo 1. Cmd. Sgt. Maj. Edward Mitchell, Secretary of the Army Mark Esper, and Maj. Gen. Malcolm Frost-First Army Combat Fitness Test, 18 May 2018. Photo 2. Secretary of the Army Mark Esper, Sprint-Drag-Carry, 18 May 2018. Photo 3. Secretary of the Army Mark Esper, First Army Fitness Combat Readiness Test, 18 May 2018. Photos credit: US Center for Initial Military Learning Public Affairs Office.

On 13 July 2018 the US Army published HQDA EXORD 219-18, Implementation of the Army Combat Fitness Test. The EXORD formalized the three phases of the ACFT implementation plan: Field Test, IOC and FOC. General Milley, 39th CSA, was anxious to move to full oper-

ating capability as soon as possible to prevent any potential off-ramping of the test, therefore the actual phase nomenclature in the EXORD was: IOC, FOC-initial, and FOC. The EXORD outlined the testing requirement for each phase of the plan to include capturing scores from the generating and operating US Army—all components. It also directed each US Army component to provide personnel to CIMT headquarters and the Physical Fitness School to staff mobile training tests to conduct ACFT preparation sessions and train ACFT graders. Although already under development in the revision of FM 7-22, Holistic Health and Fitness, the EXORD directed USACIMT to develop an ACFT testing manual and training program.

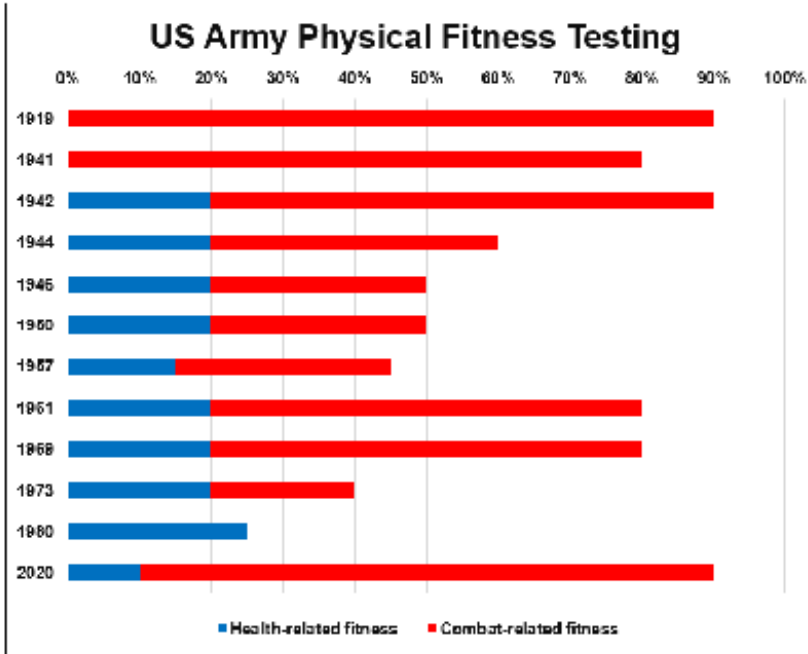


Figure 8.14. Historical Percentages for US Army Physical Fitness Test.

Source: Created by author.

Phase 1 of the ACFT implementation plan (Field Testing) consisted of four major components. The overall objective was to field test a large, representative sample of soldiers. To accomplish this objective the ACFT Study team tied ACFT testing into an existing Holistic Health and Fitness pilot program with the acronym H2F-lite. H2F-lite was a cooperative proj-

ect between TRADOC and FORSCOM to pilot test H2F personnel during FY19 in 29 FORSCOM battalions (BN) and the Indiana National Guard. In addition, three BNs from USAREUR and USARPAC, seven additional BNs from Army National Guard and Reserve Command, and Initial Military Training units from IET and BOLC were included in the Field Test. The second component was to order and ship approximately 1,000 lanes of ACFT testing equipment to the 60+ BN units.⁵⁰ This limited contract was managed by TRADOC and equipment sets began shipping in 1st quarter FY18. The third component of the Field Testing phase was to produce and publish a field test manual and develop resident and mobile training teams (MTT) to train and validate ACFT graders. The fourth component was to develop criterion-referenced grading standards for each ACFT test event.

From July to September 2018 the ACFT Study team, in conjunction with the US Army Physical Fitness School, worked on three projects. The first project was to develop an ACFT Field Testing manual. The manual was designed to provide specific administrative instructions for the ACFT. These materials were later codified in Annex A to FRAGO 1 to HQDA EXORD 219-18 on 06 September 2018. There were subsequently nine more FRAGOs to EXORD 219-18.⁵¹ The second project was to build a program of instruction to train ACFT MTTs based out of FT Jackson and FT Eustis. The touchstone for MTT training was the Field Test manual, since it was imperative for all ACFT testing to be synchronized across the force. The last project was to develop an interim ACFT physical training manual, with and without equipment. For years many units focused their training plan on the three APFT test events rather than designing and implementing a comprehensive physical readiness training program focusing on common soldier and occupational and mission essential tasks. Although units were specifically directed in FM 350-1, Army Training not to “train to the test,” since the APFT was a requirement for higher level professional military education and therefore advancement and promotion, it was difficult to break this bond. Also, the APFT did not require a sophisticated or periodized training program. Most soldiers could train to pass the APFT with relatively little effort starting 6-12 weeks prior to testing. Although plans were in place for a total re-write of FM 7-22, Army Physical Readiness Training in 2020, it was critical to provide interim training guidance precipitated by the transition to the ACFT prior to the Field Testing.⁵² There was special concern for and attention on Reserve Component Soldiers, who may not have access to sophisticated training equipment. The ACFT Training Guide was published in Annex C, FRAGO 1, HQDA EXORD 219-18.

In the summer of 2018, LTC Charles Blake assumed the duties of Director, US Army Physical Fitness School. For the first time in 12 years, a military Officer would serve as the USAPFS Director. Mr. Frank Palkoska had assumed the duties as director from LTC William Rieger in 2006 and led the move of the School from FT Benning to FT Jackson in 2007. Mr. Palkoska also designed and supervised the renovation of an old gymnasium to provide students in the Master Fitness Trainer Certification course a state-of-the-art learning and teaching facility inside the US Army Physical Fitness School footprint. The USAPFS filled a crucial role in the three ACFT projects describe above. Five ACFT MTT teams were stationed at the Physical Fitness School and coordinated with CIMT to develop a mobile training team schedule for the up-coming Field Testing.



Figure 8.15. US Army Physical Fitness School Training Facility.

Source: Photo by author.

In October 2018 the Army Combat Fitness Test moved from a notional plan to an operational plan with the start of the FY19 Field Testing, which was slightly behind the original planning schedule. Field testing was scheduled to take place in 45 US Army units: FORSCOM–29 units,

Army National Guard—8 units, US Army Reserve Command—7 units, US Army Europe—6 units, and US Army Pacific—6 units. As more units prepared to start ACFT testing, unit leadership voiced significant concerns over testing equipment. Initially, units were tasked to purchase their testing equipment out of existing funds.⁵³ After significant push-back, Field Testing equipment was centrally funded by TRADOC and FORSCOM. However, full funding for the rest of the US Army, in particular the Army National Guard and Reserve Command, remained a significant hurdle. Several units used the equipment issue to push back against fielding the ACFT. In December, 2018 CSA General Milley agreed to centrally fund ACFT testing equipment for every unit in the US Army. Army Material Command/Tank-Automotive & Armaments Command (AMC/TACOM) was directed to develop a purchase and distribution plan for the US Army. The final cost of nearly 36,000 lanes of ACFT testing equipment was approximately \$85M, however these equipment sets did not include pull-up bars required for the Leg Tuck. Individual units were expected to either have pull-up bars, as required in FM 7-22, or purchase them out of unit funds. Through the US Army contracting process, two vendors were selected in June 2019 to provide all the ACFT testing equipment. The “no later than” ship date on the equipment was 30 MAY 2020. This was the largest single purchase of fitness equipment in modern history. On 03 April 2019 Major General Lonnie Hibbard assumed command of the U.S Army Center for Initial Military Training. One of his first tasks was to complete the recommended scoring standards for the six events of the Army Combat Fitness Test. During the first half of FY19 there were significant discussions concerning ACFT performance standards relative to the age and gender specified scales used in the APFT. The US Army formula for training tasks to standards was shaped by three elements: (1) task—a description of the task, (2) conditions—the circumstances and settings associated with the task, and (3) standards—measures of success. Training and performance of soldier physical tasks, for example common soldier tasks—Skill Level I or MOS occupational tasks, were always gender and age agnostic. Standards for casualty evacuation are the same for 18yo men and 35yo women. To maintain parity with other US Army physical tasks, senior leadership directed the ACFT Study team to develop criterion-reference standards for each ACFT test event, without consideration for age or gender.

On 25 April 2019 and again on 07 May 2019, CSA 39-General Milley directed the ACFT Study team to explore the application of grading standards for the ACFT. The two prescribed scoring methodologies were by: (1) MOS, or (2) Unit. For method 1, a soldier’s required ACFT scores on

the 100-point scale were dictated by their MOS. For method 2, a soldier's required ACFT scores at the 100-point scale were dictated by their unit.⁵⁴ After careful consideration, it was determined scoring by "unit" was practically impossible to implement. Some of the serious problems were: (1) what happens to soldiers who passes an ACFT with 360 points (60-points per event), yet fails to achieve the "unit" standard, (2) during a permanent change of station (PCS), what happens if the soldier fails to achieve the gaining unit's standard (this was considered especially problematic if a soldier was being moved to a 'less desirable' duty station), and (3) what are the repercussions of requiring one ACFT standard for one 36-month rotation and a higher standard for the next 36-month rotation (e.g., a 68W combat medic assigned to a community hospital versus a line company). These concerns and others led General Townsend, TRADOC commander, to direct that ACFT standards would be based on a soldier's primary MOS and that all MOS's would be aligned to the MOS designations and tiers associated with the Occupational Physical Assessment Test (see US Army PAM 611-21).

The second consideration for scoring standards was the "passing" mark. Historically, all US Army physical fitness tests were scored on a 100-point scale with 60-points as the criterion-referenced passing mark. This convention established two significant scores from 1980 to 2020—180 points, the minimum number of points required to pass the 3-event APFT (with 60 points per event), and 300 points, the maximum number of points awarded for the APFT (with 100 points per event). Since the ACFT had six test events, one of these two benchmark numbers would have to change. The ACFT Study team made two recommendations to US Army senior leadership: (1) align the minimum total passing score with the APFT minimum passing score total (180) by making 30 points the criterion-referenced passing mark for each ACFT test event for a minimum total passing score of 180 points, or (2) keep the passing mark per event at 60 points for a minimum total passing score of 360 points and a maximum score of 600 points. US Army senior leadership directed course of action #2.

The original 60-point 'passing' standards, published in FY19, were pegged to a soldier's MOS, mirroring the MOS tiers for the OPAT (Black, Gray, Gold).⁵⁵ Most fitness professional considered the initial 60-point Gold standards to be extremely low; for example, the passing score for the hand-release push-up = 10 repetitions, while the APFT push-up passing score for 40yo men = 34 repetitions and 40yo women = 13 repetitions. On 30 July 2019 the ACFT Study team conducted an ACFT update briefing to US Army senior leadership—the Honorable James McPherson, Gener-

al Joseph Martin, Vice Chief of Staff, LTG Walter Piatt, Director of the Army Staff, BG Amy Hannah, Office Chief of Public Affairs, Mr. Michael Mahoney, Deputy DAG3, and SMA Daniel Dailey. Current interim performance scores and pass-fail rates were presented and discussed, along with efforts to provide trained graders, testing equipment and training manuals. The guidance from this meeting was to continue to move forward with the Army Combat Fitness Test and the current criterion-referenced scoring standards.

Medical Profiles and the Army Combat Fitness Test

From 2005–2010 the number of temporary and permanent medically-profiled soldiers increased dramatically, generally attributed to the mental and physical stressors of multiple deployments. Profiled soldiers and the ACFT were often a topic of discussion with senior leadership. The discussion ultimately focused on how to motivate temporary profiled soldiers to recover, rehabilitate and return to full duty, and how to support health care providers to facilitate that process. The ‘rehabilitate–return to duty’ problem was exacerbated by the pernicious use of alternate “cardio events” for the APFT. To be considered a record APFT, a temporary profiled soldier was only required to complete a “cardio event.”⁵⁶ This placed health care providers in a difficult position regarding patient advocacy versus motivating soldiers to return to full duty. Since soldiers on temporary profiles were allowed to use alternate aerobic endurance test events, they could go from profile to profile over multiple years and only execute a 2.5-mile walk test event for their record APFT. Although still problematic, this issue was also systemic among permanently profiled soldiers. As of the end of July 2018, approximate 10.5% of the total US Army was non-deployable. Approximately 35% of the non-deployable soldiers were on a temporary profile >14 days or a permanent profile.⁵⁷ As of 1 March 2019, 182,449 soldiers (17% of the total force) were on a permanent profile and 130,446 soldiers (12% of the total force) had a permanent condition limiting APFT participation.⁵⁸

On 25 April 2019 the ACFT Study team briefed Army Chief of Staff, General Milley on two ACFT testing strategies for temporary and permanently profiled soldiers. For soldiers on temporary profile, they would be expected to recover, rehabilitate and take the 6-event record ACFT, to include the 2-mile run. Soldiers on temporary profile would not be allowed to use an alternate aerobic endurance test event for a record ACFT. The second strategy applied to “deployable versus not deployable” permanently profiled soldiers. Soldiers on permanent profile, who expected

to deploy, would be expected to have the physical ability to perform four tasks: (1) react to direct fire, (2) move under direct fire, (3) prepare a fighting position, and (4) drag a casualty to safety. To demonstrate the physical capacity to accomplish these four tasks, permanently profiled deployable soldiers would be required to pass three ACFT test events: deadlift, sprint-drag-carry and an aerobic endurance event.⁵⁹ Permanently profiled non-deployable soldiers would only be required to complete an aerobic endurance test event. General Milley, CSA 39 approved these three stipulations during the 25 April 2019 decision briefing.

On 13 July 2018, HQDA EXORD 219-18 was published, which directed all soldiers all Components (COMPO) in the Phase I Field Testing to take a practice ACFT and two record ACFTs during FY19 (October 2018–September 2019).⁶⁰ At the end of FY19, ACFT data were pulled from the US Army's Digital Training Management System (DTMS), which indicated the majority of units were not testing, and therefore not revising their physical training programs. This pattern continued in Phase II–ACFT Full Operating Capability–Initial during FY20. Perhaps the greatest challenge to the ACFT was 'inertia' derived from 40 years with the same physical fitness test; changing organizational culture is extremely difficult and senior leaders, many of whom were currently in command, had served in the US Army for 15-20-25 years with only one physical fitness test, the APFT. On 8-10 July 2019, US Army Cadet Command conducted a Mission Command Workshop at FT Knox, KY. During the workshop senior leaders were introduced to the ACFT and allowed to practice the test events. One Professor of Military Science (PMS) approached the ACFT workshop leader after the session ended and stated, 'my life is over, I can never, ever score 600 on the ACFT'.⁶¹ The maximum (100-point) standards for ACFT test events were intentionally established to be 'aspirational' to extrinsically motivate soldiers to continuously improve their physical readiness. The list of excuses for not testing during FY19 and FY20 was long; lack of testing equipment or access to testing equipment, lack of trained graders, the practice ACFT was an additional requirement, lack of time/space in the training calendar, lack of physical space to conduct the test, units were deployed or demobilizing from deployment, 'my commander doesn't support the ACFT', 'we've been fighting for 15 years and doing just fine, why change the PT test', etc.

There was a growing notion across the force that if you pushed back hard enough and long enough, the ACFT would fail and the US Army would go back to the APFT. This attitude was especially prevalent in the US Army Reserve Command and the Army National Guard. There was

precedence to support this position. The US Army attempted to change the APFT in 1985, 2003 and 2010 and all these attempts failed. In addition to the units who were not testing, there were performance issues with women soldiers. Age and gender-normed APFT standards were so low that most soldiers could pass with little or no training. For example, the 2-mile run standard for a 32yo women was 21:42, just slightly above a fast-walking pace.⁶² In the first FY19 trials, almost 70% of women soldiers failed one or more ACFT test events at the 60-point level and the Leg Tuck as the most commonly failed event. The high FY19 failure rates among women soldiers, coupled with an organized and vocal minority, set off alarm bells across the force and in Congress.

On 5 December 2019, a TRADOC team presented an ACFT brief to the annual Defense Advisory Committee on Women in the Services (DACOWITS) conference. DACOWITS is “composed of civilian women and men appointed by the Secretary of Defense to provide advice and recommendations on matters and policies relating to the recruitment, retention, employment, integration, well-being, and treatment of women in the Armed Forces of the United States.”⁶³ DACOWITS had requested an ACFT briefing from the US Army. Specifically, they were concerned about how the test would affect servicewomen’s careers. The Committee requested information on the following: (1) the physiological science on which the ACFT is based; (2) the basis for the scoring criteria; (3) the data being collected during this pilot and how they will be used; (4) other than testing physical fitness, other uses of the ACFT (i.e., promotion, selection, schools, etc.); and (5) efforts the US Army to address potential disadvantages to women given the physiological differences between men and women. Due to the scoring paradigms of the APFT and other Service’s physical fitness tests, DACOWITS had difficulty conflating physical readiness assessment and physical performance evaluation. There were also probative questions concerning physical testing requirements set forth in the Department of Defense Instruction (DOD-I) 1308.3, DOD Physical Fitness/Body Composition Program versus requirements set forth in the National Defense Authorization Act (1994–Section 543; 2014–Section 523; 2015–Section 524).⁶⁴ The DOD-I 1308.3 prescribed that every Service will administer a baseline physical fitness assessment as a requirement to “serve”, while the NDAA prescribed that every Service will administer an occupational physical fitness assessment as a requirement to enter in and remain in a military occupational specialty.⁶⁵ DACOWITS’s position was these requirements mandate two separate tests. TRADOC’s position was twofold: (1) DODI 1308.3, DoD Instruction provided policy guidance

to the Services and carries no statutory weight; (2) the NDAA has statutory authority, which the tiered ACFT standards addressed; the Gold ACFT standard represented the baseline physical fitness assessment to “serve” (meeting the DOD-I 1308.3 requirement) and the Gray and Black tiers meet the MOS standards specified in the NDAA. Since the US Army does not systematically test or track occupation performance for serving soldiers, TRADOC’s position was the tiered ACFT system was a reasonable exception to baseline fitness testing policy outlined in DOD-I 1308.3.

Based on ongoing discussions throughout FY19 regarding scoring standards and pass-fail rates, the ACFT Study team proposed an interim solution to the Leg Tuck (LTK) failure problem. Approximately 10% of men and 40% of women failed an ACFT because they failed the LTK (the passing score = 1 repetition). To capture this interim solution, the US Army Center for Initial Military Training adopted a common software nomenclature of 1.0, 2.0...and published HQDA EXORD 219-18, FRAGO 10, which describes ‘ACFT 2.0’ on 15 June 2020. ACFT 2.0 added the plank (PLK) exercise as an alternative to the LTK. The PLK was added to allow more soldiers to “pass” the ACFT while training core strength for the LTK. The plank was only scored on a pass-fail (60-point) basis and the minimum time to pass the PLK (score 60-points) was 2:09. This change was also critically important for initial entry trainees who may only have 16 weeks to achieve the core strength standard. Into the summer, 2020 passing rates for women improved dramatically. By the end of 2020, the most often failed ACFT event for women was the 2-mile run.

On 15 June 2020, almost eight years after the start of the Baseline Soldier Physical Readiness Requirements Study, the Secretary of the Army, Honorable Ryan D. McCarthy signed Army Directive 2020-06 (Army Combat Fitness Test). The purpose of this directive was to establish the Army Combat Fitness Test (ACFT) as the US Army’s physical fitness test of record, replacing the Army Physical Fitness Test (APFT). The Directive stated:

The APFT has been our test of record for more than 40 years. The US Army’s physical fitness test must be based in science and accurately predict a soldier’s ability to fight and win in multi-domain operations. The ACFT does so and will become our test of record. My pledge is to give all soldiers the proper time and training to succeed. It is my intent that the transition to the ACFT will not adversely affect any soldier or group. The Army will continue to collect performance data and assess standards and requirements to ensure the ACFT best meets the needs

of our Army and our soldiers. The ACFT replaces the APFT as the US Army's physical fitness test of record beginning 1 October 2020. The US Army will no longer conduct the APFT after 30 September 2020.

With lingering concerns over poor performance during the Field Testing and IOC trials, senior leadership attempted to mitigate political and secular concerns by applying four conditions to the ACFT transition:

1. A temporary alternate event, the Plank (PLK) was offered to soldiers who could not execute 1 Leg Tuck during FY21.
2. The US Army suspended administrative actions against all soldiers for FY21, solely on the basis of failing the ACFT.
3. Soldiers who could not pass the ACFT during FY21 could use a passing APFT taken during FY20 for promotion and professional military education. Soldiers could graduate from PME in FY21 with a failing ACFT.
4. All Trainees and Officer Candidates, regardless of MOS/WOC/AOC, must only pass the ACFT at the 60-point baseline standard (Gold) in order to graduate Initial Military Training.⁶⁶
5. On 11 December 2020, the US Army Center for Initial Military Training conducted a teleconference with the Service Women's Action Network (SWAN). While they were concerned with the overall performance of women, they were particularly concerned with the Gray and Black standards for physically demanding MOSs. They presented several anecdotes where women had successfully served in combat units in Iraq and Afghanistan from 2010-2015. At least one of these women had completed Ranger School. Their primary concern was neither of these women could score "black" on all six ACFT test events. Notwithstanding issues with the tiered performance standards, similar to DACOWITS, the SWAN representatives failed to grasp the nuance between measuring physical performance and evaluating physical performance. They expressed concerns that physiological differences between men and women soldiers would disadvantage career progression for women in the US Army.

In the 4th quarter of FY20, both internal and external critics of the ACFT were exceptionally active. To respond to continued failures to train, test and perform, the ACFT Study team proposed addition changes in ACFT 3.0. They proposed making the plank (PLK) a permanent 100-point event similar to the model used by the US Marine Corps with the pull-up/push-up alternative on their Physical Fitness Test. Soldiers would be allowed to take the LTK or the PLK as a core test event. The ACFT study

team also proposed the adoption of a modified evaluation system used by the Canadian military. The system establishes rank-ordered performance categories or tiers for men and women. The ACFT Study team proposed five categories, Platinum, Gold, Silver, Bronze and Green. These ordinal categories would be based on percentages determined by an annual order of merit (OML) list for all reported ACFT scores. This system had proven successful in ameliorating concerns over physiological differences between men and women service members in the Canadian military. The separate performance categories for men and women resolved many of the outstanding issues of sex neutrality and physiological differences. Men were only ranked against men and women against women for performance “points.” Since US Army soldier performance evaluations are always ‘within COMPO’ and ‘within rank’, deploying the Canadian military performance evaluation system would eliminate the need for gender and age performance standards.

In late summer 2019, the SECARMY directed TRADOC/CIMT to conduct an external review of the BSPRRS Study. The ACFT External Validation contract was awarded to University of Iowa Technology Institute (UIOWA) to comply with the SECARMY’s directive to obtain an external review of the scientific methodologies used to develop and validate the ACFT. The contract was divided into two phases. Phase 1 was a review of the Baseline Soldier Physical Readiness Requirements Study. Phase 2 was a validation of the ACFT scale scores using SantosHuman™, a physics-based human modeling and simulation software system.⁶⁷ The purpose of Phase 2 is to directly correlate the 11 Warrior Tasks and Battle Drills and Common Soldier Tasks (WTBD/CST) identified in the BSPRRS to the Moderate/Gold scale scores of the ACFT. UIOWA used SantosHuman™ to capture the physiological and metabolic demands placed on a soldier when executing the 11 WTBD/CST; for example, joint torque, caloric expenditure, VO₂, etc.

On 14 January 2020 UIOWA completed Phase 1 and provide a summary report to the US Army Center for Initial Military Training. Upon review of the BSPRRS Technical Report and documentation, UIOWA confirmed that the three stated objectives of the BSPRRS were appropriately met.⁶⁸

1. Determining the baseline physical requirements of WTBD/CST;
2. Determining combat task variability explained by the APFT; and
3. Determining if other common physical fitness test events are more predictive of combat task performance.

UIOWA concluded:

1. A combination of qualitative and quantitative approaches was used to develop an obstacle course as a surrogate representation of WTBD/CST tasks. Systematic review, soldier interviews and surveys provided multi-modal methodologies to identify key demanding tasks for inclusion into the simulated battle drills (WTBD/CST). Five core tasks were distilled to the final WTBD/CST through practical considerations, pilot testing, field observation, and input from focus groups. Overall, the methodology used to develop the criterion metric of soldier physical requirements was scientifically valid.
2. The BSPRRS demonstrated that the current three-task APFT explains less than half of the variability observed in soldier completion times of the simulated WTBD/CST obstacle course. Accordingly, this finding validates the need for a better physical assessment to predict combat fitness.
3. The process of evaluating multiple potential fitness assessments representing various domains of fitness relative to the simulated WTBD/CST utilized scientifically appropriate and rigorous methodologies. A two-pronged approach, using both stepwise linear regression and stakeholder feedback, identified eight tasks that explained 70-85% of the variability in simulated WTBD/CST performance, across several different US Army populations. Further, secondary analyses demonstrated that the inherently unbalanced proportion of men and women tested did not negatively impact the identification of optimal fitness tasks of those evaluated in a substantive way. Accordingly, the choice of optimal fitness tasks (combined to six total), making up the ACFT is based on a scientifically valid examination that is appropriate for men and women.
4. In summary, the University of Iowa review team submitted that the stated objectives of the BSPRRS Study were successfully achieved. Key findings of this peer review include both strengths and inherent limitations that were addressed in a feasible manner. The University of Iowa Technology Institute review and assessment concluded that the BSPRRS Study was conducted by a well-qualified team of scientists and military personnel, used appropriate and rigorous methodologies, and was technically sound, resulting in valid findings.⁶⁹

In Phase 2, UIOWA captured the physical and physiological demands placed on a soldier while executing the ACFT test events, and compare those data to the data gathered from the WTBD/CST simulation performance. The comparison demonstrated that “passing” scores of the ACFT

should ensure a soldier’s readiness to perform high demand WTBD/CST an acceptable level. The goals of Phase 2 were to critically evaluate the ACFT test events, addressing the 3 following questions:

- 1. Are the ACFT test events predictive of Common Soldier Tasks (CSTs) performance?
- 2. How do the six ACFT events contribute to CST performance?
- 3. Are the minimum ACFT event standards sufficiently rigorous to meet standard CST requirements?

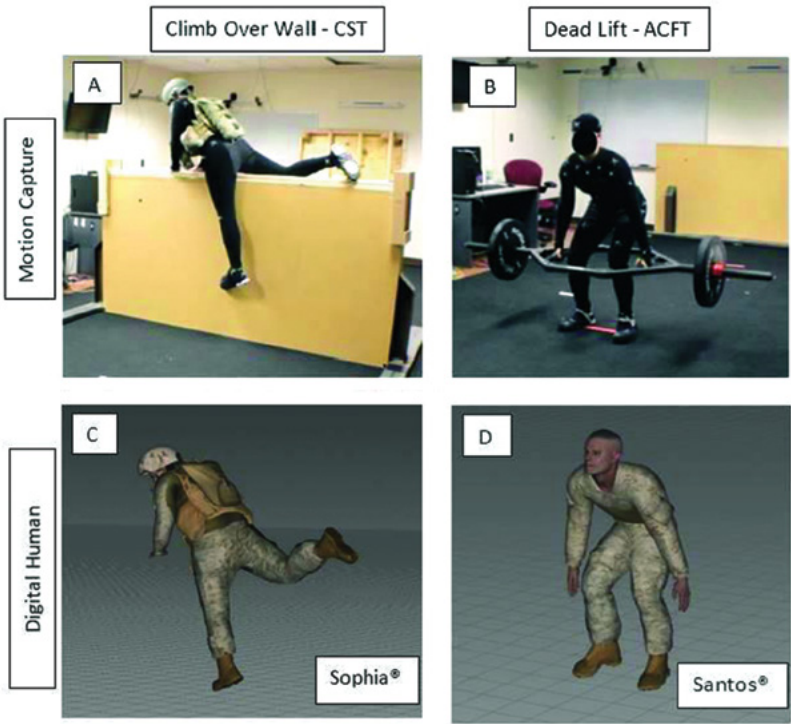


Figure 8.16. University of Iowa Phase 2, Research Protocol.

Source: Photos and models provided by University of Iowa Technology Institute in the Phase 2 report to the US Army Center for Initial Military Training, December 2021.

The Phase 2 conclusions were as follows: First, this observational study suggested the ACFT events were predictive of the muscle forces required to complete several simulated CSTs. This biomechanical assessment only addresses one domain of the ACFT–CST relationship, howev-

er, and thus cannot fully evaluate the energy expenditure, muscle power, or endurance aspects also targeted by the original design and choice of ACFT events. Despite that limitation, this preliminary report supported the ACFT events, with the caveat that the deadlift-as a primary strength domain event-remains below the level of force production needed to complete the multiple casualty extraction CSTs evaluated. Further, the leg tuck was the only ACFT event to assess core flexion strength, and the use of the plank as a substitute then created a potential void in the ACFT to rigorously meet the standards of CST requirements.⁷⁰

During FY21 the greatest challenge to the Army Combat Fitness Test came from Senator Kirstin Gillibrand, the senior Democratic senator from the State of New York. Her position was the ACFT was ‘unfair’ and potentially discriminatory against women soldiers and any level of discrimination could negatively impact women soldiers’ careers. In an attempt to forestall or derail the implementation of the ACFT, Senator Gillibrand inserted a caveat into the NDAA 2021, which prohibited the US Army from fully implementing the ACFT until there was further “independent study” on the impact on women and the effects of climate on test performance. To accede to the NDAA 2021 requirements, the US Army let a contract with the Rand Corporation to review the Baseline Physical Readiness Requirements Study and any potential environmental impacts on test performance.

It is unfortunate certain women’s-rights advocates failed to grasp the underlying physiological issues for women soldiers and the impact of undertraining on recruit, trainee and soldier physical fitness and performance. In January, 2017 the US Army implemented the Occupational Physical Assessment Test to assess recruit baseline physical fitness to ‘ship to training’. The OPAT requirements were criterion-referenced to physical demand for groups of MOSs. There was heavy, significant and moderate demand (Black, Gray and Gold). The standards were gender neutral and were designed to determine if a recruit possessed the baseline physical fitness to ‘start training’. When the OPAT was approved and implemented, the same concerns arose relative to performance by gender. As a result, the initial standards were approximately 10-15% lower than originally proposed. Women trainees were most significantly affected by lower entry standards. From 2015 to 2020, approximately 18,000 soldiers per year were discharged from the US Army. On average approximately 14,000 men and 4,000 women were discharged for a variety of reasons every year. This meant that over a decade over 40,000 women never completed their first term of enlistment. During that same time period, 2015-2020, approximately 300 women each year were discharged from

the active component US Army for failing the Army Physical Fitness Test. While physical fitness is not the only reason soldiers were discharged from the US Army, it is a major reason—“failure to adapt,” and is more causal for women than men. Even though every recruit must pass the OPAT at the required MOS-level, women trainees attrite from One Station Unit Training (OSUT) for Infantry and Armor at approximately 4x the rate of men (~13% for men and ~43% for women). Women are also injured at a much higher rate in basic training.⁷¹ As further evidence to the benefits of physical fitness for military service, women trainees, who scored ‘black’ on the OPAT and attended Basic Combat Training (where all trainees train on the same tasks to the same standards), are injured and discharged at a significantly lower rate than women who scored ‘gray’ or ‘gold’.⁷²

Issues related to MSKIs and unprogrammed discharges from basic training have plagued the Occupational Physical Assessment Test since its implementation on 03 January 2017. In the fall 2019, the Army Audit Agency (AAA) conducted an audit of musculoskeletal injuries (MSKI) as they related to the Occupational Physical Assessment Test.⁷³ The stated objective of this audit was to determine if the OPAT achieved the intended outcomes for reducing injuries and attrition rates. Interestingly these were never the stated objectives of the OPAT. The stated objective was to place the ‘right soldier in the right job’. The supposition for these ancillary objectives was, if soldiers were physical prepared to enter basic combat training and train for their MOS, regardless of physical demand, the OPAT would result in fewer MSKIs and lower attrition. For men, who routinely overperformed on the four OPAT test events, attrition rates were significantly lower for the ‘black’ group over the ‘gray’ and ‘gold’ groups. While these same attrition trends were true for women, as mentioned above, women in all MOSs (but especially high-demand MOSs like 11B and 19K) attritted at a significantly higher rate than men. The US Army Audit Agency report concluded that the current OPAT standards were not sufficient to significantly mitigate MSKIs or attrition. The US Army Audit Agency estimated the cost from MSKI-associated attrition during the ‘first term’ was approximately \$1.4B per year and that 75% of these costs occurred in initial entry training.

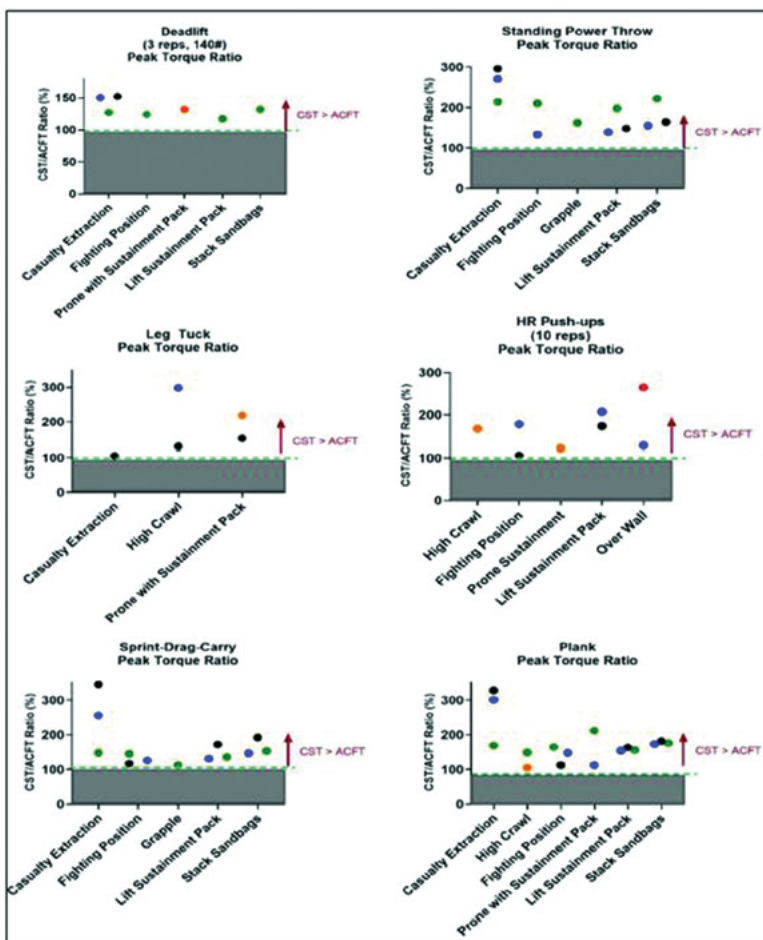
‘Landing’ the Army Combat Fitness Test

In an attempt to develop a viable ACFT implementation strategy by the self-imposed 1 April 2022 deadline, the Department of the Army scheduled three ACFT Policy Working Group meetings. On -4 November 2021 the Policy Working Group met at the Pentagon to identify ACFT

issues and potential solutions. The primary participants were DAG1–Personnel, DAG3–Training, JAG Corps, MEDCOM and USACIMT. The primary issues were female failure rates, testing requirements for permanently profiled soldiers and implementation and accountability timelines.

