(Photo courtesy of YPG)

A female fighter from the Syrian-based People's Protection Units (*Yekîneyên Parastina Gel*, or YPG) scans forward of her position looking for Islamic State enemy fighters, 14 July 2015.

Biases of the Incumbents

What If We Were Integrating Men into a Women's Army?

Col. Karl E. Friedl, U.S. Army, Retired

Audie Murphy was too short and too light to join the U.S. Navy or the Marine Corps, but when the Army gave him an opportunity to serve, he went on to become our most decorated soldier. Military entrance standards clearly fail to predict some remarkable military performances. The presence of a Y chromosome has also not held up as a useful discriminator of soldiering, but still we in the United States have not given women an equal opportunity to serve with distinction in combat.[1]

With women in Ranger training, the U.S. Army is moving toward a new, enlightened perspective. It is changing the focus from trying to define what an entire group cannot do and, instead, it is seeking

solutions that would ensure safer and more effective job performance for both men and women. However, the Army still is trying to integrate women into occupations that have been completely designed around men, the incumbents. This approach, if maintained, will deprive the Army of the advantages that gender diversity offers.

The advantages provided by gender diversity, particularly the increased ability to respond to unexpected threats with a wider choice of solutions, will only be advantages if we modernize existing equipment, tactics, techniques, and procedures that optimize the mission performance of the more inclusive group. With this modernization, we will also have the opportunity to consider health and performance issues of men that affect performance of the group.

To fully appreciate what these issues might be, it is instructive to reverse the point of view. Let us imagine we had an Army composed almost entirely of women and we were just now trying to fully integrate men. This mental exercise will evince some overlooked considerations. Of course, this is not a serious suggestion to flip the composition of the Army.

In this hypothetical reversal, what would the problems be, and how does this mental exercise help us recognize issues that we should be addressing for a more effective Army? Based, in part, on how women's issues were being discussed twenty years ago, six problems for men immediately rise to the top of the research priorities[2]:

- body size and logistics
- physiological capabilities
- body fat standards and cardiovascular health risks
- frontal lobe development and self-control
- hormones and mood
- reproductive health

Body Size and Logistics

More than half of men would be excluded from service if they had to fit into equipment and crew compartments designed to accommodate the weight, height, and sitting height of the 95th percentile woman.[3] Design of equipment to fit the typical dimensions of just one sex has many implications for usability of the equipment, from the width of shoulder straps on rucksacks to the vibration characteristics in vehicle crew seat cushions, with consequences for fatigue and back pain.[4] Some performance issues can be addressed by providing equipment that is designed to fit, but maintaining expensive specialized equipment for a wide range of sizes is a challenge for many reasons.

One of those reasons is that obesity in America is not going away, and as the military services relax their fat standards to accommodate recruitment, military men—already larger than women are—will grow even larger. This means that at the upper ranges of size, men will present a greater challenge in jobs with limited crew spaces or specialized fitted equipment. Just how many larger-than-extra-large sizes can we afford for chemical protective suits? A few decades ago, these same arguments about the economy of stocking extra-small sizes kept women from Army jobs that required specialized personal equipment.[5]

(Photo by Megan Locke Simpson, *Fort Campbell Courier*)

Capt. Lindsey Pawlowski helps Spc. Arielle Mailloux adjust her prototype women-specific outer tactical vest 21 August 2012 at Fort Campbell, Kentucky. Both soldiers serve with the 1st Brigade Combat Team's female engagement team, 101st Airborne Division (Air Assault).

Because of their size, men also would place a large burden on the logistics chain because they need 30 percent more calories than the smaller-bodied, and more-efficient women engaged in identical physical activities. For example, men and women participating in

the same physically demanding activity, such as the fifty-four-hour intensive Marine Corps "Crucible," expend energy proportional to their body size, with energy costs averaging 6,400 kilocalories per day (kcal/d) for men, compared to 4,730 kcal/d for women.[6] Accommodating these greater energy requirements is a logistics burden of questionable advantage—unless large men also serve as surrogate pack mules, carrying heavy loads of food for the force's increased consumption.

(Photo by Sgt. Russell Klika, DVIDS)

Female soldiers conduct medical training with simulated casualties 12 May 2011 during an iteration of the Cultural Support Assessment and Selection program. The U.S. Army Special Operations Command's cultural support program prepares all-female soldier teams to serve as enablers supporting Army special operations combat forces in and around secured objective areas.