After reporting the results from the early November meeting, the Department of the Army convened a second ACFT Policy Working Group meetings on 16 -18 November 2021. The ACFT Policy Working Group meet at the Pentagon to develop courses of action related to implementation of the ACFT and to review the scoring standards. The overriding concern of the ACFT Policy Working Group came from the DAG1–Personnel, who was primarily concerned with recruiting and retention. Four of the primary policy issues were: (1) the FY21 performance data, (2) use of the ACFT as a course requirement in US Army professional military education (PME), (3) implications for test failures, to include the timing of a retest, (4) implementation and accountability timeline considerations for US Army Reserve Command. The working group came to consensus on the following recommendations: (1) an ACFT implementation date for personnel actions in the generating force and active component operating force (to include Active Guard Reserve) of 1 October 2022. As a caveat, all units were encouraged to conduct diagnostic ACFT testing as often as possible throughout the remainder of FY22 and soldiers would be allowed to reclassify diagnostic tests to a record test after 1 October 2022 at their benefit. (2) As of 1 October 2022, all soldiers attending Army Professional Military Education (PME), regardless of COMPO, would be required to pass a record ACFT to graduate. (3) ACFT test failures will retest when the soldier and commander agree the soldier is ready to test, but no earlier than 120 days and no later than 180 days.⁷⁴ (4) Allow Reserve Command soldiers an additional 12-24 months to prepare for a record ACFT.

Between the second and third ACFT Policy Working Group meeting, Rand submitted their final ACFT Report. The Rand study group spent most of 2021 gathering data on the Army Combat Fitness Test by location, gender and US Army component. While all soldiers from all components were directed to test during FY21, less than 50% of the force took and/or recorded a practice ACFT. For many of these soldiers this was their first test. While performance improved, especially with the addition of the plank as an alternative to the leg tuck, women were still failing at about a 40% rate. The Rand study's primary recommendations were to remove the leg tuck and systematically phase in ACFT administrative requirements.⁷⁵ Rand's primary recommendation was to phase in ACFT test event pass rates; for example, pass 4-6 in Year 1, 5-6 in Year 2 and 6-6 in Year 3.



In each graph above the power required for a WTBD/CST is compared to the ACFT test event. When the “dot” is above the 100% line (the gray box), the power requirement for the WTBD/CST is > than the power requirement for the ACFT test event.

Graphic provided by University of Iowa Technology Institute in the Phase II report to the US Army Center for Initial Military Training, December 2021.

Figure 8.17. University of Iowa Phase 2 Power Requirements of Warrior Tasks and Battle Drills to Army Combat Fitness Test Event.

Source: Graphs provided by University of Iowa Technology Institute in the Phase II report to the US Army Center for Initial Military Training, December 2021.

The third ACFT Policy Working Group meet in the Pentagon on 17-20 January 2022. The objective was to affirm all policy recommendations made during the second working group meeting, finalize the scoring standards and finalize the ACFT testing requirements for permanent-profiled soldiers. During this session a decision was made to remove the leg tuck and to revert to age/gender normative scale standards. Interestingly, in the November, 2021 ACFT Policy Working group meeting, DAG1 personnel reported that removing the leg tuck would have no effect on women's pass rate. The most commonly failed event for men and women soldiers by late 2021 was the 2-mile run.

Over 11 years after the APFT revision process started at FT Jackson, SC, the Secretary of the Army, the Honorable Christine Wormuth, published Army Directive 2022-05, Army Combat Fitness Test.⁷⁶ Army Directive 2022-05 (AD 22-05) superseded AD 2020-06 and was followed the next day, 24 March 2022, by HQDA EXORD 153-22, Army Combat Fitness Test (ACFT).⁷⁷ EXORD 153-22 directed the effective date for full implementation of the ACFT as the record physical fitness test for the US Army and provided changes to US Army policies affected by the ACFT. The policy changes applied to the Regular Army, Army National Guard/Army National Guard of the United States, and US Army Reserve (USAR). Beginning 01 October 2022, the ACFT would be fully implemented as the US Army's official record physical fitness test for personnel actions. The criterion-referenced ACFT standards were rejected in favor of performance-normed standards by sex and age groups. These normative values were set by the Department of the US Army G1-Personnel, based on ACFT scores reported during FY 21. The test was comprised of six events: maximum dead lift (MDL), standing power throw (SPT), hand-release push-up (HRP), sprint/drag/carry (SDC), plank (PLK), and 2-mile run (2MR).

Army Directive 2022-05 also eliminated the notion of a "modified" ACFT for permanently-profiled soldiers. Permanently-profiled soldiers were required to take all six test events not prohibited by their permanent profile. If a permanent profile prohibited the 2-mile run, the permanent profile would direct the alternate aerobic events (5k row, 12k stationary bike, 1k swim, and 2.5mile walk), the Soldier was permitted to take. Soldiers on temporary profiles were required to recover, recondition and take the 6-event ACFT to include the 2-mile run. Soldiers on temporary profile were not authorized to use alternate aerobic endurance test events in a record test. To pass the ACFT, soldiers must attain a minimum score of 60 points on each test event and a "GO" if on a permanent profile and taking

an alternate aerobic event. If a soldier does not achieve a minimum of 60 points in an event or a “GO” on an alternate aerobic event, the event is a failure. Failure of one or more events results in ACFT failure. Soldiers are required to remediate an ACFT failure as soon as the soldier and their commander believe they are ready to test; however no later than 180 days.

All parties involved in the final development of AD 2022-05 and EX-ORD 153-22, acknowledged the plank was a poor substitute for the core strength as measured by the Leg Tuck and the 60-point standards normed to age and gender were not sufficiently rigorous to ensure soldiers were capable of executing high demand common soldier tasks. These concerns were echoed by Senator Tom Cotton during the Senate Armed Services Committee hearings on 5 May 2022 when he called the current ACFT age and gender standards “absolutely pathetic”. In an attempt to mitigate the potential reductions in physical readiness, the US Army has established an oversight committee to review and revise performance standards on an annual basis. Enhancements to the scoring standards may provide baseline performance standards that will improve soldier physical readiness and reduce injuries and unprogrammed attrition. Since passing the ACFT is no longer a concern due to the low standards, it will be of great interest to see if soldiers and units adopt a more intrinsic model of physical readiness performance.⁷⁸

To have good soldiers, a nation must always be at war.
Napoleon Bonaparte

Notes

1. East, W. & Crowder, T, Department of Physical Education, United States Military Academy, West Point, 10 April 2012.

2. *Physical Fitness Training Information Paper*, prepared for General Raymond T. Odierno, 4 January 2013.

3. SECARMY letter to force.

4. Note: The US Army was directed to coordinate with United States Special Operations Command (USSOCOM), United States Army Special Operations Command (USASOC) and the sister Services to develop a plan for integration of women in special operations and long-range reconnaissance.

5. Note: The ruck march protocol ultimately used in the Physical Demands Study was carry 103-pound load for 4 miles in 1:47.

6. Note: it should be noted that five of the eight PDS tasks were also Skill Level I Soldier Tasks—common soldier tasks.

7. Stephen A. Foulis, Jan E. Redmond, Maj. Bradley J. Warr, Edward J. Zambraski, Peter N. Frykman, Marilyn A. Sharp, USARIEM Technical Report T16-2, Development of the Occupational Physical Assessment Test (OPAT) for Combat Arms Soldiers, October 2015, p. 28.

8. Note: at the time the predictor test events were selected, TRADOC had not determined when or where the pre-accessions physical fitness test would be administered, which may have significantly affected the selection of predictor test events.

9. Note: near the end of the Physical Demands Study USARIEM was informed that the US Army intended to use the high-demand test battery for all MOSs. The only reason these data USARIEM collected for the high-demand combat MOS tasks worked for all MOSs was most of the tasks were either “common” soldier tasks or directly linked to a common soldier task. For example, moving on foot under load or extracting and evacuating a casualty.

10. Note: There was significant concern among senior leaders that placing a physical assessment requirement only on combat arms MOSs could drive recruits away from enlisting in combat arms MOSs; i.e., recruits would enlist in non-combat arms MOS just to avoid taking a physical fitness test.

11. Soldier’s Manual of Common Tasks, Warrior Skill Level 1 (Soldier Training Publication 21-1). Headquarters, Department of the Army, Washington, DC, August 2015.

12. DA PAM 611-21, Military Occupational Classification and Structure, Headquarters, Department of the Army, Washington, DC Prepared by Military Personnel & Structure Division (DAPE-PRP), ODCS G-1, 22 November 2017.

13. Slide deck to ASA.

14. Memorandum for Record, Preliminary Approval for Implementation of the Army Occupational Physical Assessment Test, Secretary of the Army the Honorable Eric K. Fanning, signed 9 December 2016.

15. Note: Technical Circular (TC) 3-22.20, Army Physical Readiness Training was the precursor to Field Manual (FM) 7-22, Army Physical Readiness Training.

16. *Physical Fitness Training Information Paper*, prepared for General Raymond T. Odierno, 4 January 2013.

17. Note: “Combat environment” was a euphemism for any high kinetic, multi-domain operations to include actual combat or operations other than war.

18. Headquarters, Department of the Army, EXORD 041-13, Baseline Physical Readiness Requirements Study, 27 December 2012, p. 2.

19. Note: Blue Force Tracker is a GPS-enabled capability that provides military commanders and forces with location information about friendly and hostile military forces.

20. Muraca-Grabowski, S. *Warrior Tasks and Battle Drills Survey Analysis, Research and Analysis Directorate*, U S Army Center for Initial Military Training, FT Eustis, VA, 27 February 2013 (unpublished).

21. Hauschild V, DeGroot D, Hall S, Deaver K, Hauret K, Grier T, and Jones B. *Correlations between Physical Fitness Tests and Performance of Military Tasks: A Systematic Review and Meta-Analyses*, US Army Public Health Command, PHR No. 12-02-0614, June 2014.

22. Note: The RPAT actually begins with a variable load 3200-meter run.

23. Baseline Soldier Physical Readiness Requirements Study Technical Report; TR 19.041.13.1, DTIC, DEC 2019.

24. Same as 8: Note: at the time the predictor test events were selected, TRADOC had not determined when or where the pre-accessions physical fitness test would be administered, which may have significantly affected the selection of predictor test events.

25. Harinder Singh, “An Alternative Proxy for Expectations: Some Empirical Evidence,” *Journal of Economic Psychology*, 12 (1991), 185-196. Note: muscular endurance only accounts for ~44% of measures of muscular strength, therefore the push-up is a poor measure of muscular strength, which is a requirement in DOD-I 1308.3.

26. Note: This full regression model for all eight (8) fitness test events utilized an average of WTBD-ST times for Fighting Load (FL) and 1600m Pre-Fatigue (PRE). When analyzed independently, the R^2 FL = 0.723 and R^2 PRE = 0.632.

27. Note: Following an external review by the University of Iowa, Virtual Soldier Research Center, reviewers suggested the Baseline Study team bootstrap additional women into the FT Riley sample to provide a more balanced model and determine if women used a different solution set for WTBD-ST performance. After randomly bootstrapping 92 women into the sample ($M_n = 278$, $F_n = 138$) the R^2 increased slightly to 0.790 and the following fitness test events loaded into the regression model: sled drag, power throw, 2-mile run, deadlift, sled push, leg tuck, kettlebell squat, push-up.

28. Note: The R2 full regression model for the fighting load = 0.723 for 7 fitness test events: sled drag, power throw, 400m sprint, deadlift, 2MR, sled push, leg tuck.

29. Note: The independent variables (common physical test events) in the predictive validation at FT Riley, KS, were administered over a 4-day period. The research team speculated the R2 would be higher when the test events were administered sequentially during a relative short period of time, say 1-2 hours.

30. Note: The Physical Demands Study (Soldier 2020) was initiated to answer the questions proposed in HQDA EXORD 112-13-Army Required Actions in Support of the Elimination of the Direct Ground Combat Assignment Rule (DGCAR).

31. Headquarters, Department of the Army, EXORD 021-15, Optimized Physical Fitness, 08 Nov 2014, p. 2.

32. Headquarters, Department of the Army, EXORD 021-15 Optimized Physical Fitness, 08 Nov 14, p. 2.

33. Whitfield B. East, MAJ David DeGroot, Stephanie Muraca-Grabowski, *Baseline Soldier Physical Readiness Requirements Study*, Defense Technical Information Center–DTIC, Technical Report: T19.041-13.1, November 2019.

34. The full regression model for all eight (8) fitness test events utilized an average of test event scores from Day1 and Day2. When analyzed independently, the R2 Day1 = 0.806 and R2 Day2 = 0.788.

35. Whitfield B. East, MAJ David DeGroot, Stephanie Muraca-Grabowski, *Baseline Soldier Physical Readiness Requirements Study*, Defense Technical Information Center–DTIC, Technical Report: T19.041-13.1, November 2019.

36. Note: On several occasions there is mention of the Physical Demand Study team led by USARIEM, and the BSPRRS Study team led by USACIMT. Actually, there was just one team, working on both the PDS and BSPRRS studies, with representation by USARIEM, USACIMT, USMA, and USAPHC. Over the course of four years various personnel from these organizations work on planning and executing the PDS and BSPRRS.

37. Stephen A. Foulis, Jan E. Redmond, MAJ Bradley J. Warr, Edward J. Zambraski, Peter N. Frykman, Marilyn A. Sharp, USARIEM Technical Report T16-2, Development of the Occupational Physical Assessment Test (OPAT) for Combat Arms Soldiers, October 2015, p. 28.

38. SECARMY memorandum.

39. US Air Force, Physical Fitness Tests and Standards for Air Liaison Officer and Tactical Air Control Party Operators, January 2017. Note: There were also significant linkages to the USMC PFT-CFT, the Danish Army PFT and the Canadian Army PFT.

40. Headquarters, Department of the Army, Training Circular 3-22.20, Army Physical Readiness Training, March, 2010, p. 9-46; Headquarters, Department of the Army, Field Manual 7-22, Army Physical Readiness Training, 2012, p. 9-38.

41. Headquarters, Department of the Army, ADP 1-01, Doctrine Primer, 31 July 2019, p. 1-3.

42. Note: The second 50m sprint was later changed to a 50m lateral shuttle.

43. Note: The original BSPRRS sled drag used a metal speed sled and the sled push used a relatively large and expensive “prowler” sled. During the transition to the SDC, the ACFT study team identified a light-weight fiber sled for the drag portion of the SDC that was relatively inexpensive and extremely durable. Also, in a resource-constrained environment, the weight plates from the maximal deadlift could be reused as the resistance on the drag sled.

44. Note: The Occupational Camouflage Pattern (OCP) replaced the Army Combat Uniform (ACU) in 2015, which replaced the Battle Dress Uniform (BDU) in 2004.

45. Note: Gen Abrams departed FORSCOM on 16 October 2018.

46. Note: there was significant discussion and support to make the 2-mile run the first test event of the ACFT.

47. Note: the maximum administrative time for a valid APFT was 2.0 hours.

48. Note: Present at the 9 January 2018 meeting were: Secretary Mark Esper, Gen Mark Milley, Maj. Gen. Malcolm Frost, Dr. Whitfield East, Lt. Col. David Feltwell, and Maj. Kayla Ramotar.

49. Note: during his diagnostic test, after completing the Sprint-Drag-Carry test event, General Townsend directed that the 3rd 50m lead would change from a spring to a ‘lateral shuffle.’

50. Note: An ACFT “lane” consists of multiple bumper plates (~3,000lbs), 1-hexbar with locking collars, 2-40lb kettlebells, 1-nylon sled with straps, 1-10lb medicine ball, 1-pull-up bar.

51. FRAGOs to HQDA EXORD 219-18:

- FRAGO 1 TO HQDA EXORD 219-18 HQDA EXORD IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT), DTG: 302221Z JAN 19// (ACFT Changes for COMPO2).
- FRAGO 2 TO HQDA EXORD 219-18 HQDA EXORD IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT), DTG: 042221Z FEB 19// (Information on graders and grader training).
- FRAGO 3 TO HQDA EXORD 219-18 HQDA EXORD IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT), DTG: 042055Z MAR 19// (initial ACFT equipment fielding plan).
- FRAGO 4 TO HQDA EXORD 219-18 HQDA EXORD IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT), DTG: 311229Z MAY 19// (Requires for Pull-up bars).
- FRAGO 5 TO HQDA EXORD 219-18 IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT), DTG: 281736Z JUN 19// (ACFT Phase I testing guidance).
- FRAGO 6 TO HQDA EXORD 219-18 IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT), DTG: 062223Z Sep 19 // (Guidance on the modified ACFT for soldiers on permanent profile).
- FRAGO 7 TO HQDA EXORD 219-18 IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT), DTG: 041740Z OCT 19// (Describes initial ACFT equipment sets).

- FRAGO 8 TO HQDA EXORD 219-18 IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT0, DTG: 231734Z DEC 19// (Final ACFT equipping plan).
- FRAGO 9 TO HQDA EXORD 219-18 IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT) DTG: 262057Z MAY 20// (Equipping plan and final delivery date – JUN 2020).
- FRAGO 10 TO HQDA EXORD 219-18 IMPLEMENTATION OF THE ARMY COMBAT FITNESS TEST (ACFT) DTG: 152057Z JUN 20// (Announcement of Army Directive 2020-06, ACFT Implementation to include the temporary substitution of the Plank (PLK) for the Leg Tuck (LTK)).

52. Note: FM 7-22 Holistic Health and Fitness began staffing in 2nd quarter FY20 as a total rewrite of FM 7-22, Army Physical Readiness Training. The new FM 7-22 Holistic Health and Fitness was a consortial effort by civilian and military subject matter experts from across the US Army. The lead author was Col. David Feltwell.

53. Note: a “set” of ACFT testing equipment provided a full equipment set for 16 lanes, which could test 64 soldiers in one cohort. A full set of equipment cost slightly less than \$40k, sans pull-up bars. All units were required by training doctrine to have pull-up bars to execute prescribed PRT training.

54. Note: In comparison, a 68W assigned to a Troop Medical Clinic would be required to score “gray” on the ACFT, while a 68W assigned to an Infantry battalion would be required to score “black”—since all Infantry units were tiered in the “heavy”, Black group.

55. Note: Representative MOS for the three ACFT tiers were: Gold–24A, Gray–68W, Black–11B.

56. Note: Alternate ‘cardio events’ for the APFT were: 800-Yard-Swim, 6.2-Mile Stationary-Cycle Ergometer, 6.2-Mile Bicycle Test (road bike), 2.5-Mile Walk Test.

57. Headquarters, Department of the Army, Non-deployable Report, July 2018.

58. Headquarters, Department of the Army: Medical Operational Data System (MODS) mainframe as of 28 FEB 2019.

59. Note: At this time the four aerobic endurance events were: 2-mile run, 5,000m row, 12,000m bike, 1,000m swim (the 2.5-mile walk was reintroduced as a fifth aerobic endurance event in March 2022).

60. Headquarters, Department of the Army, Execution Order 219-18, Army Combat Fitness Test, 13 July 2018.

61. Note: Officers were generally expected to score “300” on the APFT; since performance standards were normed by age and sex (i.e., became lower in each 5-year age block), it was relatively easy to “max” the APFT.

62. Note: The world record for the 2-mile walk = 11:47.

63. US Department of Defense–Release; <https://dacowits.defense.gov/>, 22 June 2022, accessed on 3 July 2022.

64. Note: It should be noted that the DODI 1308.3 is a DoD policy statement, which services have never followed. As early as 1994 the Physical Fitness Program policy has required Services to assess muscular strength as part of their baseline physical fitness test. No Service, until the US Army approved the ACFT implementation on 1 April 2022, has assessed muscular strength as part of their baseline fitness test as prescribed in DODI 1308.3 since 1995.

65. Note: The DODI 1308.3 in force during these discussions was published in 2002.

66. Note: General Milley's initial position was all officer must score "black" on the ACFT.

67. Note: SantosHumanTM is a physics-based digital human model that can be used to analyze human performance. SantosHumanTM had previously been used by the US Marine Corps for human performance evaluations.

68. Whitfield B. East, MAJ David DeGroot, Stephanie Muraca-Grabowski, *Baseline Soldier Physical Readiness Requirements Study*, Defense Technical Information Center–DTIC, Technical Report: T19.041-13.1, November 2019.

69. Karim Abdel-Malek, Laura Frey-Law, Rajan Bhatt, Kevin C. Kregel, Landon Evans, "Review Report: Baseline Soldier Physical Readiness Requirements Study," The University of Iowa–Technology Institute, 14 January 2020.

70. Karim Abdel-Malek, Laura Frey-Law, Rajan Bhatt, Marco Tena Salais, Chris Murphy, Kaylee Lichtenstein, Russell Schneider, Army Combat Fitness Test (ACFT) External Validation Strength Evaluation of the ACFT: Preliminary Results, 8 December 2021.

71. Note: Attrition data was provided by Headquarters, Department of the Army, G1–Personnel from 2015 to 2020.

72. Note: in FY17 there was a 6% reduction in female BCT attrition for women who score OPAT Black over Gold and a 3.5% reduction in female attrition for women who score Black over Gray and Gray over Gold. TRADOC Commander Occupational Physical Assessment Test Way-ahead Brief, 05 September 2021.

73. US Army Audit Agency, Evaluating the Occupational Physical Assessment Test, Report A-2021-0052-FIZ, 8 June 2021.

74. Note: Trainees and cadet candidates in Initial Military Training and students in short duration US Army schools or courses requiring an ACFT to graduate were not held to these timelines.

75. Note: it would be interesting to study the social, political ramifications surrounding the deletion of the leg tuck from the ACFT for three reasons: (1) in ACFT 3.0 no soldier was required to take the leg tuck test event, (2) the leg tuck is a dynamic muscular strength/endurance measure of core flexion that is inextricably linked to common soldier task performance, (3) throughout US Army history a 'pulling' or 'off ground' test event has been a part for the physical fitness test.

76. Headquarters, Department of the Army, Army Directive 2022-05 (Army Combat Fitness Test), 23 March 2022.

77. Headquarters, Department of the Army, HQDA EXORD 153-22, Army Combat Fitness Test (ACFT), 24 March 2022.

78. Note: at the time this book was going to press, the Senate Arms Services Committee meet to establish the National Defense Authorization Act stipulations for FY23. In Section 527, *NDAA 2023: Sex-neutral high fitness standards for Army combat military occupational specialties*, the committee recommended a provision that would require the Secretary of the Army to establish sex-neutral fitness standards for US Army combat military occupational specialties (MOSs) higher than such standards for non-combat MOSs not later than 180 days after the date of the enactment of this Act. The provision would require the Secretary to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives that describes the list of combat MOSs with higher fitness standards and the methodology used to include a certain MOS on the list. This provision has not been approved.

Chapter 9

The Holistic Health and Fitness System

The US Army's Holistic Health and Fitness initiative is an immersive program that is key to helping us attack health and fitness challenges across the force. It will improve overall health, prevent muscular-skeletal injuries and help injured soldiers rehabilitate and return to the force sooner. This is a generational shift in how the US Army trains, develops and cares for our soldiers. My intent is to treat soldiers as soldier-athletes...For those already in uniform, we're emphasizing good sleep, healthy eating and rigorous physical training. We're also developing a new physical fitness test that's based on combat standards and will be more rigorous than the current physical fitness test.

—General Mark A. Milley, 39th Chief of Staff, US Army¹

In August 2006, after nearly four years of combat in Iraq and Afghanistan, General William S. Wallace, Commander, TRADOC directed an initial study of the “human dimension.” On 2 October 2006 General Wallace directed the publication of a Commanding General TRADOC Directive—The Human Dimension in Full Spectrum Operations. In the Directive, the human dimension was defined as “that domain of behavior, intuition, and performance that impacts individual decisions and actions in interaction with other humans, technologies, and environments.” This initiative received significant support on 10 October 2006 when US Army Chief of Staff Gen. Peter J. Schoomaker delivered a speech at the AUSA Eisenhower Luncheon where he stated: “We already know that while the military, in particular landpower, is critical, we will not prevail through force of arms alone. Like wars past this one will be waged and won in the human dimension.”² In May 2007 Colonel Don Lisenbee, Chief of Joint and Army Concepts Division directed TRADOC equities (to include United States Military Academy, West Point) to develop draft documents for the coming TRADOC human dimension pamphlet (PAM). In June 2007, a draft treatise defined the human dimension as: “...the intellectual, physical, and moral human components of soldier, leader, and organizational development and performance essential to raise, prepare, and employ the US Army in full spectrum operations. Broad in scope, the human dimension addresses the physical, emotional, psychological, moral, spiritual, and socio-cultural influences (development) that effect our interaction with others, technology, and the operational environment, and influence

our decisions and actions (performance). The human dimension also focuses on soldiers and leaders as persons with beliefs, needs, motivations and aspirations.”

In July 2007 a working group defined the scope of the “human dimension.” The human dimension was initially defined as: “...the aggregate of cognitive, moral, and physical human components of soldier, leader, and organizational development and performance essential to raise, prepare, and employ the US Army in full spectrum operations.”³

- The Introduction (four major themes):
 - How do we develop soldiers and leaders and what do we develop?
 - How does human dimension relate throughout the soldier life cycle?
 - What are the performance standards?
 - How does all of the above lead to competent and cohesive units?
- Soldier and Leader Development and Performance & Learning
 - Character Development-Spirit
 - Professional Development
 - Physical Development
- Life Cycle
 - Recruitment and Accessions
 - Initial Entry Training/acclimation
 - Collective/Unit Training
 - Operational/Generating/Joint
 - Reintegration/Reset
- Performance Standards
 - Personnel and Professional Conduct
 - Technical Proficiency
 - Tactical Proficiency
 - Operational and Strategic Competence
- Capable Units
 - Adaptable
 - Agile
 - Cohesive
 - Competent and proficient
 - Values Based
 - Able to operate within Joint, interagency and multinational units

On 1 April 2008 the “human dimension” initiative directed by General Wallace culminated with the publication of “The US Army Study of the Human Dimension in the Future 2015-2024” (TRADOC PAM 525-3-7-01). This document would set the stage for four years of reflection on the way ahead for the human dimension. During this interim TRADOC constituents analyzed and developed the human dimension construct. As proponents of the US Army Physical Fitness School, the “physical” con-

struct was assigned to US Army Center for Initial Military Training. On 21 May 2014, these efforts culminated with the publication of TRADOC PAM 525-3-7: The US Army Human Dimension Concept.

Total Force Fitness: Roadmap to Peak Performance and Military Wellness

With the genesis of the Department of Defense Total Force Fitness (TFF) program in 2009, the TFF staff strived to answer two key questions: (1) What does it take to reach and sustain an optimal level of military fitness, health, and performance, and (2) How do you get there? As with any journey, a roadmap can point out the best path. TFF was created to provide the military community with a roadmap to peak performance by providing a framework to help soldiers, their family members, and military units reach and sustain optimal, holistic health and performance. As a starting point, the TFF defined ‘what it means to be healthy’. Most service members (SM) focused on their physical health and performance, while TFF suggested SMs go beyond physical health and consider the ‘whole self’ and what comprises the domains of holistic military wellness. TFF established eight domains of military wellness: social, physical, environmental, medical and dental, ideological and spiritual, nutritional, psychological, and financial health.

In the 2020, TFF updated its wellness definition as “a multi-domain framework that provides the DoD with the capability to understand, assess, and maintain the full spectrum of components affecting Service member readiness and their ability to meet mission requirements.”⁴ The TFF mission was to “measurably improve human performance optimization and readiness.” The key constructs of the TFF were:

- Good physical health and nutrition.
- Mental resilience supported by a social network, mental health resources, and spirituality.
- Considerations of and attention to your training / operational environment.
- Health focus on prevention of and recovery from disease and physical defects.
- Holistic approach, paying attention to all of these domains of military fitness.

Unfortunately, the TFF program never gained operational traction across the DoD. There were three primary reasons for a lack of effectiveness and measured performance. First, TFF lacked centralized operational control. In various mission statements for the Military Services, TFF ced-

ed programmatic control to the individual Services and programs across the DoD. TFF program updates were rife with phrases like: “establishing policy and delineating responsibilities” and “oversee, coordinate, and address system-level changes across the enterprise”, etc. TFF did leverage certain DoD policies to direct programmatic changes; i.e., Department of Defense–Directives (DoD-D) and Department of Defense–Information (DoD-I). However, most Services generally ignored these policies. For example, under DOD-I 1309.3, Section 3.2.b. Procedures (Physical Fitness)/Evaluation it states Services will: “Develop science-based, Service-specific tests that address the primary physical fitness components of cardiorespiratory endurance, body composition, muscular strength, and muscular endurance for all Service applications, separate from occupationally-specific tests and standards.”⁵ This testing requirement can be traced back to DoD-D 1308.1, 29 June 1981.⁶ The DoD-I 1308.3 (2022) later defines muscular strength as: “The maximal force that can be exerted in a single voluntary contraction of a skeletal muscle. The simplest measure of strength involves various one-repetition maximum weight-lifting test (the heaviest weight that can be lifted only once).”⁷ Until the US Army implemented the Army Combat Fitness Test on 1 April 2022, no Military Service adhered to the DoD requirement to test muscular strength. Adherence to or participation in TFF programming was and remains extremely challenging in the current operational environment due to the lack of centralized control.

Second, the TFF essentially provides no funding support for policies and programs. Lack of centralized control and lack of programmatic funding were similar problems that plagued the US Army’s Performance Triad (P3) initiative in 2019. TFF initiatives ‘brief well’, however, without funding at the unit level, there is little chance of programmatic success. Third, without control or funding, TFF has no way to affect change at the unit level. TFF has no way to execute programming and the DoD policies and programs are neither integrated or immersive. Over the years these three issues plagued a number of performance optimization efforts across the US Army and DoD such as Performance Triad, Ready and Resilient, Comprehensive Soldier and Family Fitness, Go for Green, etc. Generally, this conundrum was resolved when the US Army established a centrally-controlled and sustainable funded health and human performance program—the Holistic Health and Fitness system.

Tactical Athlete Program

With the demands of combat in Afghanistan and Iraq peaking between 2008 and 2010, the US Army was having difficulties staffing Brigade Combat Teams (BCT) for deployment due to medical and physical readiness issues. As such, the physical training and readiness of soldiers became an even more significant concern. In an attempt to drive US Army physical readiness training into the 21st Century, the 3rd Brigade Combat Team (BCT)/4th Infantry Division (4ID) at Fort Carson, CO. proposed an innovative pilot physical readiness training program to improve soldier readiness and reduce musculoskeletal injuries (MSK-I). MEDCOM secured funding to renovate the Garcia Physical Fitness Center and the recreational-sport venue was transformed into an open-concept strength and conditioning facility (see Figure 59). The pilot was conducted with the 3rd BCT/4ID under the title Tactical Athlete Program (TAP). Soldiers from the 3rd BCT were scheduled to train in the facility throughout the duty day. Certified strength and conditioning specialists (CSCS) were hired with the assistance of the National Strength and Conditioning Association.⁸ The Tactical Athlete Program (TAP) mission stated that:

3BCT executes the Tactical Athlete Program to increase soldiers' flexibility, speed, agility, strength, endurance, power and balance in order to develop the operational fitness required to meet the physical demands of tactical combat operations, optimize physical performance enhance marksmanship and prevent/reduce injuries.⁹

After Major General Richard A. Stone, M.D., Deputy Surgeon General visited TAP program at FT Carson in June 2012, he concluded that the new training program would provide some relief for the 10M lost duty days and 27,000 injured soldiers currently experienced by the US Army.¹⁰

Unfortunately, partway through the TAP pilot program, 3rd BCT deployed to Iraq. 4ID senior leadership moved to utilize the personnel, equipment and facilities by shifting the 4th BCT into the TAP program. However, this only lasted for several months as the 4th BCT was also scheduled to deploy later in the year. The interruptions in the training cycles made it virtually impossible to collect meaningful measures of effectiveness and the pilot formally ended in 2013. Although the TAP program failed to empirically validate the need for strength and conditioning personnel, facilities and equipment, it did provide a clear glimpse into future of US Army physical readiness training (PRT) programming. The TAP also supported or spawned other training programs like the Eagle Tacti-

cal Athlete Program, Mountain Athlete Warrior, Ranger Athlete Warrior, THOR3 and POTFF. The template established by the MEDCOM/4ID TAP program can be directly linked to the genesis of the Army Holistic Health and Fitness System that would manifest almost 8 years later.



Figure 9.1. Tactical Athlete Program, Fort Carson, CO.

Source: The Army Deputy Surgeon General, Maj. Gen. Stone visits soldiers of the 3rd Brigade Combat Team, 4th Infantry Division to experience and learn about the unit's new Tactical Athlete Program at Garcia Physical Fitness Center, Fort Carson, CO. VIRIN: 120621-A-CJ249-001, 21 June 2012, photo credit SSG Christopher Jelle, 3rd Brigade Combat Team, 4th Infantry Division Public Affairs Office.

US Special Forces Holistic Health and Fitness Programs

From 2005 to 2010, US Army Special Operations Command (US-ASOC) and its parent organization, U.S. Special Operations Command (USSOCOM) recognized the human toll from “the unrelenting demand for Special Operations Forces in the post 9/11,” to include the loss of personnel due to all-cause mortality and morbidity.¹¹ Through an iterative process, three holistic health and fitness programs emerged. The first program of record was the Ranger Athlete Warrior (RAW). The RAW program working group was led by Major Danny McMillian. As a physical therapist, MAJ McMillian was acutely aware of the influences of the physical and non-physical aspects of fitness on human performance opti-

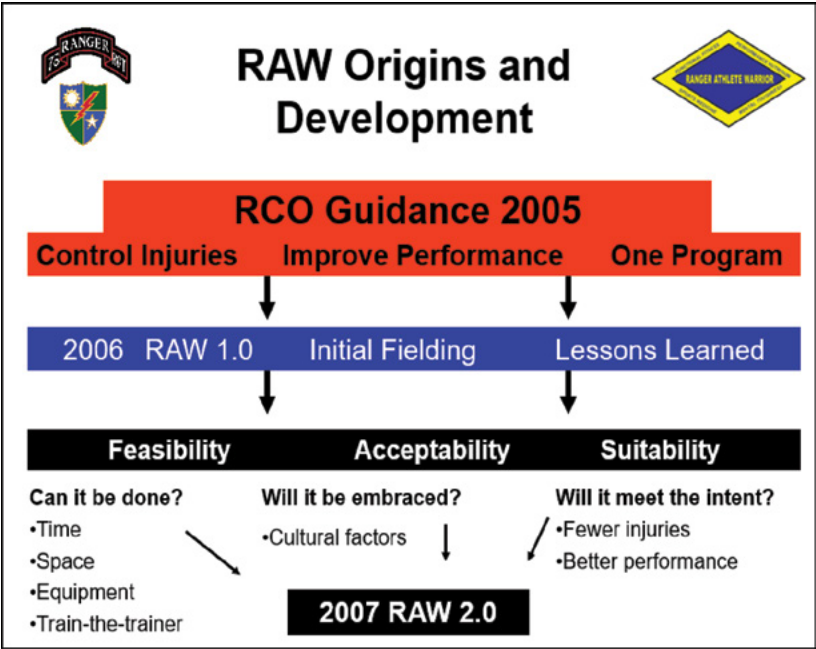
mization (HPO). Guidance from the 75th Regimental Commander was: ‘control injuries, improve performance, and one program’. A pilot RAW program was fielded in 2005. With lessons learned from the first year, MAJ McMillian’s working group published the RAW Manual 1.0 in 2006. In 2007 RAW was fully operationalized with the publication of RAW 2.0.¹² The working group identified four components of HPO: functional fitness, sports medicine, performance nutrition and mental toughness and the RAW program transformed the way Rangers were trained.

In response to the conflicts in the middle east and lessons learned from the RAW program, USSOCOM developed (2010-2012), funded, and implemented (2013) the Preservation of the Force and Family (POTFF) program. In parallel with POTFF, USASOC developed the Tactical Human Optimization, Rapid Rehabilitation and Reconditioning (THOR3) program. These programs were designed to address the physical, mental, and experiential requisites of special forces soldiers and to preserve the significant investment in time and money required to recruit, train and manage them. The Special Forces community to include US Army Special Forces Command identified and acknowledged that training, rehabilitation and reconditioning for the current OEF-OIF conflicts were not sufficient to sustain the special forces. Over a 3-year period, the POTFF and THOR3 programs evolved to full operational capability and the POTFF program as approved as a USSOCOM program of record by Admiral William McRaven in 2013.¹³ The core tenants of the POTFF program, and for all intent the THOR3 and RAW programs, were:

- POTFF is performance and readiness focused.
- POTFF utilizes embedded and specialized professionals.
- POTFF is composed of multi-domain cross functional teams.
- POTFF is a proactive and holistic approach.
- POTFF is evidenced based.¹⁴

The nexus of the Special Forces training and rehabilitation programs was scope, people and facilities/ equipment. Until about 2008-9, most US Army training programs focused on two areas, physical fitness-readiness and functional fitness-mission essential tasks. Following the evolution of secular sports and physical performance optimization programs, POTFF-like programs expanded their scope to address both the physical and non-physical domains. The non-physical domain generally included four components of readiness: nutritional, spiritual, mental and sleep. An enhanced emphasis on the physical and non-physical training was designed to optimize physical and mental/cognitive readiness, mitigate MSKIs and

to enhance rapid recovery and rehabilitation of injuries and preservation of the force.



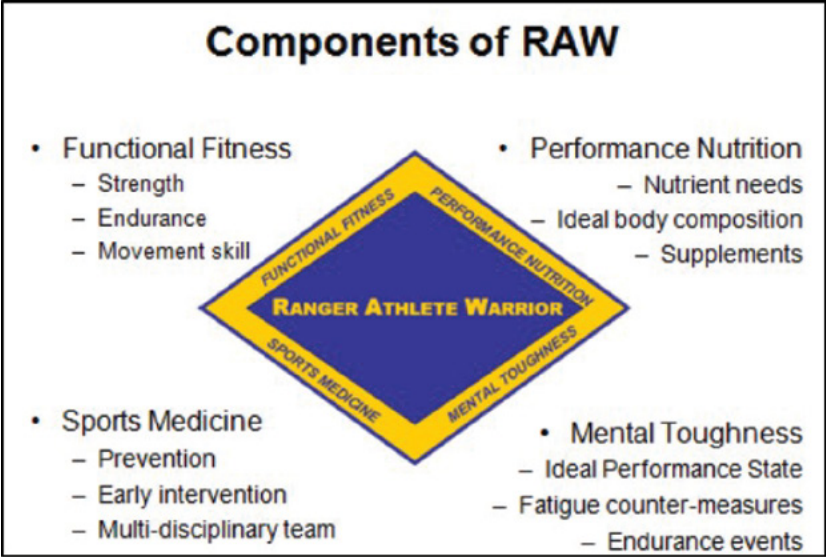
Briefing Deck, Classes for RAW 2.0, 24 MAY 2005, last edited 22 FEB 2007.

Figure 9.2. Origins of the Ranger Athlete Warrior Program.

Source: Briefing Deck, Classes for RAW 2.0, 24 May 2005, last edited 22 February 2007.

In 2013 the Rand Corporation reviewed the Tactical Human Optimization, Rapid Rehabilitation and Reconditioning (THOR3) program.¹⁵ They identified three THOR3 goals: (1) increase the physical and mental capabilities of SOF soldiers, (2) ensure rapid recovery from injuries sustained in combat and (3) force preservation. Kelly, et. al., concluded that THOR3 differed significantly from existing US Army physical fitness programs in that the holistic program of physical and mental performance enhancement was embedded in small teams and utilized certified staff to provide coaching in strength and conditioning, physical therapy, dietetics, and cognitive enhancement. The Rand THOR3 study team made two overarching recommendations. First, the US Army should provide funds for units (e.g., battalions or brigades) to hire permanent staff to enhance long-

term provider-client relationships and a “human performance coach as an adviser and asset to commanders and unit physical program leaders on human performance and program safety.”¹⁶ Second, the US Army should consider the inclusion of cognitive enhancement programs. Finally, somewhat prophetic, Kelly, et.al., observed that a successful THOR3 could serve as an exemplar for other Special Operations Center for Enhanced Performance-like programs throughout the US Army.¹⁷



Ranger Athlete Warrior PT 4.0 – manual republished 13 April 2011.

Figure 9.3. Components of the Ranger Athlete Warrior Program.

Source: Ranger Athlete Warrior PT 4.0 manual republished 13 April 2011.

Ready and Resilience Campaign

Partially in response to a growing suicide rate among soldiers and veterans in the 2010-2012 timeframe, the US Army initiated the Ready and Resilient (R2) Campaign in March 2013. The R2 campaign, directed by the US Army G1–Personnel, was designed to inculcate a cultural change in the US Army by directly linking personal resilience to readiness and emphasizing the responsibility of personnel at all levels to build and maintain resilience. The stated campaign mission was: “The Total Army integrates and coordinates US Army programs and services, focuses education and training, transforms its assessment of soldier and family fitness,

and strengthens the Army Profession in order to increase resilience and improve unit readiness.”¹⁸ In an interview published by Army.mil, Department of the Army G1 personnel answered various questions about the R2 campaign:

1. Question: Will this campaign result in new programs? Response: Not initially.
2. Question: When will the US Army see results of the campaign on suicide rates, sexual assault and hazing? Response: It is not possible to definitively state exactly when any new program or campaign will make an impact.
3. Question: Does this campaign indicate that the US Army is not currently ready and resilient? Response: No.
4. Question: Who is in charge of monitoring and reporting the results of the campaign? Response: The Deputy Chief of Staff for Personnel.
5. Question: How long will this campaign last? Response: There is no end date.
6. Question: How much is this going to cost the US Army? Response: The programs and services...are already funded.
7. Question: What does the US Army hope to achieve with the campaign? Response: We will impact every part of quality of life. We will provide quality care for soldiers equal to their service and sacrifice; reverse negative trends in suicides and sexual harassment/assault; eliminate bullying/hazing; reduce the population of non-deployable soldiers; and make every soldier “career ready” for US Army and post-Army service.¹⁹

Development of US Army Resilience Directorate (ARD). From 2013 to the present, the US Army has spent an estimated \$500M on the Ready and Resilient Campaign with little or no discernable improvements to the five major readiness metrics outlined in the Question 7 above. Why has the R2 program failed to accomplish these objectives? Some of this answer goes back to the Rand (2013) review of the THOR3 program when they stated: the US Army should provide funds for units (e.g., battalions or brigades) to hire permanent staff to enhance long-term provider-client relationships. Most unit leadership considered R2 as just another external program layered on top of a crushing workload for BNs and BDEs. There were also questions about cost–benefit in an under-resourced and over-programmed environment. One example of the lack of success for the R2 program relates to suicide rates. For 2010, there were 156 potential active-duty suicides, of which 125 were confirmed as suicides.²⁰ US Army

suicide rates for calendar years 2018-2021 were: CY18 = 141, CY19 = 146, CY20 = 173, CY21 = 176.²¹ Similarly, sexual assault reports have nearly doubled per 1000 service members from 2010 to 2020.²² While there have been some isolated gains in specific units, R2 has failed to achieve the critical metrics set forth in 2010. These issues can generally be linked to the R2 Campaign’s failure to operationalize the key programmatic requirements of centralized control, equipment and personnel, and facilities that are essential for a successful HPO program as identified by the Rand Corporation in the THOR3 review.

Reports of Sexual Assault (Rate/1,000)	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Unrestricted Reports ¹	1,476	1,658	1,482	1,520	1,398	2,017	2,199	2,046	1,996	2,178	2,576	2,551	2,550
Restricted Reports	256	283	299	301	174	318	407	470	501	528	579	668	700
Total Reports ¹	1,732	1,941	1,781	1,821	1,572	2,335	2,606	2,516	2,497	2,706	3,155	3,219	3,250
Total SM Victims ²	1,337	1,397	1,316	1,378	1,248	1,766	2,072	1,922	1,962	2,123	2,501	2,536	2,532
SM Reports/1000 ³	2.5	2.6	2.4	2.5	2.3	3.5	4.2	4.2	4.4	4.7	5.5	5.5	5.5

Figure 1: Reported Sexual Assaults in the Army & Rate/1000 (Metric #11)

1: As of FY14, one victim equals one report, per DoD guidance. (FY08-FY13 adjusted to one victim per report).
2: Includes only SM victims in restricted and unrestricted reports for incidents occurring while in the military.
3: Includes SMs reporting incidents occurring prior to military service.

Figure 9.4. Reported Sexual Assaults in the US Army.

Source: Department of the Army report (defense.gov), Enclosure 1, Reported Sexual Assaults in the US Army & Rate/1000 (Metric #11), 28, <https://media.defense.gov/2020/Apr/30/2002291691/-1/-1/1/ENCLOSURE-1-DEPARTMENT-OF-THE-ARMY-REPORT.PDF>.

Performance Triad

During the week of 9 September 2013, while the Department of the Army, G1–Personnel was developing the R2 program and Army Resilience Directorate, the US Army Medical Command (MEDCOM) entered the human performance optimization/resilience arena with the “Performance Triad.” The Performance Triad (P3) provided training programs and products designed as the cornerstone of the System for Health and linked directly to the Army’s Ready and Resilient Campaign and the Army Human Dimension Strategy. The Performance Triad was described as “the US Army’s holistic approach to enhance personal readiness and optimize human performance for the total US Army.”²³ “Army Medicine recognizes the integral role that activity, nutrition, and sleep play in optimal personal and unit performance, resilience and readiness. We believe a culture

change in how we focus on these areas is critical to maintaining a healthy and ready force.”²⁴ As part of our comprehensive strategy, programs like the Performance Triad (P3) intended to augment other initiatives such as Army Wellness Centers, Move to Health, Go for Green, Go Dental First Class, etc.²⁵

In FY14, MEDCOM conducted a P3 pilot program focused on squad leader and unit training. For selected units, P3 training included weekly squad leader lead training, leader development training and Sergeant’s Time training. Squad leaders were taught how to minimize injury risk, enhance physical readiness training, and minimize barriers to making healthy behavioral changes by leveraging technology such as; personal readiness devices, mobile applications, and Web-based resources. Master Resilience Trainers at the unit level assisted soldiers and squad leaders in setting and achieving individual health goals and applying resilience concepts to motivate soldiers to achieve their health goals.

With the Performance Triad, Army Medicine hopes to help develop a sustainable, unit-driven program that optimizes activity, nutrition, and sleep to meet the needs of leaders, soldiers and families and supports an overall system of healthy behaviors. In order to embed the tenets of the Performance Triad into the US Army’s culture, we ultimately seek to ensure that the training and program is published within US Army policy and doctrine and integrated into institutional training to promote healthy lifestyles.²⁶

P3 provided tools and strategies for unit leaders to optimize sleep, regular physical activity, and good nutrition, however there was one major shortcoming. P3 never achieved a doctrinal foundation and therefore had no long-term implementation or sustainment strategy. The most crucial missing piece for P3 was the lack of immersion and programmatic integration at the unit level. Mobile MEDCOM P3 training teams would travel to US Army installations/units and provide 2-3 days of P3 training. Responsibility for implementing and sustaining P3 was then ceded to the local unit.

An example of this shortcoming was reported by Lieutenant General Nadia West to Congress in 2016. According to Lt. Gen. West, the FY14 P3 pilot synchronized the best advances in sports science and technology to improve knowledge, attitudes and behaviors in relation to sleep, activity, and nutrition. The FY14 pilot was conducted in three active-duty battalions from August 2013 to May 2014. Once again, lacking centralized con-

trol and funding, the P3 pilot reported that soldiers were not meeting the established targets essential for health, performance, and readiness. Only 4-5% of soldiers met all sleep targets, 29-42% met all activity targets, and only 2.4-3.6% met all of the nutrition targets across the three units.²⁷

US Army Human Dimension Concept and Strategy

As the newly appointed TRADOC Commander, General David G. Perkins institutionalize human dimension efforts by directing the publication of TRADOC Pamphlet (T-PAM) 525-3-7 on 21 May 2014, which superseded T-PAM 525-3-7-01 (1 April 2008) and T-PAM 525-3-7 (12 June 2012).²⁸ T-PAM 525-3-7 described the broad human dimension capabilities required to meet the challenges of the future operational environment (OE) and provided a framework for how the US Army would select, develop, sustain, and transition soldiers and US Army Civilians to win in the 21st century. The human dimension (HD) concept reemphasized that the human dimension was composed of cognitive, physical, and social components. The HD concept also included all aspects of organizational development and performance essential to prepare the US Army for unified land operations. T-PAM 525-3-7 identified the Army Capabilities Integration Center (ARCIC) as the proponent for the human dimension initiative. TRADOC proposed the US Army use the ‘human dimension’ as a common operating framework to achieve superior warfighting effectiveness.²⁹

One of the defining features of the US Army human dimension concept document was the integration of personnel policies with training and education, science and technology (S&T), medical, and social science efforts. The HD concept focused on the application of human performance optimization—the process of applying knowledge, skills, and emerging technologies to improve and preserve the capabilities of Department of Defense personnel to execute essential tasks. TRADOC PAM 523-3-7:

The US Army recognizes that the American Soldier remains the most discriminately lethal force on the battlefield...the US Army must invest significantly in the human dimension.³⁰

—TRADOC PAM 523-3-7.

In Chapter 3 *Meeting the Challenges*, T-PAM 525-3-7 tacitly outlined the future organizational structure of the Holistic Health and Fitness system. The components of holistic health and fitness were defined as health fitness (which included health readiness, nutritional fitness, weight

management, and sleep) and physical fitness. Holistic health and fitness was one of several keys to inoculate soldiers against environmental and mental stress and to improve cognitive performance.³¹ “It is a complex multidimensional interrelationship that includes elements of cognitive and social well-being; health promotion and protection; nutritional fitness; hydration; weight control; sleep, rest, and recovery; and adaptation to and protection from environmental conditions.”³² To achieve these goals, the US Army must develop a culture that promotes a comprehensive lifestyle of health and fitness that enhances quality of life, physical performance, and resilience. To develop and nurture a pervasive human performance optimization (HPO) ethos, learning expertise and culture must be embedded in a unit’s enhanced outcome goals. The Army Performance Triad was posited as an exemplar of a holistic approach to enhance lifestyle of healthy behaviors through physical activity, nutrition, and sleep.

The HD solution required the incorporation of the cognitive, physical and social domains. Although somewhat myopic, the Physical Component (Section 3-6, p. 14) succinctly described much of what would later become the tenants of the Holistic Health and Fitness system:

To optimize performance at the individual and unit level requires a holistic approach based on all aspects of human performance. Holistic health and fitness is an approach that incorporates both the traditional aspects of physical fitness, such as aerobic capacity, strength, endurance, flexibility, and coordination, while also attending to the nutritional, psychological, and sports medicine contributions. Such a holistic approach considers the whole human and the social, moral, cognitive, and family (home life) aspects that affect physical performance. (T-PAM 525-3-7; Section 3-6)

As stated in T-PAM 525-3-7, “to optimize soldier physical fitness in a more complex OE, soldiers must become more physically adaptable and resilient. Adaptability and resilience will be critical to mission success. Attributes of adaptability include mental, interpersonal, and physical adaptability.”³³ T-PAM 525-3-7 established several critical outcome strategies for performance optimization: (1) learning expertise and culture must be embedded in the unit’s enhanced outcome goals, (2) units must become more adept at translating best practices and research into their training plans, (3) holistic health and fitness must become the standard of professional competence and (4) appropriate facilities and fitness equipment are mandatory. If these outcome goals were realized, a holistic approach would reduce the incidents of injury, sickness, and disease, and promote

rapid recovery and reintegration after operations that are physically and cognitively demanding.

Army Human Dimension Operational Approach

On 09 October 2014 the TRADOC Combined Arms Center continued to drive the HD narrative by publishing an initial strategy document: Human Dimension White Paper—A Framework for Optimizing Human Performance. This document comprised three Lines of Effort (LOE) with associated Supporting Objectives (SO). The HD strategy was a significant step forward for human performance optimization as a first attempt to describe the process of optimizing human performance. It described the purpose, concept and ways and means for performance optimization. .

To dominate on the battlefield of the future, the US Army must not only invest in long-term technological and equipment solutions, it must also invest in its people as the most agile and adaptive US Army resource. While preserving a technological edge will remain important, developing better equipment without developing better people is an insufficient strategy to retain overmatch in the face of highly adaptive adversaries. By investing in human capital, the US Army will be capable of fielding a future force that maintains and exploits a decisive cognitive edge, physical supremacy, and cultural understanding over potential adversaries... achieving physical supremacy requires investment in holistic health, injury prevention, and total fitness.³⁴

In an attempt to institutionalize the holistic health and fitness initiative, on 8 November 2014, Headquarters, Department of the Army published EXORD 021-15, Optimized Physical Fitness. As specified in the mission statement: “TRADOC facilitates a community of practice forum (consortium) of the right subject matter experts to enable the development of a US Army physical fitness plan that will optimize soldier physical readiness while reducing injuries and unprogrammed attrition.” A primary objective of EXORD 021-15 was to centralize health and fitness optimization efforts and to cede authority to a single US Army agency, i.e., TRADOC; “TRADOC will form and lead the performance optimization fitness working group” to address five key issues: (1) evidenced-based training programs, (2) secondary health determinates (e.g., smoking), (3) leveraging subject matter experts, (4) design/build/staff proper strength and conditioning facilities, and (5) methods to validate exercises, drills and programs. EXORD 021-15 specified seven outcome goals: improve physical, cognitive and social fitness, increase resilience, reduce injuries, reduce

short/long term disability, improve physical, mental and emotional health, improve stress management and enhance life cycle fitness assessment. EXORD 021-15 provided a mechanism for the US Army to coalesce disparate and redundant performance enhancement efforts and organizations to include the US Army Combined Arms Center (CAC), US Army Capabilities Integration Center (ARCIC), US Army Public Health Command (USAPHC), US Army Research Institute of Environmental Medicine (USARIEM). Office of the Surgeon General (OTSG), US Army Medical Command (MEDCOM) and US Army Forces Command (FORSCOM).³⁵

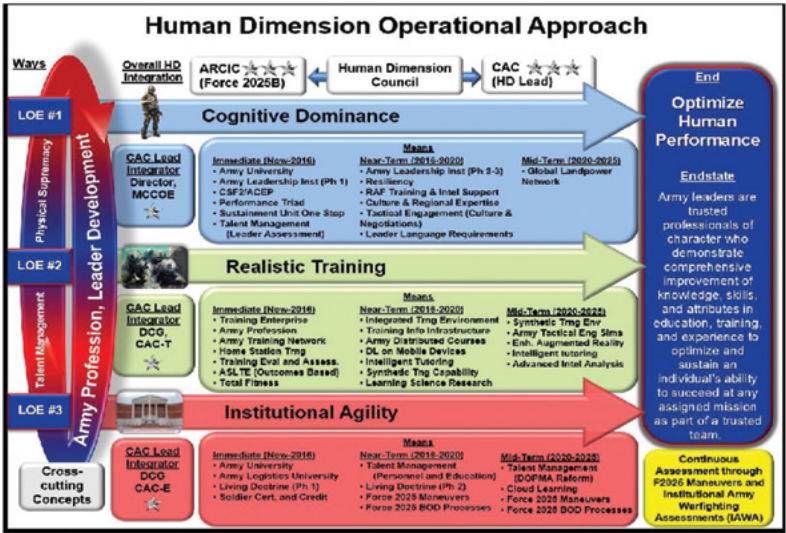


Figure 9.5. Human Dimension Operational Approach.

Source: Unknown. US Army Training and Doctrine Command, Human Dimension Strategy v3.0, presented 3 February 2015.

On 3 February 2015, in preparation for the February 2015 Human Dimension Writing Conference, CAC published version 3.0 of the human dimension strategy; The Force 2025 and Beyond (F2025B), Army Human Dimension Strategy (AHDS), Optimizing Human Performance. This document provided the foundation for the “HD Writing Conference,” which took place in the Taylor Building, Washington, DC. from 18-20 February 2015. Various US Army agencies were represented: AMC, ASAALT,

CAC, CAPE, FORSCOM, HQDA G1, HRC, OTSG/MEDCOM, TRA-DOC, USACIMT and USAREC. Led by the Mr. Jeffery Angers, Director, Strategic Integration Office, Manpower & Reserve Affairs, the product of the Writing Conference was the F2025B Human Dimension Campaign Objectives with Supporting Objectives:

Line of Effort (LOE) #1: Cognitive Dominance was defined in Strategic Objective #1: *By 2025, the US Army has the capability and capacity to optimize the performance of every soldier and civilian in the Total Force*. There were five supporting objectives (SO) to LOE#1. SO #1.3 was holistic health and fitness. This was the first time the term Holistic Health and Fitness was officially recognized as an optimization strategy.³⁶

Supporting Objective #1.3: Holistic Health and Fitness. Enhance soldier and US Army civilian health and physical readiness through an individualized comprehensive training system that improves human performance and resilience.

Following the February Writing Conference, CAC established an Army Human Dimension Council (AHDC). On 25-26 March 2015, the Human Dimension Division (HDD) of AHDC hosted a Human Dimension Workshop at the National Defense University (NDU). The workshop provided a forum for subject matter experts (SME) to present and discuss key insights and recommendations for consideration by the AHDC. The objective of the workshop was to gain input from the HD Community of Practice on HD governance and to development HD implementation strategies. Topics included governance strategies, optimized fitness, using science and technology, implications for Army Warfighting Challenges, and implications for Army Capability Enablers and Science/Technology Objectives.

In July 2015 Major General Anthony Funkhouser assumed command of the US Army Center for Initial Military Training. With little progress and a general lack of direction to the holistic health and fitness initiative, Maj. Gen. Funkhouser leveraged HQDA EXORD 021-15 to control the performance optimization narrative. However, over the next few months various US Army organizations proposed alternative courses of action (COA) for SO #1.3, holistic health and fitness, which continued to confound meaningful progress.

On 1 June 2015, the Headquarters, Department of the Army, signed by Chief of Staff Raymond T. Odierno and Secretary of the Army John M. McHugh, published the Army Human Dimension Strategy (ADHS). As written in the Forward, two key concepts underpinned this strategy:

“First, where the US Army once prepared leaders for known battlefield conditions, it must now prepare them to thrive in chaos and ambiguity. Second, the US Army must also optimize the performance of our diverse talent through better assessment of individual potential and more customized learning programs and career management. This requires a greater investment to develop fully the knowledge, skills, and attributes of every soldier and US Army civilian to reach their unique potential.”³⁷

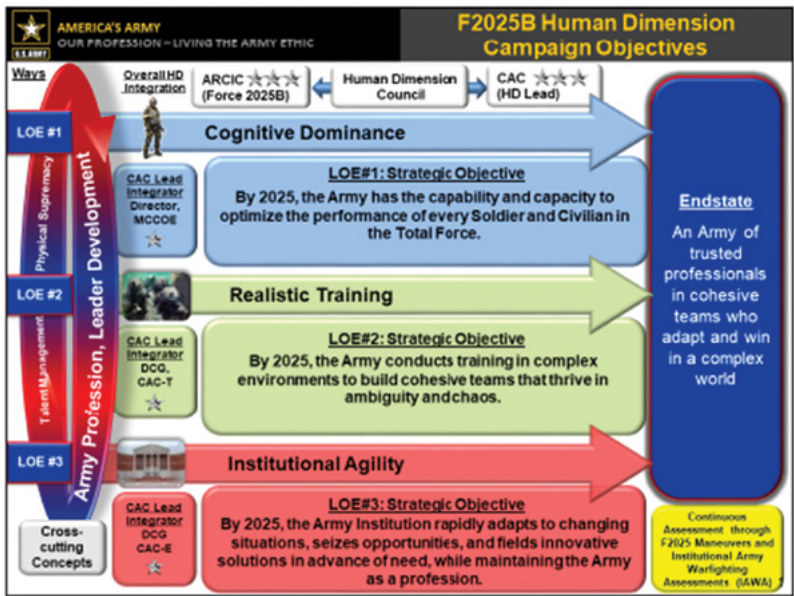


Figure 9.6. Human Dimension Campaign Objectives.

Source: US Army Training and Doctrine Command, Human Dimension Strategy v3.0, presented 3 February 2015.

On 09-10 July 2015 the Human Dimension Division of the ADHC hosted a second HD workshop at the National Defense University, Fort McNair. The workshop focused on launching a new effort to formulate a holistic policy to develop, resource, and execute Human Dimension science and technology, and research (S&T/R) efforts across the US Army enterprise in support of the AHDS (2015). Some of the organizations pre-

senting at this workshop were: Army Research Laboratory; Science and Technology working group; Research, Development & Engineering Command (RDECOM), Medical Research and Material Command,

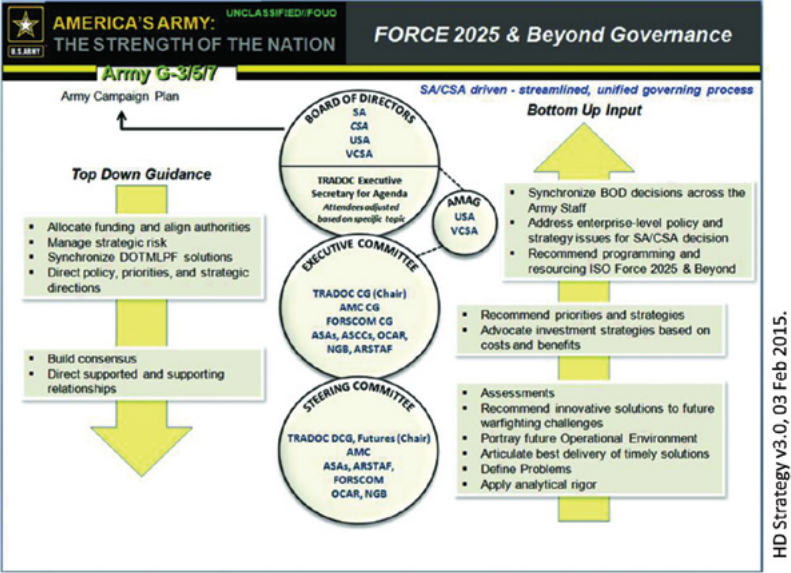
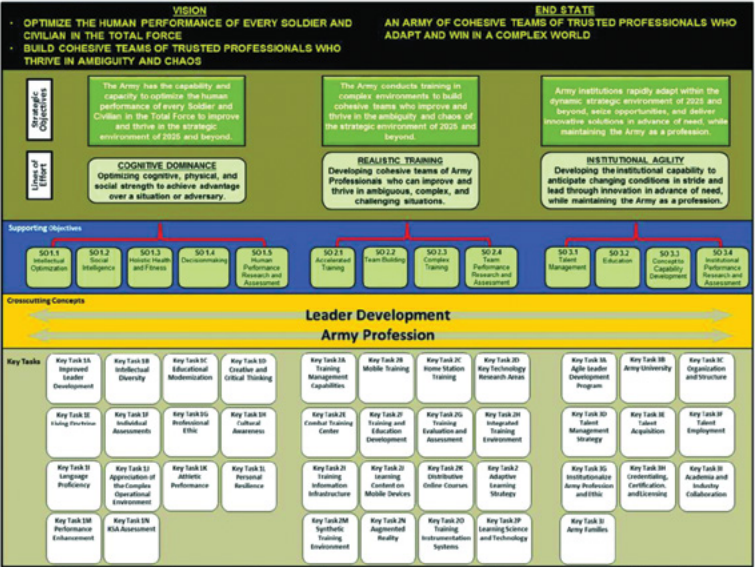


Figure 9.7. FORCE 2025 and Beyond Governance.
Source: US Army Training and Doctrine Command, Human Dimension Strategy v3.0, presented 3 February 2015.

Athletic Performance Portfolio

During the fall 2015 the term “athletic performance portfolio” (APP) gained traction as a conceptual framework across the human dimension health and fitness landscape. The Manpower & Reserve Affairs (M&RA) leveraged a specified task in the AHDS concept document-Key Task 1K to move forward on optimizing health and physical fitness. Task 1K was titled “Athletic Performance.” Programs and Initiatives (P&I) were directed to “leverage the most advanced techniques in health, sports medicine, nutrition, and fitness to increase wellness and optimize the physical performance of our soldiers and US Army civilians. Supports Objectives 1.3, 1.5.”³⁸ On 7 October 2015, Mr. Jeffery Angers, Director for Strategic Integration for the M&RA published a memorandum for key US Army stake-

holders in the health and fitness domain outlining a proof-of-concept plan for the APP.³⁹ “The US Army lacks effective and efficient governance and decision support process for non-material Human Dimension (HD) solutions.” On 8-9 December 2015 the M&RA held a “Measurement Space” workshop to identify existing health and fitness programs and initiatives and to establish an APP study protocol. The lead for the APP study was the TRADOC Research and Analysis Center at White Sands Missile Range (TRAC-WSMR). Dr. Sylvia Acchione-Noel (Chief–HD Division) was the “principal investigator” for the APP study, which was scheduled to take place on 26-27 JAN 2016 in the Pentagon.



The Army Human Dimension Strategy, published 1 Jun 2015.

Figure 9.8. Human Dimension Strategy Map.

Source: US Army Human Dimension Strategy, Annex D, 1 June 2015.

The product of the “Measurement Space” workshop was a proof-of-concept briefing. On 17 December 2015, key leadership was briefed on the athletic performance portfolio (APP) prioritization process. The process included an operational prioritization table, current stakeholders and weighted metrics for inclusion in the holistic health and fitness portfolio. The programmatic metrics used to determine program viability were: relevance, scalability, ease of implementation, effectiveness, assessment plan,

potential cost avoidance and efficiency. Based on the “study” protocol for the 26 January 2016 APP workshop, representatives from the lead programs and initiatives were directed to present an overview brief for their program and workshop members would ‘rate’ programs and initiatives based on the established programmatic metrics to prioritized programs and initiatives for inclusion in the APP.

As the M&RA moved forward with plans for the Athletic Performance Portfolio study, on 22 December 2015 Headquarters, Department of the Army published EXORD 086-16, Human Dimension, which validated and contextualized the Army Human Dimension Strategy (published on 01 June 2015). Initially, the executive body responsible for managing the AHDS was the Army Human Dimension Council, which was chartered in April 2014; however, the charter expired in March 2015. EXORD 086-16 ordered the formation of the Army Human Dimension Steering Committee (HDSC) no-later-than April 2016. The HDSC would permanently assume the role as executive agent for the AHDS. As stated in EXORD 086-16, 1.A.2. “This investment in the HD is a foundational component of the US Army’s comprehensive strategy, known as Force 2025 and Beyond (F2025B) to change the US Army and deliver Landpower Capabilities as a strategic instrument of the future joint force.” The HDSC mission was further clarified in 2. Mission; “To win today and in the complex world of 2025 and beyond, the US Army optimizes the human performance of every soldier and US Army civilian in the total US Army and forges these individuals into cohesive teams of trusted professionals who thrive in ambiguity and chaos.” EXORD 086-16 also reaffirmed the three Human Dimension Campaign Objective LOEs: 1-Cognitive Dominance, 2-Realistic Training, and 3-Institutional Agility and their supporting objectives.

With the exception of the “team building” and “talent management” subordinate tasks, which designated FORSCOM and DAG1 respectively as the office of primary responsibility (OPR), EXORD 086-16 assigned all other HD LOEs, supporting objectives and tasks to TRADOC. As the Headquarters for the US Army Physical Fitness School and as the OPR for EXORD 021-15, Optimized Physical Fitness, the US Army Center for Initial Military Training (CIMT) was assigned as the OPR for 3.B.2.A.4.-Supporting Objective 1.3 Holistic Health and Fitness. TRADOC, and therefore CIMT, was directed to “Enhance soldier and US Army civilian health and physical readiness through an individualized comprehensive training system that improves human performance and resilience.” All other US Army organizations and agencies were directed to coordinate with CIMT/TRADOC.⁴⁰ Specifically TRADOC was directed to:

- ICW [In coordination with] OTSG/MEDCOM, leverage the most advanced techniques in health, sports medicine, nutrition, and fitness to increase wellness and optimize the physical performance of soldiers and US Army civilians. (3.C.7.KK.2.: SO 1.3, 1.5)
- ICW OTSG/MEDCOM and HQDA G-1, sustain existing and recommend new programs that develop personal readiness-physical, mental, social, psychological, and emotional-over the course of an US Army professional's career. (3.C.7.OO.; SO 1.3, 1.5)

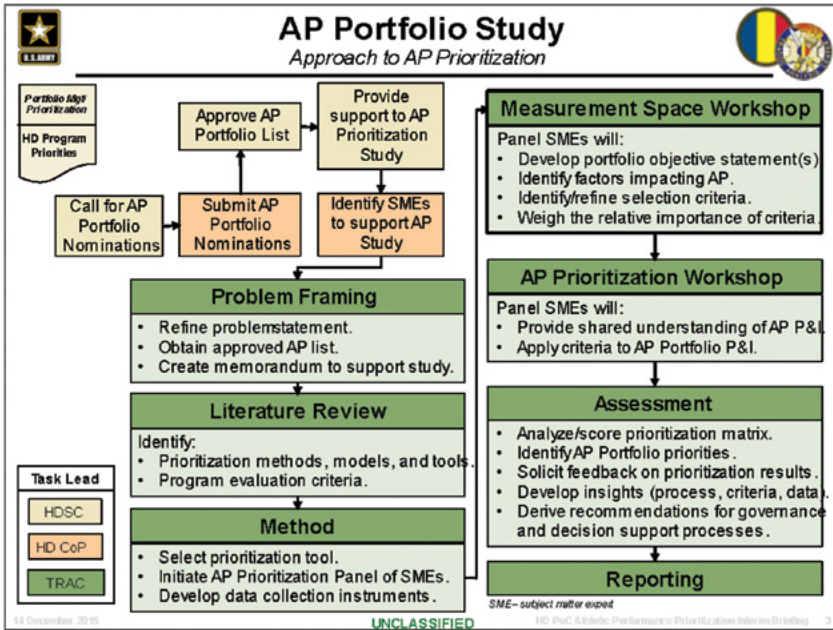


Figure 9.9. Athletic Performance Portfolio Study.

Source: Photo courtesy of US Army Manpower & Reserve Affairs.

No later than 3rd quarter FY16 (April-June 2016), the Center for Initial Military Training/TRADOC was directed to provide a formal update on LOE 1 OPRs to the HDSC.

As CIMT's efforts to steer the H2F ship struggled and the HD Steering Committee evolved into their leadership role, M&RA became increasingly concerned with the pace of progress. To jump start the H2F initiative

M&RA continued plans for the HD Athletic Performance Portfolio conference, which was scheduled for 26-27 January 2016, but was ultimately moved to 09-10 FEB 2016. Some of the major stakeholders were: US Army Physical Fitness School, Army Wellness Centers, Performance Triad, Army Resilience Directorate, Pregnancy and Postpartum Program, ArmyFit, and Go for Green. After each stakeholder briefed their contributions to health and fitness programming, the plan was for the 15-20 participating organizations to determine (by vote) which organizations contributed substantially to US Army-wide performance optimization.⁴¹ The implication of the workshop protocol was, programs and initiatives that contributed substantially would receive priority for support and funding while other programs and initiatives would not receive funding and potentially be terminated.⁴² During opening remarks, M&RA claimed to have identified over 300 unique US Army programs or initiatives that contributed to or aligned with soldier health and fitness. Many of these programs were small local programs initiated by individual installation or unit commanders. It rapidly became apparent the workshop plan was flawed, and the prioritization process deteriorated into partisan squabbling as participating organizations vied for control of the health and fitness agenda and associated support/funding. The APP conference recap was reported on 24 Feb 2016.

Based on the partisan issues that evolved in the APP conference, in the conference executive summary, the M&RA recognized the authorizations directed in HQDA EXORD 021-15, abandoned the APP framework and ceded command authority for Holistic Health and Fitness initiative to the US Army Center for Initial Military Training.

In early 2015 The Training and Doctrine Command (TRADOC) was designated as the US Army lead and proponent for H2F and the Center for Initial Military Training (CIMT) was designated as the functional lead for the H2F system. However, numerous US Army agencies continued to have vested programmatic, doctrinal and financial interests in holistic health and fitness. Nevertheless, USACIMT continued to shape the H2F 'system' and the first task was to assess current and legacy approaches to physical and non-physical performance readiness across the services and design, develop and deliver an evidence-based, scientifically-designed H2F scheme to the US Army. The intent was to publish these doctoral revisions in a bottom-up revision of FM 7-22, Army Physical Readiness Training (October 2012). The new FM 7-22 was directed to outline the H2F system concepts, which evolved to comprise five principal elements: governance, program, personnel, facilities/equipment, and leader education. These elements were essential to the future success of US Army

readiness; and as a system, were aimed to comprehensively support the physical, mental and behavioral aspects of soldier readiness. CIMT initially anticipated publishing the new FM 7-22 during FY19.


The Holistic Health and Fitness System

Born on the efforts and lessons learned from the TAP, R2, RAW, THOR3, POTFF and P3 programs, the Holistic Health and Fitness system attempted to incorporate the lessons learned related to centralized control, professional personnel and facilities and equipment. By all accounts the Athletic Performance Portfolio succumb to the relentless efforts of Major General Anthony Funkhouser, Commanding, US Army Center for Initial Military Training. As the office of primary responsibility (OPR) for the holistic health and fitness initiative (SO 1.3) for the US Army, per EX-ORD 021-15, EXORD 086-16 and directives from the Human Dimension Steering Committee (HDSC), the H2F program development process moved rapidly forward in March and April 2016. The US Army often uses the acronym OBE (overcome by events) to signify initiatives that fail to maintain critical momentum and viability, and this appears to have been the case with the Athletic Performance Portfolio.

- 17 March 2016 - Athletic Performance Portfolio Prioritization Workshop Results were briefed to Human Dimension Council of Colonels.
- 31 March 2016 - AP Portfolio Prioritization Study was briefed to the POC.
- 14 April 2016 - AP Portfolio Prioritization Study was briefed to the Human Dimension Steering Committee.

By late March 2016, CIMT had established a Holistic Health and Fitness working group with professionals from across the US Army and scheduled five H2F working group meetings beginning on 28 April 2016 at FT Eustis, VA.⁴³ During the spring, 2016, through progressive briefings by CIMT to the Human Dimension Council, there was a steady transition of operational control for performance optimization programming. A central pillar of the H2F system was a physical and non-physical training center. On 18 May 2016, a subgroup of the H2F working group, the Facility Working Group, meet with the Army Office of the Assistant Chief of Staff, Information Management (OACSIM) / G9 and briefed several groups of senior leaders on a facility plan. During the remainder of FY16 approximate 50 military and civilian professionals representing 20 US Army agencies attended and contributed at various H2F working group meeting. By the final working group session in MAR 2017, the working group had identified six LOEs and 13 supporting objectives. The LOEs were:


1. Improve soldier screening/selection process.
2. Improve soldier combat readiness.
3. Reduce health and fitness attrition/injury rate.
4. Improve behavioral health.
5. Transform fitness centers.
6. Improve civilian health opportunities.



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Measurement Space Workshop Discussion

P&I in Scope as of 10 December 2015



(2 of 3)

- Army Master Fitness Trainer's Course (MFTC); U.S. Army Physical Fitness School.
- Army MOVE! Weight Management Program; MEDCOM.
- Army Wellness Centers Program; MEDCOM.
- Athletic Trainer Resourcing and Assessment; MCoE.
- Brigade Physical Therapist; MEDCOM.
- Community Recreation; OACSIM.
- Comprehensive Soldier Family Fitness (CSF2); HQDA, G1.
 - Global Assessment Tool (GAT) 2.0.
 - ArmyFit.
 - Comprehensive Resilience Modules.
- Foot Marches Manual Revision; MCoE.
- Guard Your Health; ARNG.

- IET Physical Resilience Program; 194th AR BDE, MCoE.
- IET Red Phase Optimization; 198th IN BDE, MCoE.
- Morale, Welfare and Recreation (MWR) Fitness Centers/Gyms; OACSIM.
- Musculoskeletal Forward Care Plan; MEDCOM.
- Performance Triad (Activity, Nutrition, Sleep); OTSG.
- Pregnancy Postpartum Physical Training; APHC.
- Recruit Sustainment Program; ARNG.
- Tactical Human Optimization, Rapid Rehabilitation and Reconditioning (THOR3) Program; USASOC.
- Unit Fitness Centers; FORSCOM.

APHC– Army Public Health Center
FORSCOM– U.S. Army Forces Command
IET –InitialEntry Training

MCoE– Maneuver Center of Excellence
MEDCOM– U.S. Army Medical Command

OACSIM– Office of the Assistant Chief of Staff for Installation Management
GFS3– Office of the Surgeon General

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MD P&I Athletic Performance Prioritization Interim Briefing 14

Figure 9.10. Programs and Initiatives in the Athletic Performance Portfolio.

Source: Photo courtesy of US Army Manpower & Reserve Affairs.

For a short period of time, the H2F working group appropriated the acronym TAP2–Tactical Athlete Performance Portfolio, somewhat as an homage to the Athletic Performance Portfolio. However, as the H2F system initiative matured, it became self-evident that the other domains of performance optimization (e.g., sleep, nutrition, mental, behavioral etc.) were critical to the success of Supporting Objective 1.3 and TAP2 was abandoned in favor of the “Holistic Health and Fitness System.” On 17 May 2017 the H2F system was previewed for the first time at the TRA-DOC Commanders Forum in Fort Leonard Wood, MO.

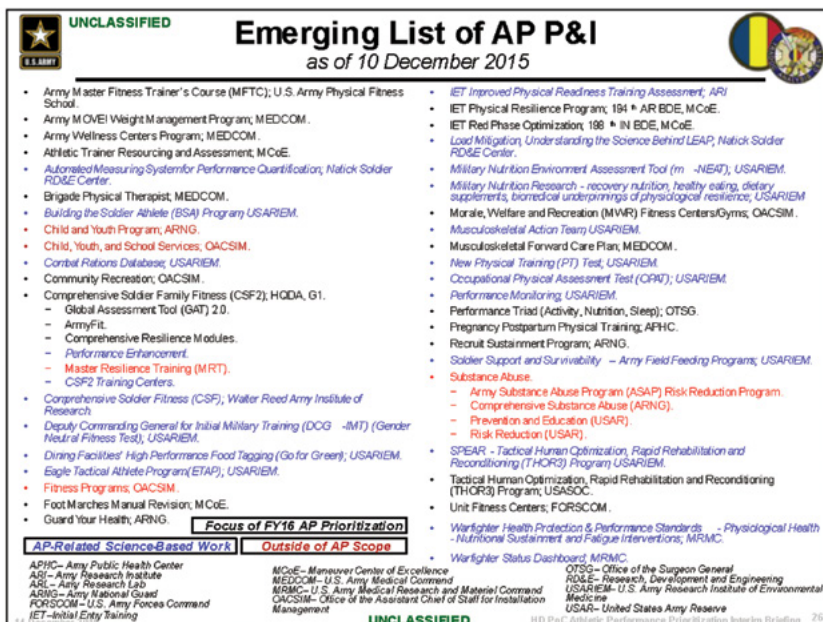


Figure 9.11. Emerging Athletic Performance Portfolio and Initiatives.

Source: Photo courtesy of US Army Manpower & Reserve Affairs.

Frustrated with the pace of Holistic Health and Fitness and Army Combat Fitness Test development and implementation, during FY17 and FY18 FORSCOM developed and piloted an alternate physical readiness test (Soldier Readiness Test-SRT) and training program. Due to the high intensity functional nature of the SRT, FORSCOM considered current physical readiness training programs insufficient to prepare for the SRT and therefore developed a new training program called the Soldier Readiness Test and Training Program-SRT2P (EXORD 069-18, 25 January 2018).⁴⁴ The SRT was pilot tested in Q1, FY18 and the SRT2P was piloted during Q2-Q4, FY18. SRT2P teams were embedded in battalion-sized units and included: forward medical care by multi-disciplinary teams, strength and conditioning coaches and certified athletic trainers.⁴⁵ In early FY18 the Close Combat Lethality Committee selected the Holistic Health and Fitness-Individual Soldier Readiness program as one of the top eight (8) priorities for the US Army. Approximately \$75K was awarded to CIMT, which was programmed to build two prototype Soldier Physical Readiness Centers (SPRC) facilities. However, these monies were reappropriated to

FORSCOM for FY19 to continue their efforts associated with the SRT2P. FORSCOM used these monies to purchase mobile fitness lockers (gym-in-a-box–GIB) and fund the SRT2P strength and conditioning coaches and certified athletic trainers. Three events were primarily responsible for the demise of the SRT2P program: (1) during the early winter summary statistics on SRT performance and training from Q1, FY18 emerged that were less than favorable; (2) 02 May 2018 General Milley, CSA 39, approved the Army Combat Fitness Test to replace the Army Physical Fitness Test, and (3) 16 October 2018 General Abrams left FORSCOM to take command of the United Nations Command, the Combined Forces Command, and of United States Forces Korea (UNC/CFC/USFK). The SRT2P acronym and programming were rebranded H2F-lite for FY19, in an attempt to coopt SRT2P and coalesce all holistic health and fitness programs under the H2F umbrella. On 24 April 2019 FORSCOM, in conjunction with CIMT launched the FORSCOM H2F-lite pilot with 29 FORSCOM units and Indiana Army National Guard.

As the Holistic Health and Fitness system was developing, most of FY18 and FY19 was allocated to four projects: (1) implementation of the Occupational Physical Assessment Test, (2) implementation of the Army Combat Fitness Test, (3) development of the Holistic Health and Fitness Concept paper and (4) bottom-up rewrite of FM 7-22 Army Physical Readiness Training (Oct, 2012). To launch these efforts, the US Army Center for Initial Military Training hosted the first H2F Industry Day at FT Eustis, VA on 30 April–1 May 2019. Approximately 30 human performance optimization companies and over 100 government and civilian professionals participated in the two-day industry day. On 13 May 2019 the H2F system was memorialized with the publication of HQDA EXORD 149-19. The purpose of EXORD 149-19 was to formally establish the Army Holistic Health and Fitness (H2F) System. The H2F System’s national debut was at the AUSA Conference, Washington, DC, on 8-10 October 2019.

The H2F system was designed as a comprehensive, integrated, and immersive experience to develop soldiers who are physically and mentally ready to overmatch the enemy in multi-domain operations. EXORD 149-19 reiterated the US Army’s core mission “to deploy, fight and win our nation’s wars by providing a ready, responsive, and sustainable force.” The H2F system acknowledged the American Soldier serves as the most flexible and discriminately lethal capability on the battlefield. H2F funding represented the largest peace-time commitment of resources in the human dimension of the fighting force in the history of the US Army. This investment required the development of a holistic performance optimiza-

tion system designed to improve the physical and non-physical readiness of the soldier (e.g., improved: physical fitness, nutrition, sleep/recovery, and mental toughness).

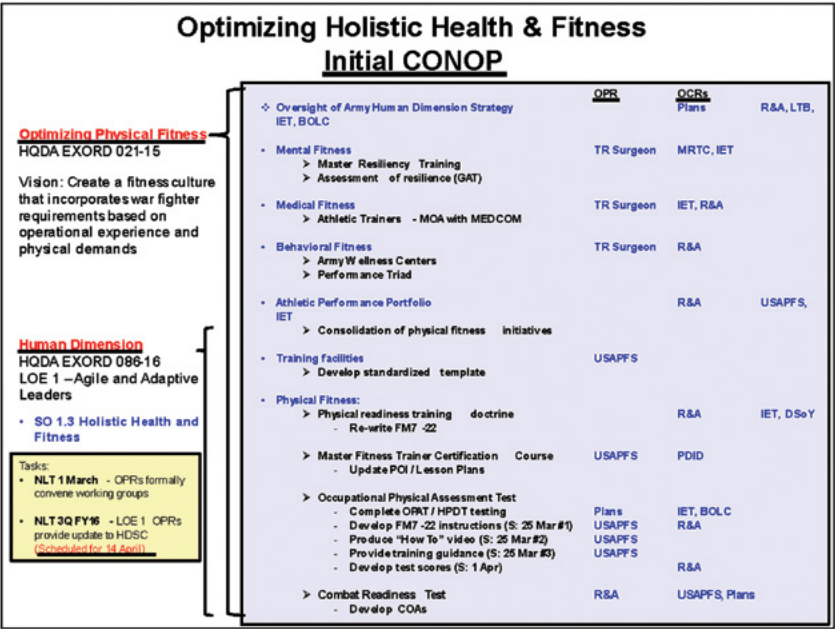


Figure 9.12. Optimized Holistic Health and Fitness.⁴⁶

Source: Photo courtesy of US Army Center for Initial Military Training.

As directed in HQDA EXORD 149-19, the US Army Center for Initial Military Training initiated a historic revision of FM 7-22 with the development of the H2F Operating Concept: The US Army’s System for Enhancing Soldier Readiness and Lethality in the 21st Century. Although the Operating Concept provided the conceptual framework for the FM 7-22 revision, it was approved and published simultaneously with the publication of FM 7-22, Holistic Health and Fitness by the Department of the Army on 01 October 2020.

The implementation of the H2F System was designed to achieve these five objectives:

1. Enhance soldier lethality and readiness.
2. Optimize physical and non-physical performance.
3. Reduce injury rates, particularly over-use MSKI rates.
4. Rapidly rehabilitate and recondition soldiers following injury.
5. Improve overall soldier and unit morale and effectiveness.

As stated by General Mark A. Milley, Chief of Staff (39) in his 2017 interview with USA TODAY, the H2F System represents “a cultural shift in the way we train, develop, and care for soldiers”—a change that begins now and will continue to evolve over the next 20-30 years. The H2F System builds the underlying capability and capacity within the soldier. Similar to professional athletes, soldiers will optimize individual performance by becoming stronger, fitter, and faster in both the physical and non-physical domains. “Stronger” soldiers will lead to stronger teams that are better prepared to confront challenges and accomplish the mission. “My intent is to treat soldiers as soldier-athletes.”⁴⁷

After more than two years of review and discussion, the H2F team established five programmatic domains of the Holistic Health and Fitness system: physical readiness, mental readiness, spiritual readiness, nutritional readiness and sleep readiness. These domains were outlined by chapter in the new FM 7-22, Holistic Health and Fitness. A unique feature of FM 7-22, Holistic Health and Fitness was the collaborative nature of the document. Historically FM 21-20, TC 3-22.20 and FM 7-22 were sole-source documents written by the US Army Physical Fitness School. To reinforce the holistic nature of health and fitness, CIMT sought out US Army experts in nutrition, behavioral health, sleep and spirituality to write the doctrinal materials for FM 7-22. These experts were paired with exercise science experts inside CIMT and the USAPFS to create an authoritative document for the US Army. During the developmental process, then CIMT Commander, Major General Lonnie Hibbard directed the writing team to separate doctrine and training materials similar to the publication of FM 21-20, Physical Training and TC 21-200, Physical Conditioning in 1956. As a result, four H2F companion documents were published: the H2F Opera2ing Concept; FM 7-22, Holistic Health and Fitness, ATP 7-22.01, Holistic Health and Fitness Testing; and ATP 7-22.02, Holistic Health and Fitness Drills and Exercises.

People are always my #1 priority: Our Army's people are our greatest strength and our most important weapon system.
—General James C. McConville 40th Chief of Staff,
US Army

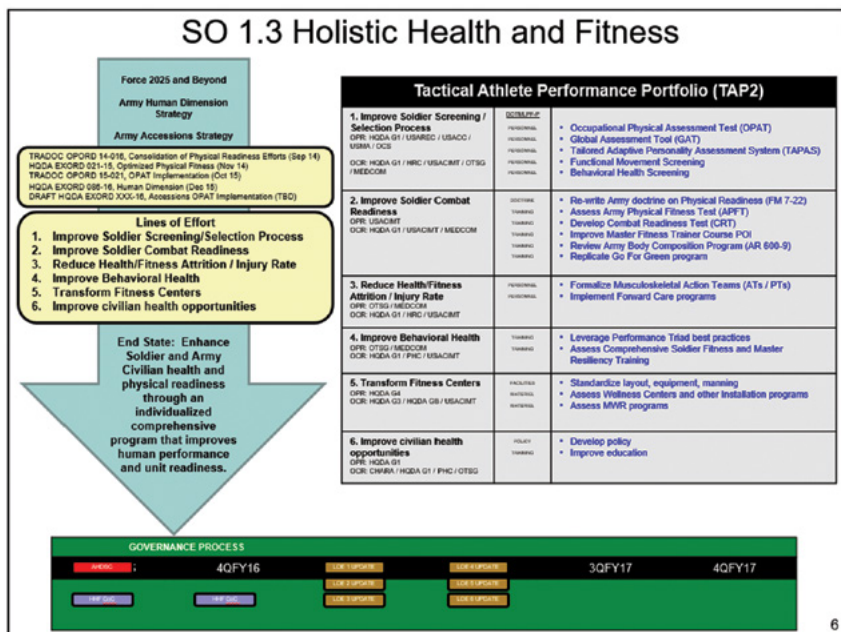


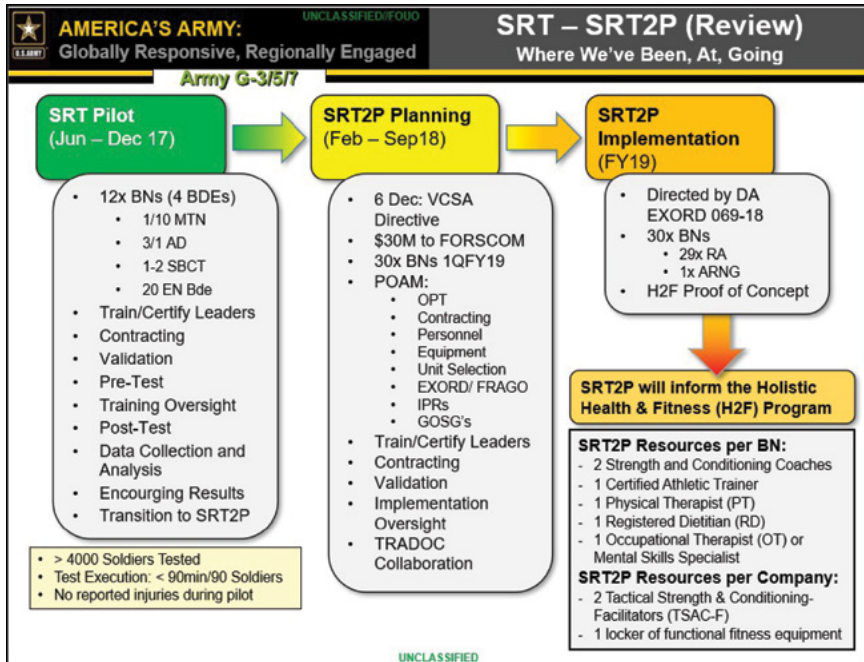
Figure 9.13. Holistic Health and Fitness Portfolio and Strategy.
Source: Photo Courtesy of the US Army Center for Initial Military Training.

Soldier Physical Readiness Center

Adaptive physical and non-physical training requires time, equipment, personnel and facilities. In 1890 orders were published directing the establishment of US Army gymnasiums and to provide instruction in gymnastic exercises at US Army recruiting depots. As this initiative matured, depots leaders observed immediate improvement “to the men mentally and physically.”

These striking results were obtained in gymnasiums ill adapted from buildings constructed for other purposes, with an extremely meagre outfit of apparatus, and all the other disadvantages

unavoidable in a new departure under inexperienced leadership. Nevertheless, so conspicuous have been the benefits derived from the system that the officers in charge unhesitatingly urged its extension to all military posts, --an instance of the repetition of history.⁴⁸



Original materials provided by the US Army Forces Command.

Figure 9.14. Soldier Readiness Test and Training Program.

Source: Photo Courtesy of the US Army Forces Command.

However, over 100 years later the US Army is still struggling to provide proper training facilities and certified physical trainers to optimize physical readiness training for soldiers. The H2F training center was designed to mirror strength and conditioning training facilities used by high schools, colleges and professional sport teams for the past 40 years. A myriad of different designs and configurations were considered from 2017-2020 with input from the H2F team, the CIMT engineer, the US

Army Corps of Engineers and private strength and conditioning companies and organizations. During late FY17 the US Army Center for Initial Military Training consulted with the Department of the Army, G9 and the US Army Corps of Engineers to develop a model and standards for the H2F training center. The H2F training center was intended as a one-stop, brigade-centric H2F center for the physical, behavioral, and mental care and training of the soldier. On 26-28 March 2018 the Architecture Branch, Engineering Directorate, US Army Engineering and Support Center in Huntsville, AL, conducted a training center Value Engineering Study (VES). CIMT representatives, to include Ms. Francesca Singhas, CIMT/H2F engineer, worked with the Architecture Branch representative, Mr. Ross Allen, to create an H2F Facility Concept Design. As part of the design process CIMT leadership approved the acronym SPRC–Soldier Physical Readiness Center for the H2F training center. On 19 April 2018 the Office of the Assistant Chief of Staff for Installation Management (OACSIM)/G9 conducted the inaugural meeting of the H2F Facility Design Team. The primary objective was to develop a SPRC design standard for presentation to the Army Facility Standards Committee (AFSC). Approximately one year later, on 24 September 2019, the AFSC approved the SPRC facility design standards.

The SPRC design team proposed a 40,000+ square foot structure where a large brigade could train and care for approximately 4,000 troops. The SPRC was designed to serve as the nexus of all-things H2F, to house all H2F personnel and serve as the BDE training, treatment, education and counseling center. One of the most critical design elements was to make the SPRC an immersive and integrated structure accessible to all troops. To ensure effective utilization of the SPRC, the planning team proposed a standardized physical training model and schedule. Training was scheduled to start at 0600 and run throughout the duty day. Physical readiness training in the BDE SPRC was programmed at the Company (CO) level, with one CO moving through the four exercise zones during a 90-minute training session 2-3 times per week.⁴⁹ This schedule required units to conduct physical and non-physical training throughout the duty day; a radical paradigm shift in how unit leadership had come to understand ‘the duty day’. Resistance to this paradigm shift was intense, however considering the number of musculoskeletal injuries, lost duty time and unprogrammed attrition, conducting physical training throughout the duty day to align with current best practices in exercise science seemed a small price.

On 01 October 2020 (FY21) 28 US Army brigades were resourced with H2F personnel and equipment. The personnel resources consisted of

three physical therapists, two registered dietitians, two behavioral counselors, one performance psychologist, 12 certified strength and conditioning specialists (SCC, the most common certification was by the National Strength and Conditioning Association-NSCA) and eight certified athletic trainers (ATC, certified by the National Athletic Training Association - NATA). Each Company in the resourced brigade received a deployable fitness training locker (gym-in-a-box–GIB). The GIB contained enough strength and conditioning equipment for one platoon to conduct a 90-minute training session. The GIBs were a deployable stop-gap solution until the Soldier Physical Readiness Centers (SPRC) could be renovated or constructed. Organizational change is difficult at best, and changes to the US Army’s culture of this magnitude created a myriad of issues.

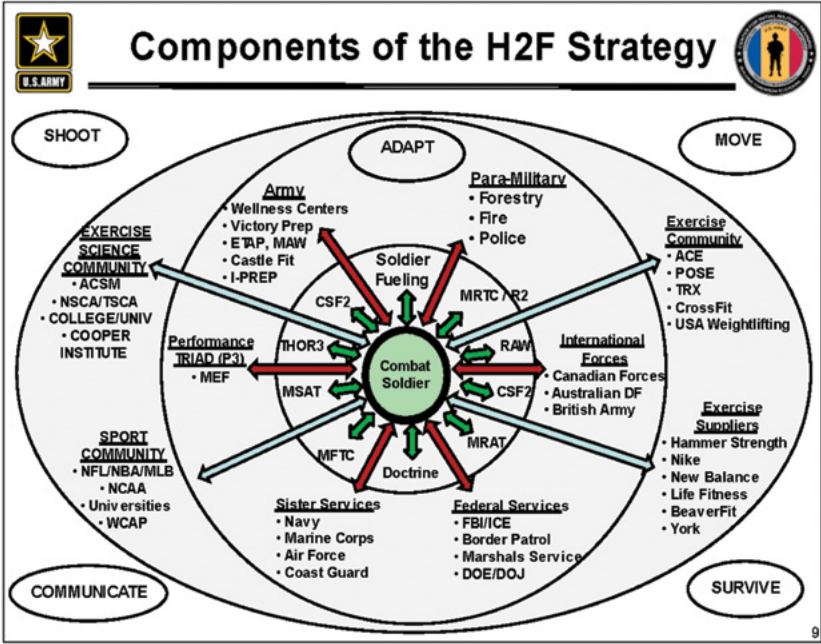


Figure 9.15. Components of the H2F Strategy.
Source: Photo Courtesy of the US Army Center for Initial Military Training.

During the first year H2F resourced battalions encountered three major issues: personnel allocation and utilization, training time and facili-

ties-equipment. During the initial deployment of H2F personnel, brigade and battalion leadership tended follow traditional personnel assignment paradigms and allocated H2F personnel equally across subordinate units; for example, with six battalions and 12 strength and conditioning coaches (SCC), they would assign two SCCs to each battalion. This assignment practice made it difficult for H2F personnel, particularly SCCs and ATCs to effectively execute the H2F performance plan. H2F personnel utilization models were designed to operate at the battalion (BN) or brigade (BDE) level, not the platoon or company level. The training model utilized a rolling start into the three SPRC training zones. Each CO started with a preparation drill in Zone 0 and then rotated into and through SPRC Zones 1-2-3 approximately every, cxz 30 minutes. Once ACO completed the prep drill and moved into Zone 1, BCO started their preparation drill. When ACO transitioned to Zone 2, BCO moved into Zone 1, and so forth until each of the three training zones was filled by a CO for a total of approximately 400 troops.



Original materials provided by the US Army Center for Initial Military Training.

Figure 9.16. The Holistic Health and Fitness System.

Source: Photo Courtesy of the US Army Center for Initial Military Training.

SCC professionals generally work at a coach to athlete ratio less than 1:20. If resourced BDEs had a proper SPRC training facility, the operational training plan called for approximately eight SCCs, four ATCs and 306

two PTs to mass on the SPRC daily. At maximum capacity there would be approximately 130 soldiers in each of three SPRC zones (Zone 1, Zone 2, Zone 3) at one time. In this training scenario, 14 CSS/ATC/PT personnel would conduct physical and non-physical training in the SPRC at a coach to soldier ratio of about 1:25. When the CSCS/ATC/PT personnel are assigned by COs, the coach to athlete ratio is more like 1:250. The personnel assignment issue is further exacerbated by the lack of training equipment.

Another personnel utilization issue was linked to the concept of paradigm paralysis. Senior commissioned and non-commissioned leaders have served in an army for 20-30 years where non-commissioned officers, most E5-E7, planned and executed physical readiness training. Although most of these NCOs had little or no preparation for or understanding of the science of physical readiness training, it was ‘the way we’ve always done PRT’. The lack of confidence in civilian certified trainers to develop physical training programs, or the paradigm paralysis of current practice, has led to a significant underutilization of H2F training assets. Although this issue will resolve as younger officers and NCOs ‘grow up’ in the H2F system, US Army senior leadership must display patience in the pace and rate of change, i.e., increased levels of physical and non-physical readiness and reduced MSKI injuries.

The second issue for H2F physical training was time. For the past 200 years to US Army has followed a “playground” model of physical readiness training that was developed in Jenna, Prussia in 1806. Extended rectangular formations executing body-weight calisthenics were a convenient and cost-effective solution to the US Army’s physical readiness ‘leader to led’ training dilemma. With the requirement to train approximately ½ million active component soldiers daily, the US Army defaulted to Frederick Jahn’s Turnverein model.⁵⁰ As the tactical athlete programs (TAP) and the THOR3 and RAW programs demonstrated over the past 20 years, performance optimization training requires time, programming, professional supervision, facilities and equipment. As a result of adopting the ‘playground’ model, almost 60k US Army soldiers are currently non-deployable.⁵¹ Interestingly, if you review the WWI training manual, *Mass Physical Training for Use in the Army and Reserve Officers’ Training Corps* (1920), Dr. Joseph Raycroft recommended 1000 as the optimal time to conduct daily physical training, with a concomitant afternoon session of mass athletics.⁵² The only cost-effective solution to the H2F training, facility and equipment problems was to train throughout the duty day. Even with a 40k square foot training facility and utilization plan where troops trained throughout the duty day, soldiers would only train in the

SPRC about 2-3 time per week. On many occasions since 2019, US Army senior leadership gave unit commanders and NCOs a WARNO to adjust work schedules to make the most effective use of H2F personnel, facilities and equipment. However, the ‘we only do PT at 0600’ training model is an extremely difficult problem for the US Army and unless resolved will hinder future progress on performance optimization.

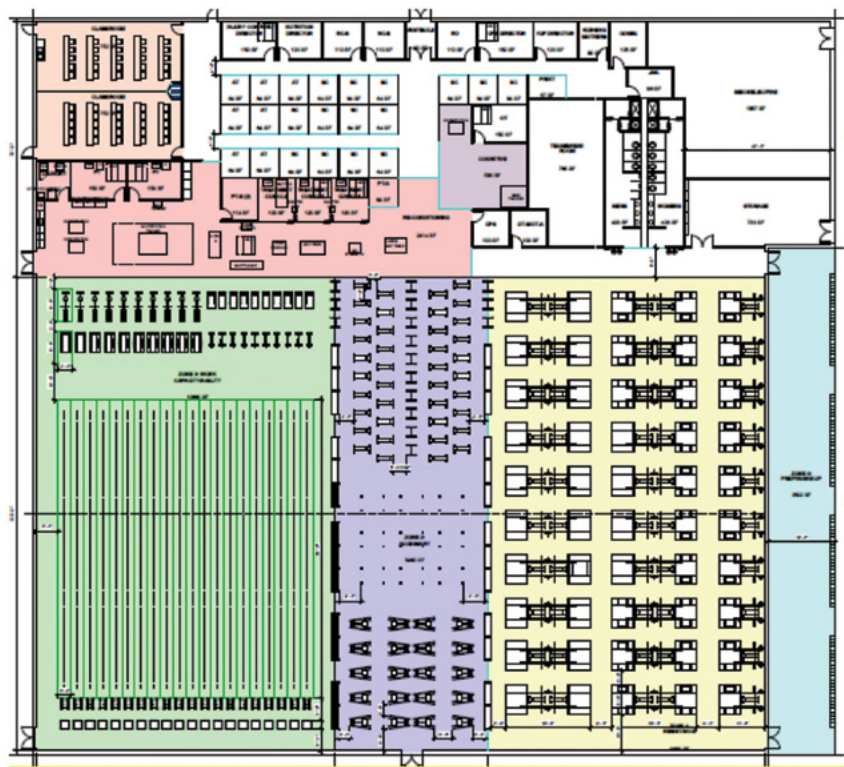


Figure 9.17. Soldier Physical Readiness Center Design.

Source: Photo Courtesy of the US Army Center for Initial Military Training.

The third issue for H2F pertained to SPRC construction. While the SPRC was programmed into the H2F System, for a myriad of reasons

the US Army has not resolved the complex regulations and issues that plague government construction. This is especially problematic considering the plethora of innovative and unconventional technical advances with semi-permanent construction materials that have evolved over the past decade. Tension fabric structures are generally more affordable, easier to install, and can span larger distances with minimal load-bearing supports. Many of these fabrics can be layered over a steel frame to construct facilities like the SPRC. Some tension fabric structures are engineered to withstand significant windshear and snow load, which makes them practical in virtually all climates.⁵³ In working with semi-permanent building construction companies, i.e., tension fabric or pre-engineered metal buildings, turn-key building costs can be as low as \$150 per square foot as opposed to the \$450 per square foot estimated by the US Army Corps of Engineers for ‘brick and mortar’ construction. These low cost, sustainable structures may provide an effective solution for the H2F SPRC.⁵⁴

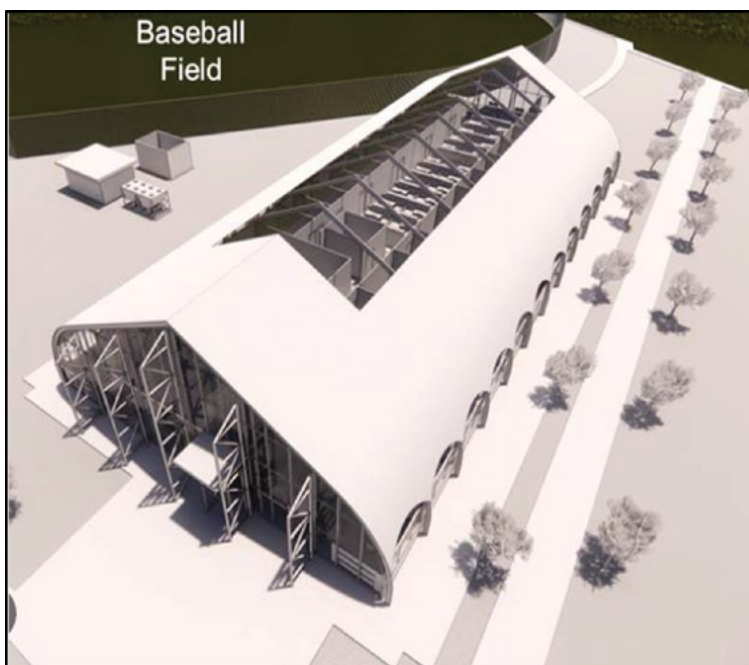
Staying the Course and Planning for the Future

In December 2017, General Mark Milley, 39th Army Chief of Staff, introduced the Holistic Health and Fitness and the Army Combat Fitness Test. His message was, these changes represent a generational shift in how we train, develop and care for soldiers. We cannot accomplish this transition with ‘business as usual’. As the first five years of the Holistic Health and Fitness ‘era’ came to an end in 2022, the US Army continues to struggle with issues of funding and culture. Although there was project objective memorandum (POM) funding for 28 brigades in FY21, the funding for the 10 brigades in FY22 was cut with a promissory note that this funding would be restored in FY23. One bright spot in the funding dilemma was the continued funding for the Holistic Health and Fitness directorate in the US Army Center for Initial Military Training. Col. Kevin Bigelman currently serves as the Director and the staff is aligned into six principal areas: Plans & Ops, H2F Integration Team (HIT), Non-physical Training, Physical Training, Engineering, and Assessment. The HIT team is actively engaged in traveling to the 28 H2F resourced BDEs, to assist the BDE H2F teams in developing and implementing their unit H2F programs under the auspices of FM 7-22 and EXORD 149-19. With specialists in each of the five H2F domains, the H2F Directorate is capable of guiding the local H2F teams through the development and implementation process.

Since the publication of EXORD 149-19, Holistic Health and Fitness (to include FRAGO 1–H2F Framework and Governance), two additional FRAGOs and eight Annexes were published. FRAGO 2, Annex A, B, C

were published on 5 April 2021. FRAGO 3 was published on 16 May 2022 with a revision of Annex A-C and four additional annexes, D-H, to clarify and extend the Holistic Health and Fitness strategies and governance.⁵⁵ These executive orders along with the doctrinal publications will help guide the Holistic Health and Fitness system for the next decade.

While the 28 BDEs funded in FY21 were sustained in FY22, the 10 BDEs scheduled for funding in FY22 were pushed to FY23. The initial H2F objective was to fund 110 active component brigades over 10 years (FY21–FY30). That plan has now been extended to FY31 after the FY22 BDEs were pushed out one year. Unfortunately, no H2F funding has ever been allocated for the US Army National Guard or the US Army Reserves. The POM funding is scheduled to resume in FY23 with the funding of 10 more BDEs. The current planning model funds 10 BDEs /year for the next decade until the US Army has funded 110 brigades with personnel and medical and deployable exercise equipment. Currently the US Army has not resolved the construction issues for the Soldier Physical Readiness Centers, although approximately \$550M are still programmed for these facilities, either as temporary new construction or renovations. A lack of SPRC facilities will severely hamper the future success of the H2F System.



<https://www.westpoint.edu/USMA-2035/academic-infrastructure/academic-building-upgrade-program>

(The Patton Swing Facility will be a temporary tension fabric structure that provides about 20K square feet of academic space to provide “swing” capability as various departments move to facilitate renovations during the 17-year Academic Building Upgrade Program.)



Figure 9.18. Patton Swing Facility, West Point, NY.

Source: The Patton Swing Facility will be a temporary tension fabric structure that provides about 20K square feet of academic space to provide “swing” capability as various departments move to facilitate renovations during the 17-year Academic Building Upgrade Program, <https://www.westpoint.edu/USMA-2035/academic-infrastructure/academic-building-upgrade-program>.

Notes

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2. General Peter J. Schoomaker, CSA; AUSA Conference, Eisenhower Luncheon; As Delivered Transcript; Washington Convention Center, Washington, DC, 10 October 2006.
3. Human Dimension in Full Spectrum Operations; TRADOC Doctrine and Concepts Conference (Human Dimension TDCC IV Brief-v10.0), 10-11 April 2007; Colonel Michael Haith (file notes), Central Ideas of the Human Dimension (Joint and Army Capabilities Directorate-Draft), 04 April 2007.
4. Defense Health Agency, Total Force Fitness (TFF): Program Update, 10 February 2020.
5. Office of the Under Secretary of Defense for Personnel and Readiness. *DoD Instruction 1308.03 DoD Physical Fitness/Body Composition Program*. 10 MAR 2022, p. 8.
6. Office of the Under Secretary of Defense for Personnel and Readiness. *DoD Instruction 1308.03 DoD Physical Fitness/Body Composition Program*. 29 JUN 1981 MAR 2022, p. 1; Note: this document superseded DoD Directive 1308.1, Physical Fitness Programs, 20 NOV 1962.
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8. Note: The National Strength and Conditioning Association (NSCA) was conveniently located in Colorado City, CO, and provided direct access to CSCS for the TAP pilot program.
9. Tactical Athlete Program, FT Carson, CO; Promotional compact disk cover document, 21 June 2012.
10. MG Stone Visits 3BCT TAP (Tactical Athlete Program), FT Carson, CO; Sound Bites: Army Deputy Surgeon General, Maj. Gen. Richard A. Stone, M.D., VIRIN: 120621-A-CJ249-001, 21 June 2012.
11. Nolan Johnson and Jonathan C. Baker, *Preservation of the Force and Family as a Tool for Talent Management*, Naval Postgraduate School, Monterey, California, December 2019, p. 1.
12. McMillian, Danny. "Ranger Athlete Warrior: A Systematic Approach to Conditioning," *Infantry*, 2007, 96:3, 5-8.
13. William McRaven, "Admiral McRaven State of SOCOM | C-SPAN. Org," www.c-span.org, 10 July 2019, <https://www.c-span.org/video/?c4364544/admiral-mcraven-state-socom>.
14. SOCOM POTFF Homepage, <https://www.socom.mil/POTFF/Pages/About-POTFF.aspx>, (accessed 13 OCT 2022).
15. Terrence K. Kelly, Ralph Masi, Brittian A. Walker, Steven A. Knapp, Kristin J. Leuschner, *An Assessment of the Army's Tactical Human Optimization*,

Rapid Rehabilitation and Reconditioning Program (Technical Report), Rand Corporation, 2013, 1-104.

16. Terrence K. Kelly, Ralph Masi, Brittan A. Walker, Steven A. Knapp, Kristin J. Leuschner, *An Assessment of the Army's Tactical Human Optimization, Rapid Rehabilitation and Reconditioning Program* (Technical Report), Rand Corporation, 2013, 25 & 56.

17. Note: The Center for Enhanced Performance and the United States Military Academy-West Point was started in the early 1990's and is directed by Dr. Nate Zinsser. Many other Army CEP programs benefited from lessons learned by this ground-breaking program. The mission of the Center for Enhanced Performance is to educate and train the Corps of Cadets on comprehensive performance psychology and academic skills to develop their full potential.

18. <https://www.army.mil/e2/c/downloads/285588.pdf>; document date 1 MAR 2013.

19. Ready and Resilient Campaign-Frequently Asked Questions; ASA M&RA/Army G-1 Public Affairs, 5 November 2013, (https://www.army.mil/article/114462/ready_and_resilient_campaign_frequently_asked_questions, accessed 15 July 2022.).

20. https://www.army.mil/article/50909/army_releases_december_and_2010_suicide_data.

21. https://www.dspo.mil/Portals/113/Documents/2020QSRs/TAB%20A_20210309_OFR_Rpt_Q4%20CY%202020%20QSR.pdf?ver=UKN194rEw-5MhM_vaGy0j0w%3D%3D.

22. Department of Defense Annual Report on Sexual Assault in the Military Fiscal Year 2013 Enclosure 1: Department of the Army Report.

23. 1 MAR 2016 Performance Triad Strategy Document.

24. https://www.army.mil/article/111317/army_medicine_launches_performance_triad_pilot_program; Army Surgeon General and Commanding General of the MEDCOM, Lt. Gen. Patricia Horoho.

25. Statement By Lieutenant General Nadja Y. West the Surgeon General and Commanding General, United States Army Medical Command before The Senate Committee on Appropriations Subcommittee on Defense, Second Session, 114th Congress on Defense Health Program, page 4, 9 March 2016.

26. MEDCOM Performance Triad Working Group, Army Medicine Launches Performance Triad Pilot Program; *OTSG Public Affairs*, September 13, 2013; <https://www.army.mil/article/111317/>; quotations from Lieutenant General Patricia Horoho and Major Darryl Metcalf.

27. Statement By Lieutenant General Nadja Y. West the Surgeon General and Commanding General, United States Army Medical Command before The Senate Committee on Appropriations Subcommittee on Defense, Second Session, 114th Congress on Defense Health Program, page 4, 9 March 2016.

28. Gen. David G. Perkins was appointed the 15th commander of TRADOC on 14 MAR 2014.

29. TRADOC Pamphlet 523-3-7, *The US Army Human Dimension Concept*, 21 MAY 2014.

30. TRADOC PAM 523-3-7, *The US Army Human Dimension Concept*, 21 MAY 2014, p. 9.

31. Kelly Kotch, "Human Performance Optimization: Maximizing the Capability of Our Warfighters," in *Force Health Protection and Readiness*, Volume 5, Issue 3, 2010, pp. 9-10. Defined as "the process of applying knowledge, skills and emerging technologies to improve and preserve the capabilities of DoD personnel to execute essential tasks." human performance optimization's goal is to optimize the performance of warriors in all conditions and is designed to prepare warfighters for future conflict in the 21st Century.

32. TRADOC PAM 523-3-7, *The US Army Human Dimension Concept*, 21 MAY 2014, p. 14.

33. TRADOC PAM 523-3-7, *The US Army Human Dimension Concept*, 21 MAY 2014, p. 14. E. D. Pulakos, S. Arad, M. A. Donovan, & K. E. Plamondon, "Adaptability in the workplace: Development of a taxonomy of adaptive performance," *Journal of Applied Psychology*, 2000, 85, 612-624; Tanja C. Roy, Barbara A. Springer, Vancil McNulty, Nikki L. Butler, "Physical Fitness," *Military Medicine*, August 2010, 175, 14-20; Paul T. Bartone, Dennis R. Kelly, and Michael D. Matthews, "Psychological Hardiness Predicts Adaptability in Military Leaders: A Prospective Study," *International Journal of Selection and Assessment*, June 2013, 21, 200-210; M. Kaspersen, S.B. Matthiesen, & K.G. Gotestam, "Social network as a moderator in the relation between trauma exposure and trauma reaction: a survey among UN soldiers and relief workers." *Scandinavian Journal of Psychology*, 44:5 (2003), 415-412.

34. Human Dimension White Paper: A Framework for Optimizing Human Performance; The US Army Combined Arms Center, page 7, 9 September 2014.

35. Note: The US Army Public Health Command is now the US Army Public Health Center.

36. LOE#1 name—"Cognitive Dominance" was later changed to "Agile and Adaptive".

37. The Army Human Dimension Strategy, TRADOC Combined Arms Center, page ii, 01 JUN 2015.

38. The Army Human Dimension Strategy, TRADOC Combined Arms Center, page 14, 01 JUN 2015.

39. Office of the Assistant Secretary Manpower and Reserve Affairs, Department of the Army (Mr. Jeff Angers, Director of Strategic Integration), Memorandum; Subject: Human Dimension Strategy, 2015; 7 OCT 2015.

40. 3.B.2.A.4.B. OCRS: OTSG/MEDCOM (Including MRMC [US ARMY Medical Research and Materiel Command]), TRADOC (Including USAREC [US ARMY Recruiting Command], Cadet Command, COEs and USASA), HQDA G-1 (Including ARI [Army Research Institute]), HQDA G-3/5/7, AMC/RDECOM (US Army Materiel Command/US ARMY Research, Development, and Engineering Command) (Including ARL [US Army Research Laboratory]), USMA, USAWC, FORSCOM, OCAR, CNGB, AND Office of the Chief of Chaplains.

41. Note: There were two significant issues with the Athletic Performance Portfolio conference plan: (1) there was no mechanism to validate programmatic data associated with measure of performance, measures of effectiveness (several organizations presented significant programmatic gains with no corroborating data), and (2) various organizations had representatives from multiple programs, which appeared to give them multiple “votes”.

42. In common vernacular, the conference rapidly devolved into a “getting voted off the island” process.

43. Report to the Army HD Council of Colonels by Maj. Gen. Anthony Funkhouser, CIMT, 16 March 2016.

44. Meghann Myers, As the US Army turns to functional fitness testing, is the end of gender standards near?, Army Times, 26 March 2018, p. 3.

45. Joseph M Molloy, Timothy L Pendergrass, Ian E Lee, Keith G Hauret, Michelle C Chervak, Daniel I Rhon, Musculoskeletal Injuries and United States Army Readiness. Part II: Management Challenges and Risk Mitigation Initiatives, Military Medicine, Volume 185, Issue 9-10, September-October 2020, Pages e1472-e1480, <https://doi.org/10.1093/milmed/usaa028>; Published: 27 February 2020.

46. Note: H2F Working Group dates:

- 28 APR 2016 Holistic Health and Fitness (H2F) working group meeting at FT Eustis.
- 26 MAY 2016 H2F working group meeting at FT Eustis.
- 28 JUL 2016 H2F working group meeting at the ADL Center, Alexandria, VA.
- 21 SEP 2016 H2F working group meeting at FT Belvoir, VA.
- 09 MAR 2017 H2F working group meeting at DHHQ, Washington, VA.

47. General Mark Milley, Army Chief of Staff, Interview, USA Today – Special Edition: Year in Defense, 27 December 2017, p. 27.

48. James E. Pilcher, *The Building of the Soldier*, The United Service—A Monthly Review of Military and Naval Affairs, Volume 7:2, (April, 1892), p. 329.

49. There were four physical training zones in the Soldier Physical Readiness Center: Zone 0 = warm-up (outside the facility), Zone 1 = strength/power training, Zone 2 = accessory strength training and Zone 3 = anaerobic endurance and power training.

50. Note: although Frederick Jahn and Herman Koehler recommended and use a variety of ‘gymnastic’ equipment, pommel horse, beams and bars, ladders and ropes, for use in physical training.

51. Headquarters, Department of the Army, EOM Non-deployable Report, June, 2021.

52. Note: a 2nd edition, which appears to be an exact reproduction of the 1st edition was published in 1924; the only addition is a preface by Brig. Gen. H.A. Drum.

53. Note: the Sprung Corporation was founded in Calgary, Alberta Canada and their tension fabric structures were designed and built to withstand the environmental conditions of the northwest.

54. Note: some examples of tension fabric builders are: Clear Span, Cocon, Sprung, Legacy Building Solutions, Brite Span and others.

55. EXORD 149-19 (18 August 2020):

- FRAGO 1 (18 August 2020)–H2F Framework and Governance.
- FRAGO 2 (5 April 2021)–H2F Timeline and Personnel:
 - Annex A–H2F Facility Check.
 - Annex B–H2F Procedures for Credentialing Privileges for Medical Team Members.
 - Annex C–H2F Personnel Team Tracker.
- FRAGO 3 (16 May 2022)–Revision to Annex A, B, C, D and 4 new Annexes:
 - Annex A–H2F Facility Check (revised).
 - Annex B–H2F Procedures for Credentialing Privileges for Medical Team Members (revised).
 - Annex C–H2F Personnel Team Tracker (revised).
 - Annex D–H2F Implementation Strategy (revised).
 - Annex E–H2F Integration Team Training Schedule.
 - Annex F–H2F Deployable Medical Equipment Sets.
 - Annex G–H2F Garrison Equipment Sets.
 - Annex H–H2F Return on Investment (ROI) Metrics.

Chapter 10

Summary, Analysis, and Discussion

The US Army is a complex organization with a range of military objectives. Our core mission is to deploy, fight and win our nation's wars by providing a ready, responsive, sustained and lethal land force that dominates across the full spectrum of conflict as part of the joint force in multi-domain operations. With this aim, the US Army recognizes that the American Soldier must serve as the most flexible and discriminately lethal capability on the battlefield.

—HQDA EXORD 149-19, May 2019

Summary and Analysis

“Safe behind its ocean barriers and supported by the intellectual ideals of its enlightenment-trained founders, America resisted the creation of a large standing military force as both unnecessary and dangerous to its liberty.”¹ The founding fathers set the conditions for the Continental Army over 200 years ago with the decision to maintain a relatively small “standing” US Army and plans to meet military threats through an intensive mobilization of civilian personnel. Constrained by this condition, the US Army has endeavored with little success to establish a comprehensive and sustainable physical readiness training doctrine that enables all soldiers to develop and maintain the level of physical fitness required for combat readiness. “Every war in which the US has been involved since 1860 has revealed the physical deficiencies of our soldiers during the initial mobilization...casualties in initial engagements were attributed to the inability of our soldiers to physically withstand the rigors of combat.”² Due to the absence of a systemic and pervasive PRT doctrine with consolidated and enduring support from US Army leaders, the US Army's emphasis on physical readiness training has followed a sinusoidal pattern of surge and consolidation through multiple force mobilizations and times of peace. During the periods of rapid force mobilization military and civilian leaders bemoan the poor health and fitness of the civilian population and the extraordinary task of conditioning conscripts and volunteers for combat. During the periods of force consolidation political and economic influencers have caused national leaders to casually abandon the physical lessons learned from the Battle of the Somme to Task Force Smith, from the Ia Drang Valley to the Korengal Valley. Throughout its 200+ year history the United States Army has consistently failed to provide PRT programs

and resources to adequately prepare soldiers for combat. US Army leaders have essentially relegated physical readiness to the “and other duties as assigned” category of training.

The success and general efficiency of every military establishment is, in a very large degree, dependent upon the physical fitness, endurance, and condition of the individual units of which it is composed.

—William Lee Nash, Major General, USA

During the US Army’s first 100+ years the physical readiness training banner was born through force of will by charismatic military and civilian leaders. Early on, the nexus of US Army physical readiness training was the United States Military Academy (USMA) at West Point. With early influencers like Alden Partridge, John Kelton, Edward Farrow, and Herman Koehler, USMA “trained the trainers” who would ultimately bear the responsibility for physically training our soldiers. Through their influence a young 2nd Lieutenant Franklin Bell (1878 USMA graduate) began a career-long advocacy of physical readiness training, which resulted in the first Army-wide General Order (No. 44) requiring Commanders to systematically develop and implement physical training programs for their soldiers. Although throughout the 1800’s the Prussian and US Armies continually demonstrated the link between success in combat and individual soldier fitness, it was not until the post WWI years that the US Army truly embraced the contributions of physical conditioning as a force multiplier in combat.

At the onset of WWI, the United States faced its first large-scale mobilization against a foreign enemy, which marked a significant turning point for Army PRT. Through the guidance of President Woodrow Wilson, Raymond Fosdick (Chairman, Commission on Training Camp Activities) engaged Dr. Joseph Raycroft (noted medical doctor and director of health and physical education at Princeton University) to lead the US Army’s efforts to train millions of volunteer and conscript soldiers. Through the lessons learned from our European allies prior to 1918, Army PRT sharpened its focus on combat readiness, which culminated with the publication of *Mass Physical Training* (1920). Shortly after the Treaty of Versailles in 1919 and with his failed attempt to have the United States join the League of Nations, Wilson’s influence waned as did the influence of Joseph Raycroft. Three lasting contributions from the WWI “training camps” program were: (1) the 3-month basic combat training model, (2) the “mass athlet-

ics” model promulgated by Raycroft, and (3) the founding of the Physical Training and Bayonet School at Camp Benning. This school served as the precursor to the Physical Fitness Schools that reemerged in 1946 at FT Bragg and the soldier Physical Fitness School that reemerged again in 1982 at FT Benjamin Harrison. The implementation of the “physical training school” model began a long-term struggle between the US Army Infantry School and the US Army, particularly TRADOC, over control of physical readiness training doctrine.

Due to forced consolidations during the Interwar Years, the Physical Training and Bayonet School was terminated and much of the impetus to enhance PRT was lost. During this interregnum the US Army instinctively turned back to West Point for PRT guidance and Koehler’s last publication, *West Point Manual for Disciplinary Physical Training* (1919), became the foundation for the next three US Army PRT manuals—Training Regulation 115-5 (1928); Basic Field Manual (1936); and Field Manual 21-20 (1941). All three manuals were published under the auspices of the Superintendent–United States Military Academy. Although the US Army’s physical readiness training program was successful in sustaining the professional US Army, in virtually every after-action review following WWI, WWII, and the Korean War, military and civilian leaders expressed chagrin and angst over how poorly our citizen-soldiers were prepared for the physical rigors of combat. “Of the first two million men examined under Selective Service, fully half were found unfit for military combat service”.³

At the onset of WWII research in the science of exercise, conducted by civilian educators like Dudley Sargent, Charles McCloy, A.A. Esslinger, and Thomas Cureton, enhanced US Army physical readiness training programs through more progressive program designs, improved conditioning drills, and the introduction of organized sports and combatives. The nexus of US Army PRT again focused on developing combat readiness. The prime movers for Army PRT during WWII were Colonel Leonard Rowntree, Chief of the Medical Division, Selective Service System and Colonel Theodore Bank, Chief of the Athletic and Recreation Branch. These officers were critical to the formation of the Victory Corps and the insinuation of exercise science into Army PRT. With over 400,000 wartime casualties, WWII provided a surfeit of data to assess military preparation, training, and strategy. The analysis of these data clearly demonstrated the limitation of current Army PRT doctrine as published in FM 21-20 (1941) and resulted in the rapid action publication Physical Training, Training Circular 87 in November 1942.

One of the best examples of the transient nature of the US Army's physical readiness training doctrine came from the leadership of the 2nd Army during the ramp-up to WWII (1941-1942). In a 1941 training memorandum 2nd Army Commander, Lieutenant General Benjamin Lear directed commanders to provide minimal emphasis on physical training and cautioned that excessive fatigue and exhaustion were to be avoided. Less than a year later Lieutenant General Lear directed that "physical hardening was to be brought to such a state that infantry units...are physically and emotionally prepared for the realities of the war".⁴ His successor Lieutenant General Fredendall continued to emphasize physical conditioning when he directed that "All troops should undergo a course of training paralleling that of our Ranger Battalion...it would involve maximum physical hardening...."⁵ The universal conclusion by US Army leaders following WWII was you had to be fit to fight, and you had to train hard to be fit.

If all soldiers were physically hardened to the extent of being 'tough guys'...military operations would be a success.

—Lieutenant General Lloyd Fredendall, 1 June 1943

Success in battle goes to the troops 'who can take one more step and fire one more shot' than the enemy.

—Col. Lewis A. Walsh, Commanding Officer 517 Parachute Regimental Combat Team, 1944

With the print still fresh on the after-action reviews following WWII and Korea proclaiming the benefits of physical readiness training to combat effectiveness, as a result of resource consolidation and indifference, Army-wide "interest" in PRT doctrine and training waned. By the end of 1953 the Physical Fitness School (FT Bragg) was terminated to save \$225,000. As was the case in the early 1920's, the US Army Infantry School (USAIS) at FT Benning stepped in and assumed responsibility for Army PRT doctrine and training. "The Ranger Department is charged with this Army-wide responsibility...the responsibility to monitor physical training Army-wide," make recommendations for policy and doctrine, prepare training literature and aids, conduct PRT research, and provide instruction to Officers and NCOs.⁶ Over the next 30 years the USAIS worked to better understand and apply the science of exercise to physical readiness training. They conducted periodic seminars (1958, 1970, 1980), where military leaders and civilian exercise scientists worked to improve the quality of physical training programs and instruction. However, much of the US Ar-

my's leadership still viewed physical conditioning as a wartime requirement and thus failed to ensure that soldiers were properly prepared for the physical challenges of combat during the long intervals of peace.

Even with the significant rise in national consciousness regarding secular physical fitness that began in the late 1950's through the efforts of Presidents Eisenhower and Kennedy and the President's Council on Youth Fitness (Executive Order 10673), significant reforms in Army PRT doctrine were not forthcoming. It was clear that military leaders "appreciated" the role of physical conditioning to success in combat; however as was so often the case, the universal acceptance of the need for well-conditioned soldiers failed to translate into direct actions to ensure mission accomplishment. Based upon the continuous ebbs and flows in the US Army's commitment to physical readiness training, it was clear the US Army failed to truly institutionalize the importance of sustained combat readiness.

Beginning in the early 1970's two major paradigm changes significantly influenced Army PRT doctrine and assessment that would coalesce in the surge of the early 1980's. The first change resulted from the naissance of secular physical fitness. Americans were jogging for exercise and fun while reading Ken Cooper's new book *Aerobics* and Arthur Jones' Nautilus machines were popularized by the 1977 docudrama "Pumping Iron", starring a young Arnold Schwarzenegger. The entire country became fixated with marathon mania and Frank Shorter and Bill Rodgers became national heroes. Through the birth of the fitness industry, as regulated by the American College of Sports Medicine, millions of Americans embarked upon their personal fitness journey. The second major paradigm change resulted from congressional legislation that allowed women to enroll at the nation's service academies. The United States was again at peace and some of the Vietnam War scars were on the mend when President Gerald Ford signed legislation opening enrollment in the US Service Academies to women on 7 October 1975. Sans the Army Nurse Corps, prior to 1976 women were mostly relegated to a limited number of administrative and clerical military occupational specialties.⁷ Once women were enrolled at West Point, the US Army faced two growing problems: (1) how to provide greater leadership opportunities that would qualify women Officers for advancement to higher rank and (2) how to develop a "separate but equal" physical readiness assessment process that would make women Officers competitive for positions of higher leadership.⁸ Although women's physical readiness training and assessment had made significant progress since

1943, women still suffered from the perception as the “weaker sex” that the US Army was preparing for non-combat roles.

As a result of these two paradigm changes and the growing “Cold War” mentality, from 1979 to 1981 US Army leaders formulated a plan to change the focus of PRT and assessment from “combat readiness” to health-related fitness and weight control.⁹ The guidance from US Army leaders prior to the publication of the 1980 revision of FM 21-20—*Physical Readiness Training* was to develop and implement a gender integrated physical readiness training and assessment program. Prior to 1980 most men took the Advanced Physical Fitness Test, which purported to measure combat readiness by testing the inverted crawl, run-dodge-jump, horizontal ladder, bent leg sit-ups, and the two-mile run (in boots). Most women took the Advanced Physical Fitness Test, which was composed of the 80 meter shuttle run, run-dodge-jump, modified push-ups (from the knees), modified sit-ups, and one-mile run.¹⁰ Due to a myriad of factors including the low intensity level of women’s PRT and the parochial expectations and beliefs about the strength and endurance capabilities of women, US Army leaders concluded that the men’s Advanced Physical Fitness Test was too challenging for women, especially the horizontal ladder.¹¹ The perception that women were incapable of achieving a significant level of functional fitness, even on a relative scale with men, caused the post-Vietnam ensemble of all-male US Army leaders to make an unfortunate mistake.

Rather than exercising due diligence, to develop a common function fitness test and perhaps expecting more of women soldiers in the physical domain, US Army leaders scrapped the functional fitness assessments proscribed by FM 21-20 (1973) and FM 35-20 (1975) in lieu a 3-event health-related physical fitness test. Based upon the parochial views of women at the time, this was a simple solution to a complex social and physiological problem. Several concrete examples demonstrate just how misinformed US Army leaders were about the physical capabilities of women soldiers. We now know that the variation in aerobic capacity between men and women is about 10-12% for any distance—100m to 100 miles. However, in FM 21-20 (1980) the delta between the 100-point performance time for men (13:05) and women (17:10) for the 2-mile run (17–21-year-old) was 31.21%. To assuage concerns over massive numbers of women failing the 2-mile run (in boots), US Army leaders set the 60-point (failure) time for women at 22:10. This baseline “run” time is just marginally faster than a brisk walking pace.¹² The gender bias and associated lack of knowledge about women’s anatomy and physiology was even more evident in the 60-point performance score for women’s sit-ups; the passing score (60

points) was 27 repetitions. The 60-point sit-up performance score (1980) was so egregiously inaccurate that in FM 21-20 (1985) the 60-point performance score for sit-ups for 17-21-year-old women was raised to 52 repetitions—a 93% increase.

The combination of a transition to a health-related fitness test, concerns about women's strength and endurance, and the expanding role of women in the US Army engendered the development of the 3-event Army Physical Readiness Test (APRT). The transition to a health-related fitness focus was reinforced by the resurrection of the US Army Soldier Fitness Center at FT Benjamin Harrison by order of the Secretary of the Army—John O. Marsh on 26 April 1982. The transition was completed when FM 21-20 (1985) was published and the title was changed from *Physical Readiness Training* (1980) to *Physical Fitness Training* (1985) and the APRT became the Army Physical Fitness Test (APFT). These name changes were more than symbolic; they represented a fundamental shift from combat-focused PRT to health-related PFT and assessment.

Although US Army doctrine clearly identified the 3-event APFT as a tool for Commanders to determine a soldier/unit's general fitness, it rapidly became the *raison d'être* for unit fitness. In an attempt to increase the emphasis on physical fitness, US Army leaders inadvertently exacerbated the preoccupation with the 3-event test when they insinuated APFT performance into rank advancement and job selection through its inclusion in officer evaluation reports (OER) and non-commissioned officer evaluation reports (NCOER). Through selective attention, soldiers and commanders became even more focused on APFT performance and less focused on combat-related and mission essential fitness. Throughout the 1980's and 90's it was relatively common for unit APFT reports to be the first item of business briefed at quarterly training meetings.

Due to difficult economic times from 1988-89, the US Army initiated cost-savings efforts based upon recommendations by the Vanguard Task Force. One of the BRAC casualties in 1990 was FT Benjamin Harrison. As FT Ben Harrison prepared to close, there were significant discussions concerning the disposition of the USAPFS. Initial plans were made to decentralize PRT doctrine and distribute authority to instillation commanders across the country. After additional discussions between the US Army Infantry Center (USAIC), Army Medical Department (AMEDD), and Training and Doctrine Command (TRADOC), the decision was made to move the US Army Physical School to FT Benning and place it under the command of the USAIC.¹³ The move from FT Ben Harrison to FT Ben-

ning marked the beginning of an inexorably slow 20-year transition from an emphasis on physical fitness to an emphasis on combat readiness.

Army PRT doctrine drifted throughout the 1990's, as US Army leaders were primarily preoccupied with concerns over age and gender equity in APFT standards and rising body fat concerns. The four USAPFS Commandants that served during the 1990's had no background in exercise science, and military and civilian resources dwindled. With the loss of personnel such as Tomasi, O'Connor, Bahrke, and Thomas most of the ongoing research was contracted out to CHPPM, USARIEM, and West Point. Although FM 21-20 was revised in 1992 and again in 1998, there were no substantial content changes to training protocols and the 3-event APFT remained the US Army's physical fitness test of record. The confounding factor for Army PRT during this 20-year period was the precipitous decline in youth fitness and concomitant increase in childhood obesity throughout the United States. During the late 1990's the US Army Recruiting Command found it increasing difficult to meet their recruiting mission as a result of a thriving economy and a decreasing number of fully qualified recruits due to poor fitness levels and excessive body fat.¹⁴ Unfit and overweight recruits also caused significant PRT issues in Basic Combat Training (BCT) as injury and attrition rates increased sharply and graduation rates declined.¹⁵ With no resolution to these fitness and obesity issues by 2000, the US Army initiated a decade of research and discussion on pre-accession physical fitness assessment, injury reduction, and attrition mitigation.¹⁶

When Muslim extremists attacked the World Trade Center and Pentagon on 11 September 2001, the United States and the US Army were once again at war. As has been the case throughout the history of the US Army, we were unprepared to respond from a physical readiness perspective. The strength, power, endurance, and agility components of post WWII PRT were sacrificed by the need to do more pushups and sit-ups. Through a lack of focus on Warrior Tasks and Battle Drills and Common Soldier Tasks, the US Army was once again playing catch-up. Fortunately, as with the First Gulf War large scale combat operations were brief; in less than 30 days (19 March 2003 to 14 April 2003) joint US Forces defeated a poorly trained and disjointed Iraqi Army.¹⁷

Unfortunately, sustained combat operations in Iraq and Afghanistan required to "win the peace" proved more onerous. Through repetitive deployment cycles of ever-increasing lengths, acute and chronic orthopedic injuries, and the dwindling pool of qualified recruits, many active and reserve component units prepared to deploy significantly under

strength. “An example representing this high degree of operational change is the tremendous number of soldiers and pieces of equipment that were cross-leveled into undermanned and underequipped RC [Reserve Component] units and then quickly trained and validated for deployment to Operation ENDURING FREEDOM (OEF) and OIF.”¹⁸ These manning issues had significant implications for many US Army units. The testimony of personnel, in the Article 15-6 hearings following the Abu Ghraib prison incident, demonstrated the deep impact of waning force generation. “Because both of the USAR [US Army Reserve] units were significantly under strength before being deployed to Iraq, they received many soldiers from other USAR units country-wide to fill up their ranks. This process is known as ‘cross-leveling’. Although it has the benefit of filling the ranks, it has the disadvantage of inserting soldiers into units shortly before deployment who had never trained with those units. The soldiers did not know the unit. The unit and the unit leadership did not know the soldiers. The US Army has always stressed ‘you train as you fight.’”¹⁹

Poor physical readiness also had a direct impact on combat operations during OEF/OIF. Grueling operations in inhospitable climates and unforgiving terrains against battle-hardened insurgents forced the US Army to refocus physical readiness training. Company-grade Officers returning from command in Iraq and Afghanistan generally relate similar conclusions about US Army physical readiness training. Captain Nick Bilotta’s reflections serve as a good exemplar of the physical needs in full spectrum combat operations.²⁰ From July 2008 to July 2009, Captain Bilotta served as the Alpha Company commander in RC East, Afghanistan. Alpha Company’s area of operational (AO) was in the Kunar Province; its company observation post (COP) was at 7,000 feet elevation, with an elevation range from 4,000 to 12,000 feet. The terrain was uncompromising and the enemy unforgiving. During the “fighting season” Alpha Company’s soldiers were in direct contact with the enemy on almost a daily basis. Due to significant loss of life, Alpha Company’s AO was designation “the most violent place on earth.” Capt. Bilotta identified four elements that “mattered most” during his deployment: (1) communications, (2) medical support, (3) use of enablers, and (4) physical fitness. In discussing the physical needs of his soldiers, he concluded that many military operations failed because individual soldiers couldn’t carry their combat loads in the rugged terrain. He summed up the need to be physically fit by stating: “it may not be the most important thing we do in a day, but it’s the most important thing we do every day”. When asked, what was the single most im-

portant physical attribute required of soldiers during his command, Capt. Bilotta replied, “stamina.”

Physical Readiness Revitalization

Phase 1: In late 2012, based on lessons learned from multiple deployments and missions in OEF/OIF, US Army leadership renewed its commitment to changing the Army PRT landscape. Beginning with General Odierno (38th Chief of Staff-Army), with follow-on support from General Milley (39th Chief of Staff-Army) and General McConville (40th Chief of Staff-Army), the US Army set about revitalize the physical training and assessment programs. The first phase of PRT revitalization began in 2012 when Headquarters Department of the Army (HQDA) published Execution Order (EXORD) 012-13 to outline the requirements associated with the US Army’s required actions in support of the elimination of the Direct Ground Combat Assignment Rule (DGCAR). The intent of this EXORD was to support the integration of women into all military occupational specialties, specifically combat arms MOSs. Adjunct to the Execution Order was the Soldier 2020 initiative. Part of this initiative was to establish physical employment standards, especially for combat arms MOSs, in compliance with the NDAA.²¹ A significant part of the Soldier 2020 testing initiative was the “Physical Demands Study” (PDS), which was directed by TRADOC with USARIEM as the lead action office. Ms. Marilyn Sharp was the principal investigator for the PDS. From 2012 to 2015, USARIEM studied the physical demands and underlying predictive exercises of high demand occupational tasks. The deliverable for the PDS was a pre-accessions physical fitness test for all soldiers entering the US Army. The PDS resulted in the development of the Occupational Physical Assessment Test (OPAT), a 4-event physical fitness test administered by recruiters at over 1,400 recruiting stations. The OPAT was piloted in the second half of 2016, approved by the Secretary of the Army the Honorable Eric K. Fanning on 9 December 2016, and operationalized as the test of record for all recruits accessing into the US Army on 3 January 2017. The OPAT screened recruits into three occupational categories, moderate (Gold), significant (Gray) and heavy (Black), depending on the physical requirements of each Military Occupational Specialty (MOS).

Phase 2: The second phase of the PRT revitalization came in 2013 when HQDA EXORD 041-13, Baseline Soldier Physical Readiness Requirements Study execution order was published. General Mark Milley, CSA-39 directed a multi-organizational research team, led by the Center for Initial Military Training–TRADOC, to study the efficacy of the Army

Physical Fitness Test to predict soldier performance on high demand common soldier tasks, tasks required of all soldiers. The Baseline Soldier Physical Readiness Requirements study (BSPRRS) leveraged fitness professionals from across the US Army and Department of Defense. The deliverable for the BSPRRS study was a new US Army baseline physical fitness test called the Army Combat Fitness Test (ACFT). On 2 May 2018, General Milley approved the six events of the ACFT and in 2019 Secretary of the Army, the Honorable Mark Esper approved the ACFT as the test of record for the US Army, with an implementation date of 1 October 2020. During 2018 approximately \$85M of ACFT testing equipment were purchased and distributed to units across the Reserve and Active Component Army. US Army units were directed to pilot test the ACFT during 2018 and 2019. For a myriad of reasons, some legitimate some not, compliance with US Army directives to administer the ACFT were poor. By the end of 2019 barely half of US Army soldiers had taken a practice ACFT and for most soldiers this attempt was only a “familiarization” test with little training, practice or extrinsic motivation to perform well. As a result, significant numbers of active component female soldiers and significant numbers of Guard and Reserve soldiers failed to achieve the initial minimum standards. These failures created dissonance across the entire force.

Despite the issues with equipment and lackluster performance by certain US Army elements, on 15 June 2020, almost eight years after the start of the Baseline Soldier Physical Readiness Requirements Study, the Secretary of the Army, Honorable Ryan D. McCarthy published Army Directive 2020-06 (Army Combat Fitness Test) stating the ACFT would replace the APFT as the US Army’s physical fitness test of record on 1 October 2020. This action set off a tidal wave of complaints from the Reserve Component Army, segments of the medical community and a small group of female soldiers. Some female soldiers took their concerns to several legislators and civil support organizations, specifically Senator Kirsten Gillibrand (D-NY), DACOWITS (Defense Advisory Committee on Women in the Service) and SWAN (Service Women’s Action Network). The fact that very few women had trained for the ACFT or had any significant practice on the test events was lost on these external entities. The ACFT rapidly became the *raison d’être* for everything wrong in the US Army for women. Unfortunately, these individuals and organizations also had a fundamental lack of macro understanding of the injury and attrition problem for women in the US Army and how low levels of physical fitness informed this problem.

In the fall 2020, as a member of the Senate Armed Services Committee, Senator Gillibrand blocked the implementation of the ACFT and added a codicil to the 2021 NDAA requiring an additional external study of the Army Combat Fitness Test. Although the University of Iowa Technology Institute had just completed a 2-year study of the BSPRRS study protocol and the ACFT as a predictor of high demand common soldier tasks, the NDAA required another “independent” study. The US Army hired the Rand Corporation to conduct this study focusing on female pass rates, appropriateness of test events for women related to common task performance, and the effects of certain environmental factors (altitude and cold) on training and testing. The Rand study was directed by Ms. Chaitra Hardison, Mr. Paul Mayberry, and Ms. Sally Sleeper.²²

Despite severe criticism of the Army Combat Fitness Test by certain groups, based primarily on anecdotal and normative data from untrained and unmotivated soldiers, the Secretary of the Army, the Honorable Christine Wormuth approved a modified version of the ACFT as the test of record for the US Army on 16 March 2022 with three significant changes to the previous version.²³ The six test events approved for diagnostic testing as of 1 April 2022 were: deadlift, standing power throw, hand-release push-up, sprint-drag-carry, plank and the 2-mile run. In the most significant change, the leg tuck test event was removed due to poor performance by certain soldier demographics and a lack of understanding of the benefits of upper body posterior chain and core muscular strength training and off-ground training. From 1860-1980 some type of off-ground fitness test event (e.g., wall climb, pull-up, horizontal ladder) had been a part of US Army physical readiness testing. Even after the ACFT was approved for administration on 1 April 2022, “administrative consequences” for failing an ACFT were not applied, were not punitive, until 1 October 2022 and then only for active component and ADOC soldiers. Ironically the ACFT FOC date was almost 12 years to the day from the first APFT revision working group meeting at FT Jackson, SC, and almost 10 years to the day from the start of the Baseline Physical Readiness Requirements Study. In the second major change to the ACFT, the US Army abandoned their position on gender-and age-agnostic performance standards (similar to OPAT standards) and reverted to norm-referenced standards by age and sex based on ACFTs performance during the interim testing period (2018-2019). The third major change was the addition of the 2.5-mile walk as an alternate aerobic endurance test event for soldier on permanent profile. The addition of the “walk” was intended to alleviate any additional equipment burdens on US Army units.

Phase 3: The third phase of the PRT revitalization began in 2019 when the US Army published HQDA EXORD 149-19: Establish the Army Holistic Health and Fitness (H2F) System. The genesis of the Holistic Health and Fitness (H2F) System was a 2014 Human Dimension Working Group meeting conducted by the Combined Arms Center, FT Leavenworth, KS. H2F was a response to four factors that emerged from 10 years of war: (1) the dramatic growth and development in the science of exercise and injury prevention; (2) the results of the BSPRRS study identifying the importance of muscular strength, explosive power and anaerobic endurance to common soldier task performance; (3) the US Army's ongoing systemic problems of musculoskeletal injuries (MSKI); and (4) the pernicious problem of youth fitness and obesity. The US Army instituted the H2F system to mitigate these problems and change the strategic and operational environment for physical and non-physical performance training. "To accomplish our mission, the US Army must significantly invest in the human dimension of its fighting force. This investment requires a unified and holistic vision and an effective implementation strategy that supports an integrated and immersive performance optimization system designed to improve the physical and non-physical readiness of the soldier (e.g., improved: nutrition, sleep/recovery, and mental toughness)."²⁴ TRADOC was directed to design, develop, and deliver the H2F system for the US Army. The US Army Center for Initial Military Training (CIMT) was designated as the functional lead for the five H2F elements, associated metrics, and outcome goals.

In the fall, 2021 the US Army set forth an ambitious operational plan to fund personnel, equipment and facilities for the Holistic Health and Fitness System. The plan began with funding for personnel and equipment for 28 Active Component brigades.²⁵ The initial operational plan was designed to provide assets to 110 brigades by FY30. The nexus of the H2F system was the professional personnel and facilities. The personnel sets for a brigade H2F team included physical therapists, certified athletic trainers, certified strength and conditioning coaches, registered dietitians, behavioral counselors and cognitive performance coaches. The H2F facility was called the Soldier Physical Readiness Center (SPRC). These 40K+ square foot centers were designed to house the H2F staff and train all elements within the brigade. Part of the overall strategy was to mitigate future MSKI injuries by pushing medical care and treatment forward to the units. This model had been shown to successfully reduce MSKI injuries and associated costs in the Special Operations Forces community since 2010 with the initiation of the Tactical Human Optimization, Rapid Reha-

bilitation and Reconditioning (THOR3) and Preservation of the Force and Family (POTFF) programs. The Army H2F System also closely modeled the health and physical training programs utilized by athletic teams at the high school, college, professional and Olympic level across the United States.

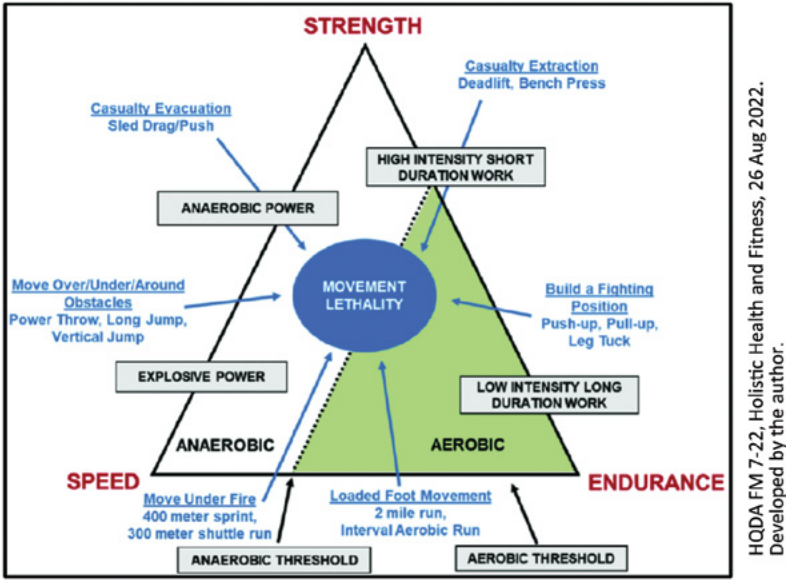


Figure 10.1. Tasks and Components of Movement Lethality.²⁶

Source: Created by author, FM 7-22, Holistic Health and Fitness, Headquarters Department of the Army, 26 August 2022, page 3-2.

Analysis and Discussion

In all history the relation between intellectual, political, and physical superiority has been a constant.²⁷

Army Training and Leader Development (AR 350-1) states: “commanders will conduct physical fitness programs that enhance soldiers’ abilities to complete soldier or leader tasks that support the unit’s FSO METL.”²⁸ The primary mission of the US Army is to “fight and win the nation’s wars” by engaging the enemy in close combat. All other concerns must subordinate to this end. The conundrum with this mission statement is the complex and variable meaning of the phrase ‘fight’. Most individuals define ‘fight’ as kicking in doors and killing bad guys, when in reality

the ratio of combat support to combat arms is approximately 3:1. These organizational complexities make the US Army's PRT mission significantly more complex and multidimensional. Deployments to high kinetic environments, where even 'rear echelon' soldiers are in harm's way, are mentally, physically, and emotionally stressful. We need to reframe the terms 'fight' and 'combat' in a more macro construct. Under those circumstances physical readiness training must be designed to prepare all soldiers for 'combat', which we will define as operating in a hostile, high kinetic environment under austere and stressful conditions. Using this broader definition of 'combat', the solutions to the US Army's PRT mission, acknowledged time and again by US Army and civilian fitness professionals as a combat force multiplier, are clear and unequivocal; successful armies accomplish this mission by addressing the four issues that follow.

Issue 1: Physiological needs of the modern combat soldier

Even with the efforts of the Baseline Soldier Physical Readiness Requirements Study team, the University of Iowa Technology Institute and the US Army Combat Capabilities Development Command (DEVCOM), the US Army still cannot clearly define and operationalize the physiological needs of the modern combat soldier, across the entire spectrum of MOS and mission tasks. This is primarily due to the complexities and vagaries of combat mission in reference to frequency, intensity, type and task (FITT). These physiological needs must be scientifically-based and sufficiently broad to prepare all soldiers for full spectrum combat operations in varying terrains, climates and circumstances. Once the US Army establishes the requisite physiological needs for various operations and operators, it can then develop mission-focused training programs and criterion-referenced assessments and standards to measure physical readiness and ensure success of combat missions.²⁹ These performance assessments and concomitant standards can then serve as the primary determinant of mission readiness. By establishing a physiological basis of high kinetic operations, the US Army may bring some resolution to the gender issues that have plagued US Army PRT since the late 1970's.³⁰

To sharpen our focus on how we think about the physiological capacity of modern soldiers, we can explore four associated tasks. The first task is to establish a known physiological start point from which to pivot. Although the US Army Physical Fitness School, the 75th Ranger Regiment (Ranger Athlete Warrior), Special Forces Group and to a lesser degree the 101st Airborne Division (Eagle Tactical Warrior Program), the 4th Infantry Division (Mountain Warrior Program), and others have made some

progress in PRT development over the past ten years, the US Army has yet to empirically define the physiological needs of the modern combat soldier. We have a myriad of first-person anecdotal reports from soldiers, commanders, and fitness professionals that describe the physical nature of combat, but we have no empirical evidence. The closest we came was in 1942-43 when Drs. Esslinger and McCoy worked with Col. Ted Bank developed a “combat-focused” PRT program and then tested their program against known measures of endurance, stamina, and coordination and against existing Army PRT programs. These results provided the foundation for TC 87–*Physical Training* (1942) and DA Pam 21-9–*Physical Conditioning* (1944). To demonstrate the lack of empirical data, we only have to consider three rudimentary PRT questions. For the modern combat soldier: (1) what is the proper physiologic balance across the five primary components of physical fitness: muscular strength and endurance, anaerobic/explosive power and aerobic and anaerobic endurance; (2) what is more crucial to high kinetic operations, aerobic work capacity or anaerobic work capacity; and (3) what degree of mobility (flexibility, agility, coordination and dynamic balance) is required and expected of US Army soldiers based upon current combat loads? Without empirical answers to these rudimentary questions, US Army physical readiness training and assessment is just a “guess.” Until we know the ‘left and right limits’ of the physiological needs of high kinetic operations, we will continue to “rearrange the deck chairs on the Titanic” by refining, revising, and refocusing PRT programs and assessments based upon current fitness trends, attempts to reduce injuries and attrition, or the predilections of US Army commanders and leaders.

Once the US Army defines the physiological needs of the modern combat soldier, the second task is to establish a cogent and coherent conceptual framework for physical readiness training. The intuitive context, the *raison d’être*, is high demand task performance as defined by Warrior Tasks and Battle Drills and Skill Level I–Common Soldier Tasks. To function optimally in a high kinetic environment soldiers must first develop a baseline of physical fitness that can be applied to mission essential or occupational tasks. The marriage of baseline fitness to occupational fitness in PRT development will help establish the contextual framework of functional combat fitness. The PRT framework or “form” can then support the PRT context or function (i.e., “train like you fight”).³¹

For the third task, need and context give way to an operational framework. In most modern Armies this framework is built around the concept of physical work capacity (PWC); i.e., the ability to perform physical work

in a functional environment. The standard metric of physical work capacity is work volume, which is defined as the product of work intensity and work duration. Work intensity is a function of resistance (load) and work duration is a function of repetitions (distance). In producing combat-ready troops, soldiers must train physiologic systems throughout the intensity spectrum, with appropriate accommodations for rest/recovery. This PRT framework is perhaps easier to visualize graphically, see Figure 10.2.:

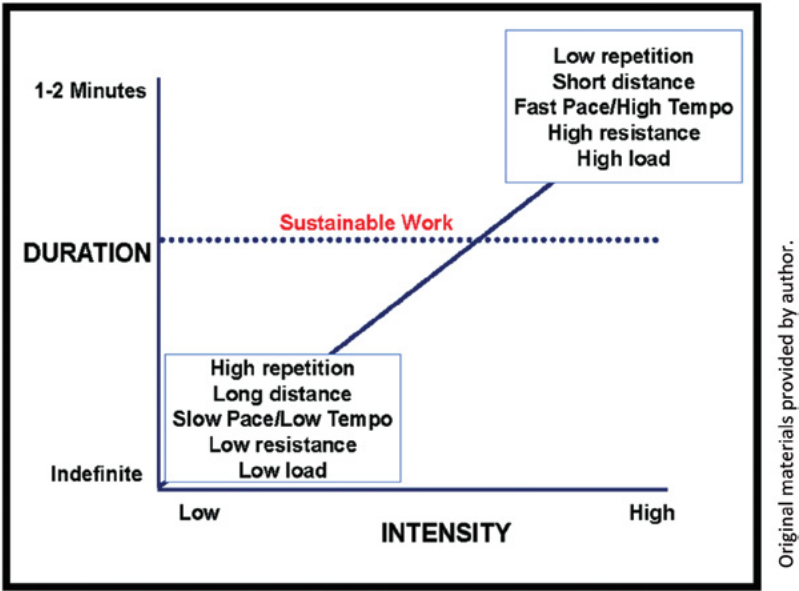


Figure 10.2. Physical Work Capacity Continuum.

Source: Created by author.

To optimizing PWC to support high physical demand task performance, soldiers must understand the difference between “absolute” and “relative” workload. An absolute workload is the work required to complete a physical task. For example, to perform the lift and carry of a casualty evacuation or to lift a 100-pound artillery shell into a rack requires a specific and measurable amount of muscular strength/force. These tasks require a relatively specific level of absolute workload. Higher absolute workloads require higher physiological capacity. To establish individual training goals, the soldier must know their baseline physiological capacity and the absolute workload of the high demand tasks.

The second component of physical work capacity is the “relative workload;” relative workload is the relationship between the absolute workload of a task and the maximal physiological capacity of the soldier. In other words, relative to the maximum amount of physical work an individual can do, how difficult or how much (what percentage) of one’s physiological potential (e.g., biological processes) is required to complete the task. Relative workload is defined as “percent of maximum;” it is a way to calculate the “strain” on the physiologic systems. If an individual needs to lift a 100-pound artillery shell, and their maximum lifting capacity is 200 pounds, their relative workload for one repetition of this task would equal 50%. From a muscular strength / power perspective, the National Strength and Conditioning Association (NSCA) has defined three categories of resistance: (1) endurance-67% of maximum lifting capacity, (2) hypertrophy-67-85% of maximum lifting capacity, and (3) strength-greater than 85% of lifting capacity. These three categories can be applied to relative workload as moderate load with higher repetitions (>12 reps), significant load (6-12 reps), and high load (< 6 reps). From a relative workload perspective, these categories are important considerations relative to work-rest cycles, volume of work and onset of musculoskeletal injuries (MSKI). This same construct can be applied to low and high intensity aerobic workload. If performing a road march with a loaded pack requires an oxygen consumption of 2.0 liters per minute and the individual’s maximal oxygen consumption (VO₂ max) is 3.0 liters per minute, the relative workload would equal 66%. The training goal should be to increase the rate limiting physiological systems (e.g., muscular strength, speed, aerobic endurance, etc.) to reduce the relative workload of a task. Lower relative workloads allow soldiers to do more repetitive, fixed-demand tasks with less ‘effort’, thereby reducing ‘strain’ and the potential for over-use musculoskeletal injuries.

It is important to know the relative workload, especially for the repetitive tasks with high muscular strain. Relative workload is directly related to “time to fatigue.” The higher the relative workload, the sooner an individual will fatigue. For an endurance event, if a person is working at 50-75% relative workload (of their VO₂ max or 1RM) they can continue this low endurance work for a prolonged period of time. If the relative workload is greater than 70%, an individual will not be able to continue this task for long, and the amount of time needed to recover will be greater. Since a higher relative workload is generally associated with an increased risk of musculoskeletal injury, it is important to extend rest/recovery times after very high intensity physical work. As individuals train and increase

their physiological capacity, relative workload is reduced, lowering the potential for injury.

A proper operational framework requires attention to the fourth task, where US Army fitness professionals development periodized training by addressing the three physiologic systems. To perform optimal physical work soldiers must develop and integrate all three physiologic systems: (1) neural—the brain sending efferent impulses to the muscles to incite muscle action, (2) portal—the heart and lungs sending oxygen and macronutrients to the muscles to provide fuel for metabolism, and (3) mechanical—the muscles, connective tissue, and bones providing structure for movement. The integration of these systems allows units to develop periodized training plans (i.e., a long-range roadmap for physical readiness training) that incorporates the seven basic principles of exercise (regularity, progression, overload, recovery, balance, variety, and specificity) to optimize physical development and reduce organic injury.

A proper periodized plan must address training frequency (how often we train) and training volume (how long/hard we train—duration x intensity). These components must be strictly coordinated with training recovery (i.e., the time required for a soldier to rest between work bouts). Training recovery is in turn regulated by two factors: the physiologic characteristics of the individual soldier and their current physiologic status. Failure to understand the rate at which a soldier recovers and his/her current physiologic status and to incorporate that knowledge into the development and execution a periodized training plan will ultimately lead to organic failures.

There are many manifestations of a dysfunctional periodized training plan. In some cases, soldiers fail to develop an adequate baseline level of physical fitness (physiologic capacity). In other cases, the lack of specificity results in a failure to acquire appropriate levels of occupational fitness. However, one the most revealing symptoms of a dysfunctional training plan is a high number of organic failures (injuries), which seems to be the case in the US Army.³² For CY2004 Ruscio et al. estimated that Service members (DoD-wide) had over 2 million injury visits for acute and chronic (overuse) injuries affecting approximately 900,000 Service members at a cost of hundreds of millions of dollars and resulting in over 25,000,000 days of limited duty.³³ In 2006 the Department of Defense recorded an estimated 743,547 musculoskeletal injuries at a cost of over \$2.2 billion.³⁴ In 2021 the Army Audit Agency estimated the annual cost of first term soldier attrition related to MSK injuries was approximately \$1.4B.³⁵ To better understand how relatively minor changes in a physical readiness training plan can mitigate injuries (and therefore attrition), saving millions of dol-

lars in lost productivity; it is instructive to compare combat basic training for the US Marine Corps and the US Army. The annual injury rate for Marine Corps Depot, Paris Island is approximately 11.7% per year. The historic Initial Entry Training injury rate for the US Army is approximately 15% per year. There are two primary differences in US Army and US Marine basic training programs that result in lower injury rates at the Paris Island Depot. First, Marine Corps basic training is 12 weeks versus 10 weeks for the US Army. The additional two weeks allow the Marine Corps to increase training volume at a slower rate (i.e., moderating increases in overload and increasing recovery time). Second, the Marine Corps utilizes a mandatory DEP (delayed entry program) fitness development program that requires recruits to regularly participate in organized physical training prior to shipping to the Military Entrance Processing Station-MEPS (prehabilitation). While in DEP, “Marine Corps Recruiters will help them prepare physically, and will provide information to help them adjust to their future in the Marine Corps.”³⁶

While extending the length of combat basic training or deploying a pre-accession physical training program are not trivial endeavors for the US Army, minimizing training injuries, reducing recruiting costs, decreasing BCT attrition rates, and reducing rehabilitation costs make the benefits of a holistic, science-based pre-accessions physical training program worth the cost. In the spring 2021, the Army Audit Agency (AAA) completed a year-long study of the effects of the Occupational Physical Assessment Test (OPAT) on MSKI reductions in combat basic training (CBT) and first unit of assignment (FUA).³⁷ The AAA determined the annual cost of MSKIs for treatment and attrition was roughly \$1.4B, with 75% of these injuries occurring in BCT and 25% in First Unit of Assignment (FUA). The AAA concluded that higher OPAT standards resulted in higher MSKI reductions and lower attrition and the US Army should reevaluate current criterion scores for “Black, Gray and Gold” military occupational specialties (MOS). To further delineate the problem, approximately 18K new soldiers are discharged from the US Army each year in the first term (i.e., “first handshake” to the end of the first enlistment contract). Approximately 4,000 of the annual discharges are women. While not all these discharges are MSKI related, it is fair to assume that a significant number of these discharges are directly or indirectly related to poor levels of initial entry physical fitness.³⁸

Issue 2: Planning and Resourcing Physical Training with Facilities, Equipment, and Personnel

Although the US Army has made significant progress over the past ten years improving the physical training environment for soldiers, specifically with the genesis of the Holistic Health and Fitness System, there is still much to be done. For over 100 years military and civilian fitness professionals have counseled the US Army on the need for proper facilities, equipment, and personnel to conduct physical readiness training (PRT) and research. Each year the US Army loses billions of dollars in productivity and attrition from organic injuries due to a lack of resources.³⁹ These losses can be significantly minimized with access to proper facilities and equipment and adequate training time.

Soldiers are combat systems, and the gym and the PT field is the motor pool and maintenance facility for that combat system. Fitness is an integral part of readiness and survivability on the battlefield.⁴⁰

From 1916-1918 during the ramp-up to WWI, the US Army was tasked to in-process, house, clothe, feed, and train large numbers of volunteer and conscript soldiers. At that time and in that place the US Army's only training model was the Turnverein (playground) model, where large numbers of soldier/students/athletes gathered outdoors and conducted group calisthenics, exercises, and drills. Even with Colonel Herman Koehler's lifelong efforts to encourage the US Army to build suitable gymnasias and weight rooms on each US Army installation, there were few facilities available for physical training at the start of WWI; certainly, relative to the large number of soldiers that required training.⁴¹ Almost 100 years later the US Army has most recently made some strides in replacing the playground/Turnverein model with the H2F system to mitigate the "limited facilities"- "large numbers" issue. By arranging soldiers in large unit formations on outdoor fields, the US Army essentially eliminated the need for gymnasias and weight rooms and minimized personnel needs by optimizing the leader-to-lead ratio. Due to the extremely high leader-to-lead ratios, the US Army even had to put the physical training instructor up on a "stand" so they could be seen and heard. Historic "facility" constraints also forced the US Army to adopt a "unit physical training" (unit PT) model to conduct physical readiness training. Although there are arguably some team-building benefits from "unit PT", a platoon-or company-sized extended rectangular formation is not a productive exercise environment.

The contributions of physical readiness to combat performance are not in dispute. High levels of physical conditioning provide soldiers with three significant performance advantages: (1) reduced relative workloads, (2) increased mental toughness and perseverance (will to win), and (3) a decreased risk of injury, which results in increased survivability for all-cause mortality and combat-related morbidities. With the development of the Holistic Health and Fitness system and the People First initiative in TRADOC, the US Army is starting to address these PRT resource issues. Terms like “Pentathlete,” “Soldier athlete” and “Tactical Athlete” are common place in US Army parlance and US Army training manuals laud the benefits of high levels of physical conditioning. In addition, we clearly know “what right looks like” relative to performance training. New resources for facilities, equipment, and personnel will make substantial inroads into the pervasive performance, injury and attrition problems. Although the US Army is a large, diverse organization with finite resources, and always operates in a resource constrained environment, it has started to find the way ahead to provide proper facilities, equipment, and personnel for our most precious resource, the American soldier.⁴²

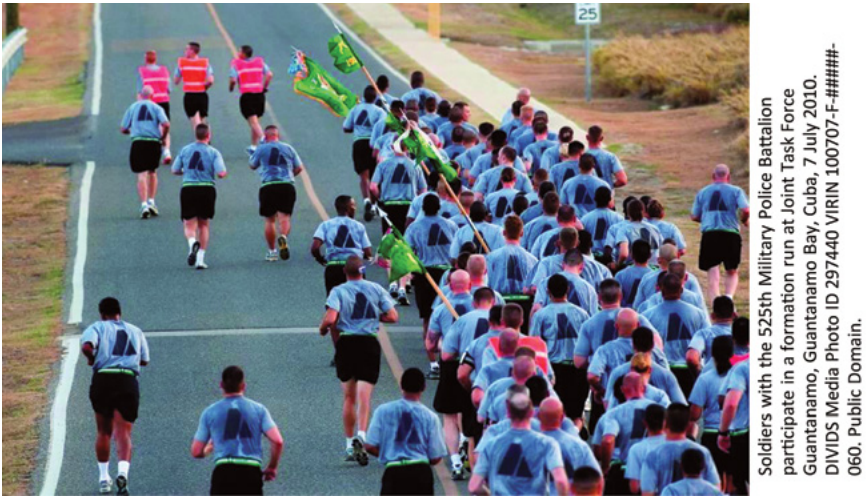


Figure 10.3. Unit Formation Run.⁴³

Source: Soldiers with the 525th Military Police Battalion participate in a formation run at Joint Task Force Guantanamo, Guantanamo Bay, Cuba, 7 July 2010. Photo courtesy of DIVIDS Media, Photo ID: s297440, VIRIN: 100707-F-#####-060, Guantanamo Bay, Cuba, 7 July 2010.

Proper facilities, equipment, and personnel allow units to develop individual soldier-centric training models to optimize training effect. In 1913 Captain Merch B. Stewart, who would later serve as the 33rd Superintendent of the United States Military Academy, proposed the solution to the “unit PT” problem. In the introduction to his book *Physical Development of the Infantry Soldier* he stated:

In the training of the soldier, the greatest benefit is not derived by indiscriminate and impartial use of these exercises. Each individual soldier presents a special problem in physical training; each should be studied and diagnosed as to his particular requirements and each should be given the training his condition requires.⁴⁴

When is the last time an athletic team exercised as a unit? The answer is basically ‘never’. You may see teammates lifting or running together and you will certainly see players executing “skill drills” (mission essential tasks) as a unit; however modern athletes never exercise/train as a “unit.” Virtually all athletes train alone (perhaps with a strength or running coach) or in dyads or in very small groups of three, four or five. The “dyad/small group” model, adopted by many if not all special forces units, allows tactical athletes to optimize their exercise bout to ensure proper warm-up and maximize overload and progression through appropriate use of duration, intensity and rest. Individualized exercise prescriptions allow athletes (and potentially soldiers) to achieve physical performance outcome goals in the most effective and efficient manner.

Regardless of adherence to precision and progression as specified in countless Army PRT manuals (including the current FM 7-22, Holistic Health and Fitness), the US Army’s “unit PT” model makes it virtually impossible to address the intensity and duration needs of the individual soldier and therefore hinders progression. Also, due to the limitations on facilities and instructors, large unit PT sessions tend to focus on two fitness domains: muscular endurance and cardio-respiratory endurance. Soldiers are constrained by the “unit PT” model to sub-maximal, repetitive, body weight exercises. In a 2003 survey of 2,000 active duty Officers and NCOs, a significant number of respondents stated there “unit PT” interfered with their personal exercise program to the point it diminished their overall physical readiness.⁴⁵ Clearly some units (Army Rangers, Special Forces, Delta Force, etc.) have resolved this issue by limiting physical readiness training to very small groups (often just a buddy team or a squad-size element) and by developing ancillary PRT programs and assessments that address the METL needs of the individual soldier (the Ranger Ath-

lete Warrior program and the Eagle Tactical Athlete program—101st Airborne Division are just two examples). We see more and more “rogue” PT programs throughout the US Army as various “units” build their own “extreme conditioning” facilities, purchase their own commercial exercise equipment, and implement the exercise program *de jure* in an attempt to enhance physical readiness. The focus of these supposedly ‘*avant garde*’ PRT initiatives is most often an attempt to address the needs of the individual soldier.

The “numbers” issue (scope and scale) also creates problems scheduling PRT. The US Army’s solution was to execute PRT outside the duty day (at 0630), on a patch of ground proximal to the Company area, with limited/no equipment. Although convenient for the US Army, the 0630 PT schedule is problematic on many levels. Since the “duty day” generally starts at 0900, starting PRT at 0630 conveys to soldiers the notion that PRT is an additional duty, not to be confused with their “real job,” which happens during the duty day. 0630 may also be the worst time of the day to conduct high intensity physical training; the body is generally dehydrated and muscles are cold and stiff, and generally out of fuel. Many of the early US Army PRT leaders recommended 1000s (or 1-2 hours after breakfast) as the optimal time to conduct physical training.⁴⁶

The “numbers” issue also exacerbates facility and equipment availability for training and assessment. Pull-up/dip bars are often the only “equipment” available to units. During the 1980 APRT revision, one of the primary considerations for test event selection was “no equipment”, therefore the US Army jettisoned the run-doge-jump and horizontal ladder. During the 2010 revision of the APFT command guidance again specified a minimal need for equipment, even casting doubt on the feasibility of including pull-ups in the APRT. Large unit formations make it impractical to provide proper equipment to facilitate the development of strength and power.

In a resource constrained environment, the daunting problem is how can the US Army optimize PRT to improve soldier physical readiness? Perhaps leaders may find one solution by answering this question: do different groups of soldiers require different levels of physical fitness? Certainly, all soldiers require a baseline level of physical fitness required to execute high demand common soldier tasks, however does the US Army need every soldier to have the same level of physical work capacity and functional fitness? Does a 68G—Patient Administrative Specialist or a 42A—Human Resource Specialist need to have the same level of physical readiness as an 11B—Infantryman? Apparently, our legislators do not think so, based on

the publication of Section 543, National Defense Authorization Act-1994 (NDAA) and reaffirmed in NDAA 2014, Section 523 and NDAA 2015, Section 524. Sec 543. GENDER-NEUTRAL OCCUPATIONAL PERFORMANCE STANDARDS, (a) GENDER NEUTRALITY REQUIREMENTS, states:

1. In the case of any military occupational career field that is open to both male and female members of the Armed Forces, the Secretary of Defense:
2. Shall ensure that qualification of members of the Armed Forces for, and continuance of members of the Armed Forces in, that occupational career field is evaluated on the basis of common, relevant performance standards, without differential standards or evaluation on the basis of gender;
3. May not use any gender quota, goal, or ceiling except as specifically authorized by law; and
4. May not change an occupational performance standard for the purpose of increasing or decreasing the number of women in that occupational career field.

To review, US Army soldiers are required to achieve and maintain a baseline level of physical fitness as defined in the Department of Defense—Instruction (DoD-I) 1308.03, DoD Physical Fitness/Body Composition Program.⁴⁷ These baseline fitness standards may or may not be age and gender neutral. These same soldiers must meet, on some regular basis—assumed to be annually, the requirements of their military occupational specialty (MOS). Inexplicably the DoD-I 1308.03, 2022 was written so as to prohibit a single physical fitness assessment from serving both objectives—measure baseline physical fitness and measure physical performance required for continuance in an MOS; same test, different standards. Regardless, based on the requirements of the NDAA and the findings of the Physical Demands Study, different Army MOSs have different physical requirements/demands. These differences would then drive variations in the physical training programs.

In seeking to answer the previous question, how does the US Army accommodate the different physical training requirement of different occupational groups, it may be beneficial to review force structure relative to PRT training and expectations in the US Navy. The current strength of the active-duty US Navy is approximately 460,000; relatively similar to the active component US Army. The Marine Corps makes up approximately 40% of all active-duty Naval personnel (around 200,000 troops). Based

upon their occupational mission the Marine Corps has designed and implemented a significantly more rigorous physical readiness training and assessment program than the Navy writ large. If we consider the Marine Corps to be the occupational specialty within the US Navy, perhaps this split-operations model might be extrapolated to US Army. If key US Army leaders can identify those soldiers with a direct high demand occupational or tactical mission, it may be more judicious to design, resource, and implement a unique PRT program for this subset population.

In the 2017, C1 revision of FM 3-0—*Organization*, the US Army reorganized warfighting functions into eight elements of combat power: leadership, information, mission command, movement and maneuver, intelligence, fires, protection, and sustainment. Although each element of combat power is crucial to overall mission success, the likelihood of leadership, information, mission command, intelligence, and sustainment personnel directly engaging the enemy in close combat is relatively small. Formally recognizing this needs dichotomy may be a benefit as it pertains to PRT. In the past the US Army has used terminology such as “combat” and “combat support”, and “combat service support”. It might be useful to differentiate personnel assigned to strategic and upper echelon operational levels as “combat operations support” and personnel assigned to lower echelon operational and tactical levels as “combat operations” with regard to PRT. The US Army could then develop a differentiated PRT model similar to the US Navy to more judiciously utilize resources and better meet the distinctive needs of these two populations.

This would not be the first time the US Army utilized multi-echelon PRT training and assessment models. During the 1960’s the US Army had at least three physical readiness training and assessment models: (1) the male combat soldier (FM 21-20), (2) the male Staff and Specialist Personnel (DA Pam 21-1), and (3) the female soldier (FM 35-20 & PAM 21-2). Semantics aside, perhaps the terms “tactical” and “operational” more appropriately classify the multi-echeloned PRT needs of the US Army. This prioritization of effort would allow the US Army to design and execute at least three levels of physical readiness training: (1) Basic PRT for initial military training (BCT, AIT, OSUT), (2) Operational PRT for soldiers in combat support operations, and (3) Tactical PRT for soldiers with a direct combat mission. Recent efforts by the Australian Defense Force (ADF) have resulted in a similar “tiering” of physical readiness. Under the auspices of establishing “physical employment standards” (PES) the ADF established four levels of military performance: basic fitness assessment

(similar to Initial Entry Training), “all Corps” assessment, combat arms assessment, and commanding officer fitness assessment.⁴⁸

Basic PRT (B-PRT) is designed to enhance baseline fitness levels in trainees during initial military training (IMT) and would follow the highly prescriptive program set forth in FM 7-22.⁴⁹ With the implementation of the OPAT, many recruits actually enter service at a higher level of physical performance. In recent diagnostic testing at FT Jackson, SC, approximately 50% of recruits attending BCT passed the ACFT on their first attempt, which is not particularly surprising considering the similarities between the OPAT and ACFT test events. It would likely be constructive to consider basic training PRT as a learning lab for physical exercise. Teaching trainees to lift weights properly, run properly, move properly, and climb, jump and land properly may be more beneficial to the US Army and soldier throughout their career and mirror the changes of other modern armies. The benefits of Basic PRT could also be greatly enhanced by extending the length of basic combat training, similar to the Marine Corps (13 weeks), the Australian Defense Force (80 days), and the British Army (14 weeks) and by initiating a mandatory physical training program for recruits in the delayed entry program (Future Soldier).⁵⁰

Operational PRT (O-PRT) is designed to sustain/enhance the fitness foundation obtained during initial military training for soldiers assigned to non-combat roles. O-PRT would utilize a highly individualized approach with a greater emphasis on physical fitness and weight control. As a general rule there would be no unit physical training. Unit PT sessions would be used to enhance unit cohesion, while the preponderance of O-PRT would be conducted by the individual soldier on their personal time. “A personal [fitness] program significantly improves a soldier’s performance in a selected component of fitness, and the benefits may compensate for any shortfall not obtained in group sessions”.⁵¹ Personal time, before, during, or after the duty day, could be used for physical training. Soldiers assigned to the O-PRT program would participate in periodic fitness assessments using the ACFT. Operationally-specific norm-referenced scales, based upon a criterion-referenced pass/fail standard, would be used to determine compliance with PRT requirements and expectations. Regularly scheduled US Army weight control body composition assessments would also be conducted. Soldiers should be allowed/encouraged to access Moral-Welfare-Recreation (MWR) or private training facilities and personal trainers to ensure regularity and progression in their PRT plan. Due to the distributed nature of O-PRT, the Commander may require soldiers to submit a quarterly training plan and/or an accountability log to ensure compliance

with stated fitness goals. Fitness assessments for O-PRT soldiers should be conducted on a quarterly basis.

It appears very probable that the conditions of a future war
will force us to outfight the enemy rather than out produce him.

—Lt. Col. Frank Kobes, USMA, 1958

Tactical PRT (T-PRT) could assume a decidedly higher intensity, functional focus, concentrating on the development of speed, power, agility, strength and stamina to enhance the successful execution of combat-oriented occupational tasks. Due to the reduced requirements and manpower savings from O-PRT and reduced loss of productivity associated with B-PRT, the US Army could re-allocate resource savings to tactical PRT. Appropriate resistance, combative, and non-impact cardio training facilities could be developed at the battalion level. Individual exercise prescriptions would be established for every tactical soldier and most T-PRT would be conducted in smaller homogeneous teams. Developmental guidelines and model programs would be provided by the US Army Physical Fitness School and Holistic Health and Fitness teams. With a focus on physical fitness and functional fitness, T-PRT could be assessed with two distinct performance tests, a functional readiness test similar to the FORSCOM Soldier Readiness Test and Army Combat Fitness Test, which will adequately assess tactical PRT. The functional fitness assessment would assess high intensity, short duration performance on obstacle course format similar to the Indoor Obstacle Course Test (IOCT) used at the United States Military Academy-West Point.⁵² If physical readiness assessments can be segregated by mission needs, we could increase the specificity of T-PRT assessments, thereby increasing content validity by allowing the assessment to focus only on high kinetic physical readiness. Based upon this model, tactical soldiers would take the functional assessment and the ACFT once each year, similar to the US Marine Corps model with their PFT and CFT physical assessments.

Issue 3: Education and Training for PRT Instructors

In 1983 the US Army established an instructor training program (Master Fitness Trainer), with an associated Army Skill Identifier (ASI). There was also an 03C MOS that supervised or conducted sports and physical activities programs (03C were also required to be MFT certified). However, the MFT program was terminated in 1989 due to lack of support from key leaders.⁵³ The prevalence of “rogue” PRT programs,

sanctioned by unit commanders, creates the potential for serious performance and injury problems for the US Army. Resolution #8 of the 1970 USAIS Physical Fitness Symposium (FT Benning) recommended “that an Army Physical Fitness Institute to train selected officers and enlisted men would contribute immeasurably to the Army Physical Fitness Program.”⁵⁴ The US Army is well on its way to accomplishing this objective with the development of the Holistic Health and Fitness system. Many modern armies utilize certified physical fitness instructors to develop, implement, and monitor basic and tactical PRT.

The Australian Defense Force (ADF) is an excellent exemplar. The ADF established a Physical Training School (ADFPTS) at CERBERUS (Westernport, VIC) in 1989. The school conducts a myriad of physical training courses to include the initial and advanced Physical Training Instructor (PTI) and Military Fitness Leader (MFL) courses. “PTIs are qualified to design, conduct, evaluate and review the unit’s physical training programs to develop physically conditioned personnel to support commanders in executing their operational tasks.”⁵⁵ The PTI instructor course is 18 weeks where participants are taught the theoretical and applied aspects of physical training including topics such as advanced anatomy and physiology, exercise physiology, morphology and testing, group exercise leadership, nutrition, first aid/athletic training, sport leadership, and sport psychology. Duties of a PTI are as follows:

- Plan and conduct physical training instructional sessions;
- Provide individual and group physical training programs;
- Provide initial management of sports injuries;
- Conduct physical training assessments;
- Conduct obstacle course training;
- Implement and monitor occupational health/safety in the physical training environment;
- Apply, supervise and manage injury prevention strategies;
- Promote health and fitness awareness;
- Officiate, coach and coordinate sporting competitions;
- Provide advice to the Commanding Officer on physical training, injury prevention, rehabilitation and Military Self Defense;
- Instruct and supervise Military Self Defense;
- Instruct on Combat Fitness Leaders Courses;
- Rehabilitation of soldiers; and education on health and fitness.⁵⁶

The PTIs rank structure is equivalent to US Army ranks of E2-E6 and WO1-WO2 and is considered a military occupational specialty. The ADF also certifies Combat Fitness leaders (CFL) who are soldiers embed-

ded in their units that are uniquely trained and qualified to lead combat-focuses physical training. CFLs are always under the supervision of a PTI. Although PTIs would be beneficial to any tactical unit, they would be especially useful at the US Army basic and advance training schools, which would significantly reduce the workload for US Army drill instructors.⁵⁷

By way of analogy, modern Division I (D1) football programs can provide and exemplar of the benefits of a certified physical training instructor. The physical training program for a D1 football team is directed by a certified strength and conditioning coach. This coach designs periodized training programs based upon the needs of each position (linemen, cornerbacks, running backs, etc.). The strength and conditioning coach explains and teaches the training program to the athletes and position coaches, and provides technical assistance pertaining to execution. Under the direction of the position coach, the athlete executes the periodized training program while participating in periodic evaluation to assess progress.

How does this model applicable to the US Army? Under the H2F system, each brigade will have 10 strength and conditioning (S/C) coaches. These S/C coaches could train and certify a “physical training instructor” for each Company. It may be beneficial to offer installation-wide training to optimize S/C coaches and eliminate TDY costs to a centralized physical training school. The PTIs would serve as an extender for the S/C coaches. They could follow Captain Merch Stewart’s recommendation that each soldier be “studied and diagnosed as to his particular [training] requirements and each should be given the training his condition requires.”⁵⁸ Following the ADF model, each Company PTI could select and train two soldiers from each platoon to serve as assistant PTIs. Once each soldier has his/her periodized training plan and the A-PTIs are trained, the A-PTI can manage PRT implementation and adherence under the guidance of a PTI, under the guidance of a S/C coach. By maintaining small, homogeneous training cells soldiers could optimize the duration and intensity of every workout, therefore ensuring optimal overload, progression, and recovery. These smaller training cells would also maximize the use of facilities and equipment by scheduling off-cycle training that doesn’t conflict with other cells in the Company.

It was apparent from [my] experiences of the World War that a course of training should be planned...to qualify [Officers] as physical directors and instructors of their future commands. They must learn, not only how to perform themselves, but how to teach others. They must understand the means by which then

can most speedily and efficiently bring their men to the necessary physical condition.⁵⁹

Another important facet of the physical training instructor issue is Officer PRT education. Traditional officer candidates can acquire these skills, abilities, and knowledge during their undergraduate education. ROTC cadets can complete a course of study (or perhaps a minor) in exercise fitness/leadership that address the topics included in the ADF PTI course. West Point cadets currently enroll in a 1.5 credit hour Fundamentals of Personal Fitness and a 1.5 credit hour Army Fitness Development course (unit fitness), which address most of the topics in the ADF PTI curriculum. A common core curriculum could be developed and implemented in the Officer Candidate School program of instruction to ensure all Officers have a fundamental understanding of the science of exercise training, prescription, and assessment. These certified 2nd Lieutenants would design and supervise the Platoon/Company-level physical readiness plan, while providing support and mentoring to the “physical training instructor” NCO.

Issue 4: PRT Research and Development for the US Army

Research and development are the seed corn of any organization. In a recent Amazon shareholder newsletter in response to the question ‘how did you perform so well during the recent COVID pandemic’, CEO Andy Jassy said, “We have been iterating on and remaking our fulfillment capabilities for nearly two decades. In every business we pursue, we are constantly experimenting and inventing.” The evolutionary nature of the physical requirements for high kinetic conflict makes it imperative the US Army commit to a comprehensive exercise science research and development program by resourcing a centralized and unified effort.⁶⁰ On numerous occasions military and civilian leaders have articulated the need for a comprehensive research program to support the development of physical readiness training doctrine. Resolution #2 of the 1970 USAIC Physical Fitness Symposium recommended “that a national research and documentation center is needed to serve as a national focal point for research on physical fitness”.⁶¹ In the 1980 Department of Defense Study of the Military Services Physical Fitness, the assembled working group recommended the Department of Defense establish an Armed Forces Physical Fitness Academy (PFA). The mission of the PFA was to: develop physical training programs and assessments, train a cadre of physical training instructors; conduct and direct interservice physical fitness research, maintain contact with foreign Army PT organizations, and establish a career field (MOS)

for physical training instructors.⁶² The “physical fitness academy” concept was tacitly implemented with the founding of the Soldier Physical Fitness Center at Fort Ben Harrison in 1982. In the coordinating memorandum signed by LTG Julius W. Becton, Deputy Chief for Training (TRADOC) the role of the Soldier Physical Fitness Center was to provide physical fitness programs and testing for combat units by providing information, research, and consultation. From 1983–1990 the Soldier Physical Fitness School was sufficiently resourced to manage PRT doctrine, develop and implement the Master Fitness Trainer certification program, and maintain a broad-based research initiative. With the pending reduction in resources and scope mandated by the Vanguard Task Force in 1991, the Physical Fitness School began a two decade decline relative to the research mission even though the 1991 coordinating memorandum stated that “the mission of the USAPFS will include: fitness doctrine preparation and writing; research of the fitness needs of the US Army; standardization of fitness requirements within the US Army; fitness policy development; and training assistance to the US Army.”⁶³

Recently there are at least ten (10) organizations (civilian and military) conducting PRT research and development for the US Army: the Research Institute for Environmental Medicine (USARIEM), the Center for Health Promotion and Preventative Medicine (CHPPM), the Army Research Lab (ARL), the Army Research Institute (ARI), University of Pittsburg–Neuromuscular Research Lab, the Army Physical Fitness Institute (APFRI), the Department of Physical Education at the United States Military Academy, the University of Iowa Technology Institute, the Colorado State University Department of Health and Exercise Science, and the Army Combat Capabilities Development Command (DEVCOM). With meager resources the 75th Ranger Regiment has also filled some of the void in applied PRT research for the last ten years. However, these efforts have been indiscriminate and fragmented, regularly engaging “pop-up targets” (IET attrition, IET injury rates, Air Assault injury rates, body composition, ruck march standards, etc.) rather than pursuing a systematic, long-range research agenda. These disjointed efforts by disparate organizations often produce redundant and overlapping research in an attempt to resolve dissonant PRT problem. The Eagle Tactical Athlete Program, developed by the University of Pittsburg and implemented in the 101st Airborne Division, is the best exemplar of this fragmented process.

Learning from Others

There have been many lessons learned over the past century as the US Army has transitioned from a pedestrian, combat arms-centric, low technology organization to a mobile, high technology, specialized organization. This evolution is evidenced by the proliferation of military occupational specialties (MOS) over the last half century; there are current 159 US Army MOSs. There is a myriad of US Army MOSs that require a high degree of technical training and experience, such as a 15T–UH-60 Helicopter Repairer, 94F–Computer/Detection Systems Repairer, 25B–Information Technology Specialist, or 25N–Nodal Network Systems Operator-Maintainer. There are also US Army schools that require a significant level of additional training to achieve technical competencies, such as the Master Gunner course. The Master Gunner Common Core (MGCC) course is taught in four modules over 25 days. In the MGCC course non-commissioned officers are taught advanced universal gunnery methodologies, gunnery training with a focus on vehicle mounted machine gun weapons systems, and the planning and implementation of gunnery training programs. All of these MOSs and schools are critical to the success of the US Army, but heretofore the US Army has failed to recognize and therefore provide a commiserate level of technical training, education and certification for soldiers, civilians and contractors who provide the health and fitness training and education to our most valuable resource—the soldier. For most of the US Army’s history there was essentially no health-related education or training beyond issues surrounding basic hygiene and communicable diseases; no training on sleep, nutrition or mental health. And physical training was historically considered to be “NCO-business.” While uncommon in the heuristic world, marginally trained “teachers” generally default to what they know best, i.e., the way they were trained. An adjunct to the ‘teach how I was taught’ system is ‘sitting next to Nelly’, where young NCOs are paired with ‘experienced’ NCO to learn physical readiness training, ‘the way we were taught’. For decades the US Army produced a doctrine and training guide, FY 21-20 Physical Readiness Training, to reinforce doctrinal training. Most NCOs grew up in a US Army system with two focuses: (1) body-weight exercises executed in an extended rectangular formation, and (2) running. When it became their time to lead physical training, NCOs simply replicated the existing physical training system, and so for the past 200 years the US Army executed for the most part a physical training system that was developed in 1806 in Jenna, Prussia by Frederick Ludwick Jahn.

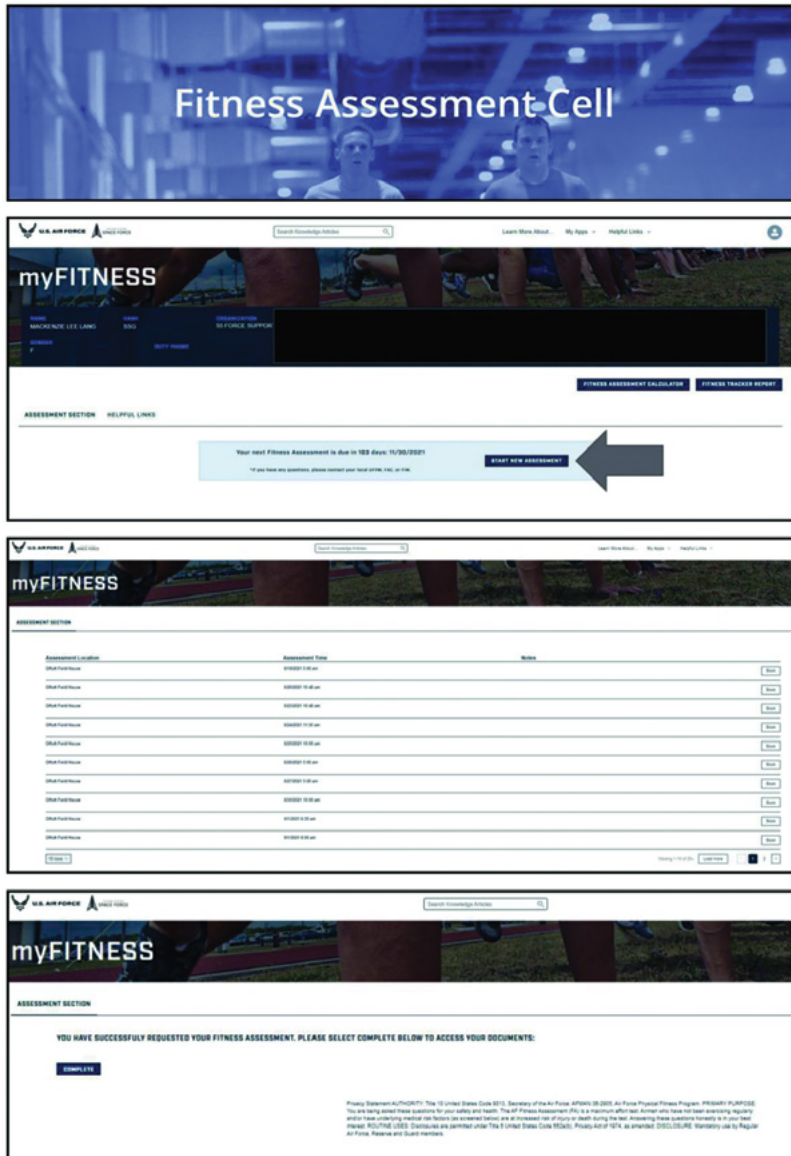


Figure 10.4. US Air Force Fitness Association.⁶⁴

Source: <https://www.offutt55fss.com/wp-content/uploads/2021/11/How-To-Sign-Up-For-A-Fitness-Assessment-via-myFitness-20-Aug-21.pdf>.

Over the past half century various international armies and US military services have learned the value of leveraging trained and certified health and fitness professionals and standardized assessment practices to optimize soldier performance. In the US Army this has been particular true in the Special Forces community with the THOR3, POTFF and RAW programs. Internationally, the Commonwealth nations, Canada, Australia and Great Britain and most European nations, especially Denmark and Germany have forged ahead in utilizing health and fitness professionals to train and assess soldier performance. As previously discussed, the Physical Training Instructor (PTI) in the Australian Defense Force system is the nonpareil example. PTIs manage every aspect of physical training and assessment, after a considerable period of training, education and certification.

Assessing human performance has also taken on new import as armies and associated soldier requirements have evolved over the past half century. There are three generalized aspects to this evolution: (1) armies have become ‘lighter’ and ‘faster’, fighting many times in constrained urban environments, (2) personal protection systems have become heavier and more cumbersome, and (3) physical training and assessments have become more comprehensive and complex, requiring significantly more equipment and better trained evaluators. Many modern armies have transitioned to using their professional physical training staff or a dedicated physical readiness testing cell to conduct periodic physical readiness assessments. A dedicated, installation-wide testing cell(s) provides many significant advantages to the soldier and the commander:

- Gives more control to the soldier since the soldier can select a date time group (DTG) to test that supports his/her personal and fitness training schedule,
- Provides a trained, impartial testing staff that increases test accuracy and objectivity,
- Removes the burden of scheduling a unit test that attempts to capture most soldiers in the unit,
- Removes the burden of a developing and maintaining a unit fitness testing field/facility,
- Removes the burden of purchasing and maintaining fitness testing equipment,
- Removes the burden on units to train graders,
- Removes the burden to enter testing data into a central repository,
- Supports the cost-effective construction of a centralized, professional testing center.

Lastly, the testing cell concept allows units and installations to coalesce their physical training and health promotion resources around a centralized location or venue. Service members can schedule a comprehensive assessment for mental, physical, nutrition and sleep assessment and counseling at a single location during a single day.

The testing cell concept may also have a significant impact on the US Army Reserve Corps (COMPO 2) and the US Army National Guard (COMPO 3). Due to significant restrictions on training and testing time and the geographically dispersed nature of units and troops, deploying the Holistic Health and Fitness system presents unique problems. Assuming the US Army develops a way-ahead to deploy the H2F system to COMPO 2 & 3, there is still the fitness testing problem. While fitness testing is a real issue, it is exacerbated by parochial attitudes and behaviors about unit centrality. It has always been the notion that training and testing are a unit responsibility, which is exacerbated by AR 350-1 Army Training and Leader Development. Some of this notion is supported by the mission-essential tasks of the units. However, administering a standardized physical fitness test does not require the participation of the unit. If one applies the testing cell model to a geographic region rather than a unit, there are significant regional resources to relieve unit commanders of this burden. For example, in Figure 77 the US Army Center for Initial Military Training identified five US Army programs within the state of Virginia and drew 20-mile radius circles identifying units belonging to: ROTC, Virginia National Guard, US Army Reserve Centers, US Army Installations and US Army Recruiting Centers. In working the fitness testing problem as a region, there are ample testing location and personnel to administer the Army Combat Fitness Test. With cooperative planning, soldiers should be able to schedule a record fitness test at a regional testing cell and remove this undue burden from the unit.⁶⁵

CONCLUSION

For the US Army to maintain the recent momentum in health and fitness transformation it needs to jealously guard resource allocations for the Holistic Health and Fitness System. A modern army, capable of engaging the enemy in close combat requires proper facilities, equipment and personnel and a comprehensive mission-focused research program that will drive future changes to the physical readiness training and assessment programs. Although never particularly heuristic, from 1940 to 1985, the US Army revised and published changes to the physical readiness training and testing doctrine about every five years. In comparison to the secular ad-

vances in exercise science and human performance over the past 30 years current Army PRT doctrine still lags behind. Over the past 10 years, the research organizations mentioned above have identified four basic research problems that demonstrate the depth of our lack of understanding: (1) what are the baseline physical attributes that constitute combat readiness, to include what does ‘combat readiness’ mean for soldiers in non-combat arms MOSs; (2) what is the frequency, duration, and intensity of training required to illicit these physical attributes, (3) what fitness measures best assess these physical attributes; and (4) what resources (trainers, facilities, and equipment) are required to facilitate acquisition of these physical attributes in a timely manner while mitigating organic failures. We currently cannot answer these basic questions to any degree of scientific rigor. Only PRT doctrine grounded in the science of exercise and human performance can prepare soldiers, leaders, and units to fight in the full spectrum of multi-domain operations.

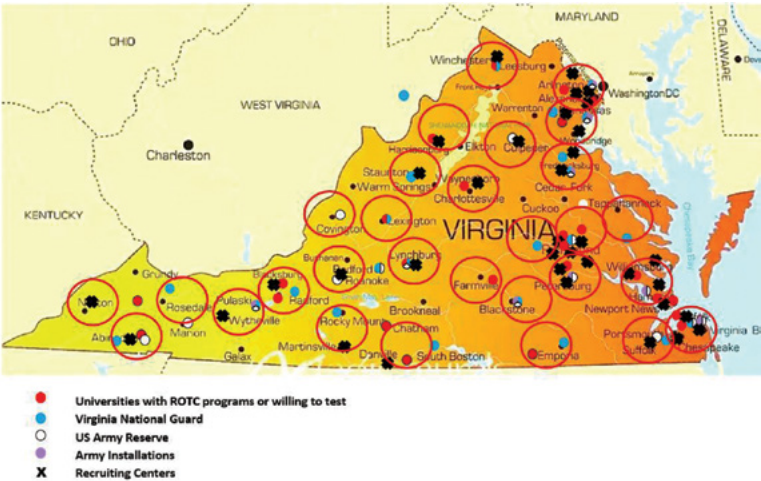


Figure 10.5. Mitigating Fitness Testing Issues.

Source: Photo courtesy of US Army Center for Initial Military Training.

The most precious and irreplaceable resource in the US Army is the individual soldier. This is true today more so than ever before as less than one in four US citizens are fully qualified to join the US Army. We must do all we can to develop and preserve our human resource. Since the early 1900’s the US Army’s physical readiness training program has been uni-

versally recognized as a force multiplier that enhances combat effectiveness, resilience, and survivability on the battlefield. We spend billions of dollars each year developing and producing tactical weapons and funding the associated training necessary to deploy them. The US Army is the most technologically advanced army in the world, however, even with the recently enhanced commitments to the Holistic Health and Fitness System, the overall resource allocations to physical readiness is trivial in comparison to the overall US Army budget. As the US Army moves to a smaller, lighter, more mobile force preparing for high-kinetic, multi-domain conflict, a long-term, comprehensive and sustainable commitment to the highest quality health and physical readiness programming is essential to the future success.

Nations have passed away and left no traces,
and history gives the naked cause of it—
one single, simple reason in all cases;
they fell because their peoples were not fit.

Rudyard Kipling

Notes

1. *American Military History Volume I: The United States Army and the Forging of a Nation, 1775-1917*, ed. Richard W. Stewart (Washington, DC: Center for Military History, United States Army, 2005), Epilogue, 387.

2. Department of the Army, *Physical Readiness Training-FM 21-20* (Washington, DC: US Government Printing Office, 1980), 1-2.

3. Lyle M. Spencer, and Robert K. Burns, *Youth Goes to War* (Chicago: Science Research Associates, 1943), 165.

4. Bell L. Wiley, and William P. Govan, *History of the Second Army (Study No. 16)* (Washington: Historical Section, Army Ground Forces, 1946), 108, 111.

5. Wiley and Govan, *History of the Second Army*, 122.

6. *Physical Fitness Seminar Report*, (FT Benning: United States Army Infantry School; April 1958), 2.

7. Brian P. Mitchell, *Women in the Military: Flirting with Disaster* (Washington, DC: Regnery Publishing, Inc., 1998), 11; Note: "In 1965, 70 percent of enlisted females were in administrative and clerical work..."

8. Mitchell, *Women in the Military*, 11; Note: "Until 1976 the highest pay grade or rank a woman could hold in any of the services was O-6."

9. Note: Most professionals associated with Army PRT over the past 30 years acknowledge that the shift in PRT from combat readiness (i.e., functional fitness) to personal health and fitness was the most detrimental change to Army PRT. With the stereotypical perception of women's physical capabilities vice upper body/core strength and functional fitness in 1980, it is beyond speculation to conclude that the health-related PRT focus and 3-event APFT were designed in part to make the PRT "fair" for women. This perception and the resultant actions have likely done more to harm women and to the US Army than any other single event other than overt discrimination. A relatively significant number of military personnel are satisfied to meet the minimum physical requirements for service. As such, if you set the "bar" too low, as has been done for the pass/fail standards for women relative to physical performance, you establish a caste of second-class soldiers. By way of presenting a single data point that supports this assertion, during the fall term 2011, women USMA cadets averaged 96 points and 92 points respectively on the push-up and 2MR test; men averaged 93 and 88. The average 3-event total for women = 284 (n=909) and men = 271 (n=4882). The delta between the average women's 2MR time = 15:38 and men = 13:39 equals approximately 2 minutes, which is a 14.52% delta. By normative comparisons of men and women on runs of this length, the delta should be about 10.5%; these disparities can be attributed to improper standards, which are insufficient to extrinsically motivate women to achieve optimal performance.

10. Department of the Army, *Physical Training-Women's Army Corps (FM 35-20)* (Washington, DC: US Government Printing Office, 1975), 174.

11. Note: a similar change occurred at the United States Military Academy when the parallel bar "traverse" (one of the 11 obstacles in the Indoor Obstacle

Course Test) was eliminated (cadets assumed an extended-arm support position on a set of Olympic parallel bars and “hand walked” the length of the bars) and was replaced by the balance beam “traverse”.

12. Note: for comparative purposes, Paula Radcliffe’s 1-mile split times in her world record marathon (London, 13 April 2003) was ~5:15 per mile for 26 miles setting a new women’s world record of 2:15:25.

13. Note: the USAPFS was to be placed on the TDA for the USAIC and the USAPFS Commandant was to be rated by the Commander, USAIC and senior rated by TRADOC Deputy Commanding General for Combined Arms.

14. Note: US Army Recruiting Command failed to meet their recruiting mission in 1998, 1999, and 2005; data were obtained from <http://www.usarec.army.mil/hq/apa/goals.htm> (accessed 6 December 2011).

15. Joseph J. Knapik, et al., “Seasonal Variations in Injury Rates during US Army Basic Combat Training,” *Annals of Occupational Hygiene* 46:1 (2002): 18; Note: time loss injury rates for Army BCT were 18.9% for a fall sample and 37% for a summer sample.

16. “Physical Fitness and Musculoskeletal Injury,” in *Assessing Fitness for Military Enlistment: Physical, Medical, and Mental Health Standards*, ed. Paul R. Sackett and Anne S. Mavor (Washington, DC: The National Academies Press, 2006) 106-108; Note: in October 2003 the Center for Accessions Research, US Army Accessions Command hosted it’s third Initial Entry Training Accession Working Group Meeting at FT Sam Houston. One of the primary objectives of the Attrition Working Group was to assist in developing an effective IET attrition reduction strategy.

17. http://warchronicle.com/iraq/news/timeline_iraq_war.htm (accessed 22 July 2011); original source www.cnn.com; Note: during the 1st Gulf War the Rand Study reported that units were deploying at 63% strength against the required Duty MOS Qualification rate (Bruce R. Orvis, et al., *Ensuring Personnel Readiness in the Army Reserve Components* (Santa Monica, CA: The Rand Corporation, 1996), 7); these issues grew in the mid 2000’s during OEF and OIF as the US Army instituted “stop loss” actions to assist under-strength units that were deploying.

18. Joseph E. Whitlock, *How to Make Army Force Generation Work for the Army’s Reserve Components* (Paper, Army War College Fellowship, The University of Texas at Austin, August, 2006), 11.

19. Anthony R. Jones, *AR 15-6 Investigation of the Abu Ghraib Prison and 205th Military Intelligence Brigade* (Department of the Army, 23 August 2004), 32.

20. Note: Cpt. Nick Bilotta is currently serving on the faculty of the Department of Military Instruction (USMA) and briefed the Department of Physical Education concerning his Company command in Afghanistan on 15 February 2011.

21. NDAA 1994, 2014, MOS requirements.

22. Rand study outbrief.

23. Note, in an homage to iterative changes to Apple iPhone, the ACFT study team initiated the use of version nomenclature; 1.0, 2.0, etc. The final ACFT version approved by Secretary Wormuth was surreptitiously called ACFT version 4.0. Ultimately US Army senior leadership directed CIMT discontinue using this nomenclature.

24. Headquarters, Department of the Army Execute Order 149-19: Establish the Holistic Health and Fitness System; Section 1.A., page 2, May 2019.

25. Note: in the H2F-lite FORSCOM pilot, 2018-2020, H2F was operationalized at the battalion level; however due to the size and cost of the Soldier Physical Readiness Center, H2F was only cost effective at the brigade level.

26. Headquarters, Department of the Army, FM 7-22, Holistic Health and Fitness (Washington: Government Printing Office, 26 August 2022), Page 3-2.

27. James E. Pilcher, "The Building of the Soldier," *The United Service* 7:4 (April, 1892): 322.

28. Department of the Army, Army Training and Leader Development—*Army Regulation 350-1* (Washington: Government Printing Office, 18 December 2009), 152.

29. Note: a relevant example of how similar organizations accomplish this goal is the Houston, TX, Fire Department. The Houston Fire Department uses a job-related physical ability test designed to determine if an applicant has the requisite strength and endurance needed to perform the job duties of a Firefighter. These job duties require balance, coordination, strength, endurance, and cardio-vascular fitness. Applicants are tested over seven (7) timed, pass/fail events while wearing gloves and an air pack because Firefighters are required to wear Self-Contained Breathing Apparatus (SCBA) and other heavy protective clothing while functioning at emergency incidents. The events include:

- Balance Beam Walk-within 30 seconds, one must walk the entire length of the beam.
- Ladder Extension-within 1 minute, an applicant must fully extend and lower the fly section of a 24' aluminum extension ladder by using the hand-over-hand method.
- Stair Climb-within 3 minutes 30 seconds, an applicant must pick up, shoulder hold, and carry two (2) 50' sections of hose, tied in a "Brown Fold," then climb and descend six (6) flights of stairs.
- Equipment Hoist-within 1 minute, an applicant standing on the 3rd floor of the drill tower, using the hand-over-hand method, must hoist one section of 2 ½" hose (44 lb.) from the ground up to the 3rd floor window, and then lower the hose back to the ground.
- Portable Equipment Carry-within 1 minute, an applicant must pick up an equipment/accessory box (Hurst, or Amkus, extrication tools) (70 lb.) from a 2' stand and carry it 50' in one direction, turn around to carry it back 50' and then place the box on a 3' stand.

- Rescue Attempt-within 30 seconds, an applicant must carry or drag a 150 lb. human dummy, 30 feet.
- 1.5 Mile Run-within 13 minutes 7 seconds, an applicant must run 1.5 miles.

30. Note: The Marine Corps has developed a combat fitness test (CFT), required for all members and initiated steps to eliminate the flexed-arm hang for women from the PFT; see “Female Marines may face pull-ups for PFT”, *Marine Corps Times*, 10 July 2011, D. Lamothe; *Marine Corps PT: not equal, not fair*; W. Easter, 2009.

31. Note: there is an inherent conundrum with the cliché ‘train like you fight’. While there comes a time soldiers must practice their profession under real-world conditions, that should not be the foundation or even regular practice for training. Physical training per se is designed and conducted to produce an adaptive physiological effect; field training exercises or live-fire exercises are designed to assess soldier and unit readiness under conditions that are as close to real-time combat scenarios as possible.

32. Note: based upon the April 2009 *Armed Forces Medical Surveillance Monthly Report*, there were 7.8 million ambulatory visits for illness and injury during 2008; the largest percentage (> 24%) of visits were caused by musculoskeletal and connective tissue injuries—generally construed to be “overuse” injuries (approximately 1.9 million visits); Larkin, 2010, p. 41-42.

33. Bruce Ruscio, et al., *DOD Military Injury Prevention Priorities Working Group: Leading Injuries, Causes and Mitigation Recommendations* (Washington, DC: Office of the Assistant Secretary of Defense for Health Affairs, February 2006), 1, 4, 7; *Preventing Injuries in the US Military: The Process, Priorities, and Epidemiologic Evidence* (Aberdeen Proving Ground, MD: Army Center for Health Promotion and Preventive Medicine, December 2008), Section 1-1, A(2), 1-2.

34. Christopher P. Larkin, “Combat Fitness a Concept Vital to National Security” (Paper-Master of Science, Department of Defense: Joint Forces Staff College, 18 June 2010), 100; Note: Maj. Larkin extrapolated these data, which were derived from the following source: Armed Forces Health Surveillance Center. “Ambulatory Visits among Members of Active Components, US Armed Forces, 2008,” *Medical Surveillance Monthly Report* 16:4 (April 2009): 10.

35. Army Audit Agency Report, 2020, page 12.

36. http://www.marines.com/main/index/making_marines/recruit_training/delayed_entry_program (accessed 15 September 2011); Note: US Army injury rates will be systemically higher than the Marine Corps because significantly more women attend Army BCT and women are injured at a higher rate than men.

37. Army Audit Agency Report—MSK Injuries 2021.

38. Army Audit Agency Report—MSK Injuries 2021.

39. Ruscio, et al., *DOD Military Injury Prevention*, 1.

40. Thomas C. Lowman, “Does Current Army Physical Training Doctrine Adequately Prepare Soldiers For War?” (MA thesis, Command and General Staff

College, 2010), 113; Note: Lowman was quoting Col. Henry Arnold III, 4IBCT, 1ID through direct correspondence.

41. Note: In 1892, Herman Koehler convinced USMA leaders to appropriate funds for the construction of a new physical development center. The new facility contained a large gymnasium, running track, fencing rooms, dressing rooms, bowling alley, office, and a swimming tank. Koehler argued that the USMA gymnastics equipment was “superior to any in the world.” In 1890, the US Army initiated a program to build gymnasiums and provide the instruction of gymnastic exercises at recruit depots, specifically at David’s Island, NY, Columbus, OH and Jefferson Barracks, MO. In an article published in the Infantry Journal (“Physical Training in the Army”) and reprinted in the preface of Koehler’s third Manual of Exercises—Prepared for Use in Service Gymnasiums (1904), Koehler reiterated his position on physical training: “*What the service requires is a system of training based upon proper educational principles, the chief object of which is to raise the physical standard of all...Physical training has been adopted by all the large armies of the world chiefly on account of economy...they have found that the efficiency of an army was directly dependent upon the physical fitness of all of its members...the physical training of the soldier is considered paramount to everything else in his development.*” Herman J. Koehler, *Manual of Gymnastic Exercises: Prepared for Use in Service Gymnasiums* (Washington DC: Government Printing Office, 1904), 10-12.

42. Note: the force size of the active duty US Army is approximately 550,000 Officers and enlisted soldiers. Note: by comparison the GAO estimates the US Army will spend approximately \$11.5 dollars between FY 2001 and FY 2010 to design, develop, store, and distribute the Army Combat Uniform (ACU); between FY 2005-2010 the US Army will then spend over \$1.24 billion dollars in production and procurement of ACUs (*Warfighter Support: Observations on DOD’s Ground Combat Uniforms*), Government Accounting Office Report: GAO-10-669R Warfighter Support, 2010), 48).

43. Note: “unit training runs” a common site on many US Army posts are normally conducted at a 9:00-10:00 pace; yet even at this slow pace (which would be categorized as a “junk mile” pace for most soldiers) there are soldiers “falling out” on either side of the formation making formation runs inappropriate for virtually all soldiers involved from an “overload” perspective.

44. M.B. Stewart, *The Physical Development of the Infantry Soldier*, (Mena-sha, WI: George Banta Press, 1913), 5.

45. Maureen K. LeBoeuf, and Whitfield B. East, “Case No. 2: Physical Readiness and Assessment,” in *The Future of the Army Profession*, ed. Lloyd J. Matthews (Boston: McGraw Hill Primis Custom Publishing, 2006), 486.

46. Herman J. Koehler, *Manual for Physical Training for use in the United States Army* (New York: Military Publishing Company, War Department, 1914) 10; Joseph Raycroft, *Mass Physical Training for use in the Army and Reserve Officer Training Corps*, (Washington: US Infantry Association, 1920), 2.

47. DoD Physical Fitness/Body Composition Program; Department of Defense—Instruction (DoD-I) 1308.03, March 2022.

48. “Physical and Employment Standards.” Australian Defense Force: Major Ryan Holmes, March 2011, slides 6-7; Note: the combat arms assessment consisted of four tests—10k forced march (110 min.), box lift and place (30kg), jerry can carry (225 m), and the fire and move simulation (16x 6m).

49. Note: Basic PRT would be for soldiers in BCT, AIT, OSUT; TC 3-22.20 was re-designated as FM 7-22 in October 2012.

50. Belinda R. Beck, “Stress Fractures,” *ACSM Current Comment* (Indianapolis, IN: American College of Sports Medicine, , 2007), 1—available at: <http://www.acsm.org> (accessed 3 May 2011); Note: based upon the American College of Sports Medicine “Current Comment” on stress fractures, we know it take about six weeks of adaptive exercise before bone density and connective tissue improve enough to help prevent stress-reaction injuries; “Bones are most susceptible to stress fracture when weakened by remodeling-related porosity, a primary stage in the adaptive response of bone to changes in patterns of loading.” (p. 2)

51. *Combat Fitness Handbook*, Australian Army, Land Warfare Procedures—General—LWP-G 7-7-4, Commonwealth of Australia (Australian Army), 2009, 19.

52. Note: the RPAT (Ranger Physical Activity Test) can provide initial guidelines for the components of a functional combat readiness test (*RAW PT*, v4.0, 72).

53. Note: researchers from the University of Pittsburgh, Neuromuscular Research Lab (NMRL) concluded that the only viable way to implement their Eagle Tactical Athlete Program (ETAP) was to develop a certified cadre of fitness instructors; “The objective of Phase II is to enroll Division NCOs into the ICS [instructor certification school] and phase-implement the ETAP into Division PT. In Phase IIA, the NCOs will learn the theory and implementation of the updated PT program (ETAP) and at the completion of the course be certified as Eagle Tactical Athlete Training Leaders.” (“Neuromuscular Research Laboratory Newsletter,” (Department of Sports Medicine and Nutrition, University of Pittsburg, 2009), 2.

54. *Physical Fitness Symposium Report*, (FT Benning: United States Infantry School, October 1970), 42.

55. *Combat Fitness Handbook*, Australian Army, Land Warfare Procedures, 21.

56. *Combat Fitness Handbook*, Australian Army, Land Warfare Procedures, 22.

57. Note: this text was extracted from an Australian Defense Force job announcement for a Physical Training Instructor (NCO), 23 March 2011: A Physical Training Instructor (PTI) is a Royal Australian Army Medical Corps (RAAMC) soldier who is responsible for the provision of physical conditioning and rehabilitation to the Australian soldier and the ADF in a variety of settings. The PTI is employed in the prevention of injuries, delivery of Military Self Defense and the Combat Fitness Leader Courses (CFLC). Also, the PTI delivers the Defense Injury Prevention Program (DIPP), conducts fitness assessments and

physical training of Australian Defense Force members and coordinates sporting events and other specialist activities; available at: defencejobs.gov.au/army/jobs/PhysicalTrainingInstructor/JobDetails (accessed 11 June 2011).

58. Stewart, *The Physical Development of the Infantry Soldier*, 5.

59. Douglas MacArthur, *Reminiscences* (New York, NY: McGraw Hill Book Company, 1964), 81.

60. Note: see the Recommendations Sections for the 1958, 1970, and 1981 Physical Fitness symposia.

61. *Physical Fitness Symposium Report* (1970), 41.

62. Department of Defense, *Study of the Military Services Physical Fitness* (Washington DC, 1981), 3-34.

63. *Memorandum for Record*: Subject: Relocation of the Physical Fitness School, 9 July 1991.

64. <https://www.offutt55fss.com/fitness-assessment-cell/>; <https://www.offutt55fss.com/wp-content/uploads/2021/11/How-To-Sign-Up-For-A-Fitness-Assessment-via-myFitness-20-Aug-21.pdf> (accessed 14 September 2022).

65. Note: Setting up and administering the Army Combat Fitness Test is a Basic Officer Leader Course–A (BOLC-A) commissioning task. During initial discussions, several ROTC programs in Virginia expressed a willingness to establish a testing cell and administer the ACFT to soldiers in the region. College and university participation as a testing cell would mitigate many Recruiting Command and COMPO 2 & 3 resource and logistical issues and serve as a learning laboratory for ROTC programs.

Appendix A

Chronological Summary of SIGACTS for the US Army Soldier Physical Fitness Center (Physical Fitness School)

- 1980 2 February, President Carter requested the Secretary of Defense to assess the physical fitness programs for all Armed Services.
- 1981 3 April, findings of the DoD Study of Military Services Physical Fitness were published. 21 December, Lt. Gen. Julius Becton, TRADOC Deputy Commander for Training, convened a meeting at FT Monroe on to discuss plans for a physical fitness center.
- 1982 7 January, Secretary of the Army John O. Marsh created a Physical Fitness Task Force at the Soldier Support Center, FT Benjamin Harrison, IN, and signed a resolution forming the US Army Soldier Physical Fitness Center; the operational component of the Soldier Physical Fitness Center was the Physical Fitness School (PFS); there were two branches of the PFS: (1) Academy—dealing with research and pedagogical aspects of the mission (i.e., the master fitness trainer program), and (2) Doctrine—dealing with regulatory aspects of the mission (i.e. FM 21-20).
3 May, the USASPFC was activated; Lt. Col. Joe DiEduardo was appointed as the first Commandant; Director of the Academy—Lt. Col. Larry Hicks was responsible for developing the Master Fitness Trainer course (MFT); Director of Doctrine—Lt. Col. Mark Saunders was responsible for doctrine development; MAJ William Schutsky was the Director of Instruction.
- 1983 January-July, Col. Clyde D. Lynn, was appointed Commandant of the USASPFC; personnel attended the DoD Committee for Physical Fitness Conference in San Diego (24-15 Feb); Director of the Academy—unknown; Director of Doctrine—Lt. Col. Robert (Bobbie) Hoffman; the Center's name was changed to the Soldier Physical Fitness School (SPFS) to more accurately reflect its assigned mission of education the US Army in all aspects of physical fitness.
- 1983 2nd Quarter, MFT pilot course was administered: May, USASPFS began offering the 4-week resident MFT course to senior NCOs and Company grade officers from throughout the US Army; there were 30 faculty in the Physical Fitness Academy;

October, USASPFS hosted the semi-annual meeting of the DoD Committee for Physical Fitness; USASPFS Academy provided Advanced Individual Instruction (AIT) for all 03C–Physical Activities Specialist (approximately 50% of the 03C AIT training involved enrollment in the MFT course).

- 1983 July, Col. Walter Wilms, (AR) was appointed Commandant of the USASPFS; 14 September–SPFS personnel attended the US Military Symposium on Fitness Planning Conference, Carlisle Barracks; Director of the Academy–unknown; Director of Doctrine–Lt. Col. Robert (Bobbie) Hoffman
- 1987 Col. Robert Tetu (IN) was appointed Commandant of the USASPFS; Director of the Academy–Lt. Col. Oliver Johnson, Director of Doctrine–Lt. Col. Jack O’Conner; the 03C MOS category was terminated.
- 1990 25-26 January, Lt. Col. John S. O’Connor, Ph.D. (Director of Training) reported on the status of the USAPFS at the National Conference on Military Fitness, Washington, DC.
- 1991 Col. Bruce J. Wicks (SF) was appointed Commandant of the USAPFS; Director of the Academy–Lt. Col. John O’Conner; Director of Doctrine–Mr. Edward Tarantino; after the decision was made to move the Center to FT Benning, Lt. Col. Sam Pride was appointed as the Interim Director of the Center for Col. Wicks during the move to FT Benning.

The Army Chief of Staff approved the Vanguard Taskforce recommendations, which included elimination of USAPFS in FY92; during subsequent negotiations between TRADOC and HQDA a solution was found to save the School by transferring it to the US Army Infantry Center (USAIC)–FT Benning; the transfer occurred between July 1991 and June 1992. When the “Center” moved to FT Benning they dropped the Center designation and became the US Army Physical Fitness School. The “Academy” mission of the USASPFS was also terminated as part of the move to FT Benning.

- 1992 Col. David White (IN) was appointed Commandant of the USAPFS. Director of Doctrine–Maj. Marcus Alexander; Director of Training–Mr. Frank Palkoska; with the demise of the “Academy” the 4-week resident MFT course was discontinued; however Mobile Training Teams and the Department of Physical Education, USMA continued to train Soldiers and Officers and award

- the 6P MFT ASI until 2002; USAPFS was assigned to “update APFT standards” to ensure standards require “equal effort” by both genders. Dr. Louis Tomasi (Research Physiologist USAPFS), Dr. Gene Fober (Army Research Institute) in cooperation with U.S.A.R.I.E.M. personnel led the effort; the USAPFS supervised the publication of FM 21-20 (1992).
- 1993 Col. David White (IN) was assigned to update the physical fitness uniform; Dr. L. Tomasi was the lead investigator; the project was designated “Improved Physical Fitness Uniform.”
 - 1994 Col. Jeanne M. Picariello (ANC) was appointed Commandant of the USAPFS.
 - 1997 Col. Stephen D. Cellucci (AR) was appointed Commandant of the USAPFS; the new PT standards and APFU (PT uniform) were approved by Army Chief-of-Staff (GEN Reimer).
 - 1998 USAPFS supervised the revised publication of FM 21-20.
 - 1999 Lt. Col. William Rieger (IN) was appointed Commandant of the USAPFS.
 - 2001 All mobile training teams for MFT course were terminated; 6P Army Skill Identifier was removed from the Army Training Requirements and Resourcing System (ATTRS).
 - 2002 the USAPFS developed a revised FM 21-20, to be published as FM 3-22.20.
 - 2003 As part of the FM 21-20 revision Lt. Gen. Van Alstyne requested a draft proposal for a new US Army physical fitness test; due to excessive injuries during Initial Military Training, Lt. Gen. Dennis Cavin (USAAC) provided guidance to USAPFS to fix Initial Military Training PRT program of instruction; “futures” track (FM 3-22.20) was put on hold to work exclusively on “current” issues, which, along with significant negative reactions to the newly proposed APFT, effectively terminated the revision/publication of the FM 3-22.20.
 - 2006 Mr. Frank Palkoska was appointed Director of the USAPFS.
 - 2007 USAPFS moved to FT Jackson, S.C. as part of the Directorate of Basic Combat Training.
 - 2010 USAPFS published Training Circular (TC) 3-22.20 as the replacement training doctrine for FM 21-20.

- 2016 USAPFS was assigned to the Leader Training Brigade, FT Jackson, SC.
- 2018 Lt. Col. Charles G. Blake was appointed Director of the USAPFS and Mr. Andrew Hargus was appointed the Associate Director of the USAPFS.
- 2021 Lt. Col. Christopher W. Remillard was appointed Director of the USAPFS.
- 2022 Lt. Col. Robert J. Halle was appointed Director of the USAPFS.

Appendix B

Physical Fitness Training and Holistic Health and Fitness

- 1825 *Elementary Course in Gymnastic Exercises*—Captain P. H. Clias, Royal Military Academy, Woolwich, England.
- 1840 *Infantry Tactics or Rules for the Exercise and Manoeuvre of the United States Infantry*, Winfield Scott.
- 1861 *Rifle and Light Infantry Tactics (for the exercise and maneuvers of troops when acting as light infantry or riflemen)*; prepared under the direction of the War Department—Brevet Lt. Col. W. Joseph Hardee, US Army Vol. 1; Philadelphia: J.B. Lippincott & Co., 1861.
- 1862 *Infantry Tactics for the Instruction, Exercise, and Maneuvers of the Soldier; A Company, Line of Skirmishes, Battalion, Brigade, or Corps*; Brig. Gen. Silas Casey, Vol. II; New York: D. Van Nostrand, 1862.
- 1864 *Handbook of Calisthenics and Gymnastics*—James M. Watson.
- 1867 *Manual of Physical Exercises*—William Wood; Harper: New York.
- 1868 *A Military System of Gymnastic Exercises and a System of Fencing for Use by Instructors*; Archibald Maclaren, London: Her Majesty's Stationary Office.
- 1869 *A System of Physical Education—Theoretical and Practical*; Archibald Maclaren, Oxford: Clarendon Press Series.
- 1879 *Manual of Drill and Calisthenics*—J. Laughlin Hughes (Toronto).
- 1881 *A Military System of Gymnastic Exercises and a System of Swimming*, Edward S. Farrow; Instructor—Department of Tactics and Master of the Sword (1882-1884), New York: Metropolitan Publishing Co.
- 1882 *Manual of Calisthenics*—James M. Watson; New York: E. Steiger & Co.
- 1887 *A System of Callisthenic Exercises for use in School of the Soldier*, Herman J. Koehler; West Point: US Academy Press.
- 1891 *ABC of the Swedish System of Educational Gymnastics*, Hartvig Nissen, Philadelphia: F.A. Davis, Publisher.
- 1892 *Manual of Callisthenic Exercises*—Herman J. Koehler, War Department; US Army: Government Press.

- 1897 *Physical Drill for Foot Troops*—Capt. Constantine Chase, 4th Artillery, US Army. Washington: Government Printing Office. (describes close order drills with weapons, bayonet, and Indian clubs).
- 1898 *Manual of Physical Drill*—Maj. Edmund J. Butts, United States Army, New York: D. Appleton and Company.
- 1904 *US Army Exercises: Rearranged for General Use*—Private Frank Idone, US Army.
- 1904 *Manual of Gymnastic Exercises: Prepared for Use in Service Gymnasiums*—1st Lt. Herman J. Koehler, Washington: Government Printing Office.
- 1904 *Physical Training Manual for Use in Public Schools, Normal Schools, and Gymnasias*—Carl Zeigler, M.D. Superintendent of Physical Training and Hygiene for Cincinnati Public Schools
- 1909 *A Manual of Physical Exercises*, General John P. Hawkins, US Army.
- 1909 *Manual of Physical Exercise; a Health Hand-book; Arte* R.T. Winjum, Battle Creek, MI.
- 1913 *Physical Development of the Infantry Soldier*, Merch Bradt Steward, Menasha, WI: Banta Press.
- 1914 *Manual of Military Training*, J. A. Moss, Menasha, WI: Banta Press.
- 1914 *Manual of Physical Training for use in the United States Army*, War Department Document No. 436, Office of the Chief of Staff (written by Lt. Col. Sladen, Maj. Koehler, Capt. Matthews (US Army) and sanctioned by Maj.Gen. Leonard Wood, Chief of Staff, War Department.
- 1917 *Field Physical Training of the Soldier—Special Regulations, No. 23*, Capt. Herman Koehler, United States Military Academy, West Point.
- 1917 *Manual of Military Training*, Major James A. Moss, 2nd Edition, Menasha, WI: Banta Press.
- 1917 *The Plattsburg Manual*—A Handbook for Military Training, Captain O. O. Ellis and Captain E.B. Garey, New York: The Century Co.

- 1917 *Military Instructors Manual (Chapter 3: Physical Training)*, Captain James Cole and Major Oliver Schoomaker, New York: Edwin N. Appleton.
- 1918 *Extracts from the Manual of Physical Training for use in the United States Army*, War Department, Lt. Col. Herman Koehler–West Point.
- 1919 *Army Physical Training*, Col. William Henry Waldron, US Army, New York: Henry Hold & CO.
- 1919 *West Point Manual of Disciplinary Physical Training*, Lt. Col. Herman Koehler–West Point, Instructor at United States Training Camps and Cantonments, 1917-18; Instructor at Business Men's and Militia Camps, 1915-16; sanctioned by SECWAR Baker; E.P. Dudley & CO: New York.
- 1920 *Mass Physical Training—for use in the Army and the Reserve Officers' Training Corps*; United States Infantry Association: Washington, DC (forward by MG William G. Haan—Chief, War Plans Division).
- 1923 *Manual of Military Training*, Moss, J.A. and Lang, J.W., 4th Edition, Menasha, WI: Banta Press.
- 1924 *Standards for Physical Qualifications for Entrance into the National Guard*—NGR-28 (31 December 1924).
- 1927 *Physical Examinations*—NGR 27 (1 April 1927).
- 1928 *Physical Training (Training Regulation 115-5) Part I—general training without equipment. Part II—with special equipment.* Published under the supervision of Brig. Gen. Merch Brandt Stewart, Superintendent, United States Military Academy—Maj. Edward L. Kelly, Master of the Sword.
- 1936 *Physical Training (Basic Field Manual-BFM)—Volume 1, Chapter 4—Army*, published under the supervision of Maj. Gen. William D. Connor, Superintendent, United States Military Academy.
- 1941 *Physical Training (FM 21-20)*; prepared under the supervision of Robert L. Eichelberger, Superintendent, United States Military Academy (supersedes Vol. I, Ch. 4, BFM, March 26 1936, and TR 115-5, Part II, 10 September 1928).
- 1942 *Physical Training (Training Circular-TC 87)*; Washington: US Government Printing Office, 17 November 1942 (supplement to FM 21-20, 1941).

- 1942 *Army Ground Forces Test* approved for all soldiers-oriented toward physical combat skills.
- 1943 *Physical Training*—W.A.C. Field Manual (FM 35-20), 15 July 1943.
- 1944 *Physical Reconditioning* (TM 8-292), War Department, December 1944—for the soldier who had been wounded or suffered from a prolonged illness.
- 1944 *Physical Conditioning* (Army Pamphlet—DA Pam 21-9); US War Department, Washington: US Government Printing Office, May 1944; Physical Efficiency Test Battery first presented; PETB was oriented more towards combat readiness; designed by Bank/McCloy/Esslinger.
- 1946 *Physical Training* (FM 21-20); US Government Printing Office: Washington, DC; revised the Physical Efficiency Test Battery: both outdoor and indoor tests specified; scoring standards changed; allowance made for age, 1 January 1946 (supersedes FM 21-20 (1941), TC 87 (1942), DA Pam 21-9 (1944)).
- 1950 *Physical Readiness Training* (FM 21-20); revised the Physical Fitness Test Battery; scoring standards changed. Physical Achievement Test added; designed to measure certain physical combat skills; both tests made mandatory for basic combat training, 30 November 1950 (supersedes FM 21-20, 1 January 1946).
- 1951 *Change 1: Physical Readiness Training*, FM 21-20, 26 October 1951.
- 1954 *Army Training Program—Male*, (ATP 21-114)-basic training program for personnel without prior service (revised in 1956, 1958, 1961, 1970).
- 1956 *Physical Training—Women's Army Corps* (FM 35-20), 25 January 1956 (supersedes FM 35-20, 15 July 1943).
- 1957 *Physical Training* (FM 21-20); program/training materials were removed and published separately in TM 21-200; 8 October 1957 (supersedes FM 21-20, 30 November 1950, including C 1, 26 October 1951, and C 2, 15 September 1952; and Training Circular 21-3, 18 April 1957).
- 1957 *Physical Conditioning* (TM 21-200), Washington: US Government Publishing Office—extracted from FM 21-20, 30 November

- 1950, retained the Physical Achievement Test to measure combat-related physical fitness, 31 December 1957.
- 1958 *Physical Fitness Seminar*, hosted by the United States Army Infantry School, FT Benning, GA, 21-24 April 1958.
- 1959 *Change 1. TM 21-200–Physical Conditioning*, Washington: US Printing Office—established a 200-point minimum score for both 1957 tests.
- 1961 *Change 2. TM 21-200–Physical Conditioning*—previewed the Physical Combat Proficiency Test (PCPT): entirely new test—40-yard low crawl, horizontal ladder, doge run and jump, grenade throw, and one-mile run; minimum score=300 pts; personnel over forty exempted; mandatory test for US Army; first test to have total score=300 and component scores—had to pass all components.
- 1962 *Physical Fitness Programs (DoD Directive 1308.1)*.
- 1963 *Physical Fitness Program for Specialists and Staff Personnel (DA Pamphlet 21-1)*, Washington: US Government Printing Office—established an Army Minimum Physical Fitness Test—Male: mandatory for staff and specialist personnel under forty. PCPT made mandatory for medically fit personnel under forty.
- 1963 *Physical Fitness Program for Women in the Army (DA Pamphlet 21-2)*, 7 January 1963; (supersedes).
- 1963 *Army Physical Fitness Program (Technical Circular 21-1)*, Washington: US Government Publishing Office, 7 January 1963 including Change 3, 26 July 1963.
- 1963 *Weight Control (AR 600-7)*, Washington: US Government Publishing Office (supersedes DA Circular 600-7, 10 September 1962).
- 1965 *Army Physical Fitness Program (AR 600-9)*, Washington: US Government Publishing Office, 5 January, 1965, (supersedes TC 21-1, 7 January 1963).
- 1965 *Physical Fitness Program for Women in the Army (DA Pamphlet 21-2)*, 26 February 1965 (supersedes DA Pam 21-2, 7 January 1963; including Change 1, 26 July 1963).
- 1965 *Physical Conditioning – Change 4 (TM 21-200)*, Washington: US Government Publishing Office – dodge run and jump standards were raised from 1-4 seconds; 26 May 1965.

- 1965 *Physical Fitness Program for Specialists and Staff Personnel (Army Pamphlet 21-1)*, Washington: US Government Printing Office 2nd revision, 25 February 1965 (supersedes DA Pam 21-1, 7 January 1963, including C2, 26 July 1963).
- 1965 *Physical Training Women's Army Corps (FM 35-20)*; 2nd revision, 2 September 1965 (supersedes FM 35-20, 25 January 1956).
- 1966 *Continental Army Command Pamphlet 600-1*—Establishes the Inclement Weather Physical Fitness Test for basic, advanced, and combat supported trainees.
- 1969 *Physical Readiness Training (FM 21-20)*. Physical fitness standards adjusted according to duty assignment; scoring standards modified. Minimum Fitness Test-Male: major revision of test events and scoring standards, 31 January 1969 (supersedes FM 21-20, 8 October 1957 and all changes; TM 21-200, 31 December 1957 and all changes).
- 1970 *Physical Fitness Symposium*, hosted by the USAIS, FT Benning, GA, 12-14 October 1970.
- 1973 *Physical Readiness Training (FM 21-20)*, 30 March 1973 (supersedes FM 21-20, 31 January 1969).
- 1974 *Army Physical Fitness Program (AR 600-9)*, 7 May 1974 (supersedes AR 600-9, 5 January 1965).
- 1975 *Training: Army Training (AR 350-1)* Washington: US Government Publishing Office, 25 April 1975.
- 1975 *Physical Training Women's Army Corps (FM 35-20)*, 17 February 1975 (supersedes FM 35-20, 2 September 1965, and DA Pam 21-2, 26 February 1965).
- 1975 *Change 1. Physical Training Women's Army Corps (FM 35-20)*, 30 October 1975.
- 1976 *The Army Physical Fitness and Weight Control Program (AR 600-9)*, 30 November 1976 (supersedes AR 600-9, 7 May 1974).
- 1980 *The Revised Physical Training Program (APTP-1)*, USA Infantry School, FT Benning, GA,—January 1980—primary a primer of MSE and CRE activities.
- 1980 *Department of Defense Study of the Military Services Physical Fitness*; hosted by the Secretary of Defense, 17-19 June 1980; final report was published on 3 April 1983.

- 1980 *Physical Readiness Training (FM 21-20)*, 31 October 1980 (supersedes FM 21-20, 30 March 1973, and FM 35-20, 17 February 1975).
- 1981 *Training: Army Training (AR 350-1)*, 1 August 1981 (supersedes AR 350-1, 25 April 1975).
- 1981 *Physical Fitness and Weight Control Programs (DoD Directive 1308.1)*, required all services to use body fat as the sole measure of obesity; obesity was defined as anything over 22%, 29 June 1981 (superseded DoD Directive 1308.1, 20 November 1962).
- 1982 *US Army Soldier Physical Fitness Center* was formed at FT Benjamin Harrison, IN.
- 1982 *Committee on Military Nutrition Research* was formed by the US Army Assistant Surgeon General.
- 1982 *The Army Physical Fitness Program (AR 350-15)*, 15 July 1982 (supersedes chapter 2 of AR 600-9, 30 November 1976).
- 1982 *Commander's Handbook on Physical Fitness (DA PAM 350-15)*, 15 October 1982.
- 1983 *Department of Defense Committee on Physical Fitness Conference*, San Diego, CA, 24-25 February 1983.
- 1983 *The Army Weight Control Program (AR 600-9)*, 1 February 1983 (supersedes AR 600-9, 30 November 1976).
- 1983 *Training: Army Training (AR 350-1)*, 1 August 1983 (supersedes AR 350-1, 1 August 1981).
- 1983 *US Military Fitness Planning Conference*, Carlisle Barracks, PA, 14 September 1983.
- 1985 *Physical Readiness Training (FM 21-20)*. 28 August 1985 (supersedes FM 21-20, 31 October 1980).
- 1985 *The Army Physical Fitness Program (AR 350-15)*, 30 December 1985 (supersedes AR 350-15, 15 October 1982).
- 1986 *The Army Weight Control Program (AR 600-9)*, 1 September 1986 (supersedes AR 600-9, 1 February 1983).
- 1986 *Army Forces Training (AR 350-41)*, 26 September 1986; a new US Army regulation; identifies training goals and philosophy, commander's responsibilities, and training requirements.

- 1987 *The Army Weight Control Program (AR 600-9)*, 10 June 1987 (supersedes AR 600-9, 1 February 1983 and the original form published on 1 September 1986; includes Change 1, February 1987 and Change 2, June 1987).
- 1989 *Army Physical Fitness Program (AR 350-15)*, 3 November 1989 (supersedes AR 350-15, 30 December 1985).
- 1990 *National Conference on Military Physical Fitness*, hosted by the President's Council on Physical Fitness and Sports, in cooperation with the National Defense University, 25-26 January 1990.
- 1992 *Physical Readiness Training (FM 21-20)*, 30 September 1992 (supersedes FM 21-20, 28 August 1985).
- 1993 *Training in Units (AR 350-41)*, consolidated several publications to provide a comprehensive policy for training in units, 19 March 1993 (supersedes AR 350-15, 3 November 1989, and AR 350-41, 26 September 1986).
- 1995 *Physical Fitness and Body Fat Program (DoD Directive 1308.1)*; 20 July 1995 (supersedes 29 June 1981).
- 1995 *Physical Fitness and Body Fat Program Procedures (DoD Directive 1308.3)*, 30 August 1995.
- 1998 *Physical Readiness Training (FM 21-20)*. 1 October 1998 (supersedes 30 September 1992).
- 1998 *Training in Units (FORSCOM Regulation 350-1)*, 15 October 1998.
- 2002 *Training in Units (FORSCOM Regulation 350-1)*, 25 October 2002 (supersedes FORSCOMR 350-1 1998).
- 2002 *Physical Fitness and Body Fat Program Procedures (DoD Directive 1308.3)*, 5 November 2002 (supersedes 20 July 1995).
- 2003 *Army Training and Education (AR 350-1)*, established US Army physical fitness policy; defined US Army physical fitness test and height and weight standards as enrollment and graduation requirements for professional development schools; and provided guidance for physical fitness training in units, 9 April 2003 (supersedes AR 350-1, 1 August 1983, and AR 350-41, 19 March 1993).
- 2004 *Physical Fitness and Body Fat Program (DoD Directive 1308.1)*, 30 June 2004 (supersedes DoD Directive 1308.1, 20 July 1995).

- 2006 *Ranger Warrior Athlete Physical Training (v.1.0)*, no date provided, established feasibility, acceptability, and suitability of the RAW program.
- 2006 *Army Weight Control Program (AR 600-9)*, 1 September 2006 (supersedes AR 600-9 10 June 1987).
- 2006 *Army Training and Leadership Development (AR 350-1)*, date (supersedes AR 350-1, 2003).
- 2007 *Ranger Warrior Athlete Physical Training (v.2.0)*, no date provided (supersedes RAW v.1.0, no date provided).
- 2007 *Army Training and Leader Development (AR 350-1)*, 3 August 2007 (supersedes AR 350-1, 2006); rapid action revision.
- 2008 *Ranger Warrior Athlete Physical Training (v.3.0)*, 13 May 2008 (supersedes RAW v.2.0, no date provided).
- 2009 *Eagle Tactical Athlete Program Spring*, 2009, developed by the University of Pittsburgh's Department of Sports Medicine and Nutrition; implemented with the 101st Airborne Corps, FT Campbell, KY.
- 2009 *Army Training and Leader Development (AR 350-1)*, 18 December 2009 (supersedes AR 350-1, 2007).
- 2010 *Army Physical Readiness Training (TC 3-22.20)*, (supersedes FM 21-20, 30 September 1992, and Change 1–FM 21-20, 1 October 1998).
- 2010 *Ranger Warrior Athlete Physical Training (v.4.0)*, 13 April 2010 (supersedes RAW v.3.0, 13 May 2008).
- 2012 *Tactical Athlete Program*, 3BCT, 4th ID, FT Carson, CO.
- 2012 *HQDA EXORD 041-13*, Baseline Physical Readiness Requirements Study, 27 December 2012.
- 2013 *HQDA EXORD 012-13*, Physical Demands Study (Occupational Physical Assessment Test), 5 April 2013.
- 2015 *HQDA EXORD 021-15*–Optimized Physical Fitness, 8 November 2014.
- 2015 *HQDA EXORD 086-16*, Human Dimension, 22 December 2015.
- 2016 *HQDA EXORD 071-17*, Accessions Occupational Physical Assessment Test (OPAT) Implementation, 9 December 2016.

- 2016 *Secretary of the Army Memorandum*, Subject: Preliminary Approval for Implementation of the Army Occupational Physical Assessment Test, 9 December 2016.
 - 2018 *HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 13 June 2018.
 - 2018 *FRAGO 1, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 13 July 2018.
 - 2019 *FRAGO 2, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 4 February 2019.
 - 2019 *FRAGO 3, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 19 March 2019.
 - 2019 *HQDA EXORD 149-19*, Establish the Army Holistic Health and Fitness (H2F) System, 13 May 2019.
 - 2019 *FRAGO 4, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 31 May 2019.
 - 2019 *FRAGO 5, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 28 June 2019.
 - 2019 *FRAGO 6, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 6 September 2019.
 - 2019 *FRAGO 7, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 4 October 2019.
 - 2019 *FRAGO 8, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 23 December 2019.
 - 2020 *FRAGO 9, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 26 May 2020.
 - 2020 *Army Directive 2020-6*, Army Combat Fitness Test, 15 June 2020.
 - 2020 *FRAGO 10, HQDA EXORD 219-18*, Implementation of the Army Combat Fitness Test, 15 June 2020.
 - 2020 *FRAGO 1, EXORD 149-19*, Establish the Holistic Health and Fitness System, 18 August 2020 (Framework and means by which TRADOC will deliver and govern the Holistic Health and Fitness system).
 - 2021 *FRAGO 2: EXORD 149-19*, Establish the Holistic Health and Fitness System 05 April 2021 (H2F Personnel).
- Annex A: H2F Facility Check.*

Annex B: Procedures for Credentialing Privileges for H2F Personnel.

Annex C: H2F Personnel Team Tracker.

2022 *Army Directive 2022-5, Army Combat Fitness Test, 23 March 2022.*

2022 *HQDA EXORD 153-22, Army Combat Fitness Test (ACFT), 24 March 2022.*

2022 *FRAGO 3: EXORD 149-19, Establish the Holistic Health and Fitness System 16 May 2022 (Governance, Managing the H2F System).*

Annex A – H2F Facilities Check–Final.

Annex B – Revised H2F Personnel Credentialing Procedures.

Annex C – Revised H2F Personal Team Tracker.

Annex D – Revised H2F Implementation Strategy.

Annex E – H2F Integration Team Training Schedule.

Annex F – H2F Deployable Medical Equipment Sets.

Annex G – Garrison H2F Equipment Sets.

Annex H – H2F return on Investment (FOI) Metrics.

2022 *FRAGO 1 to HQDA EXORD 153-22, Army Combat Fitness Test, 28 June 2022.*

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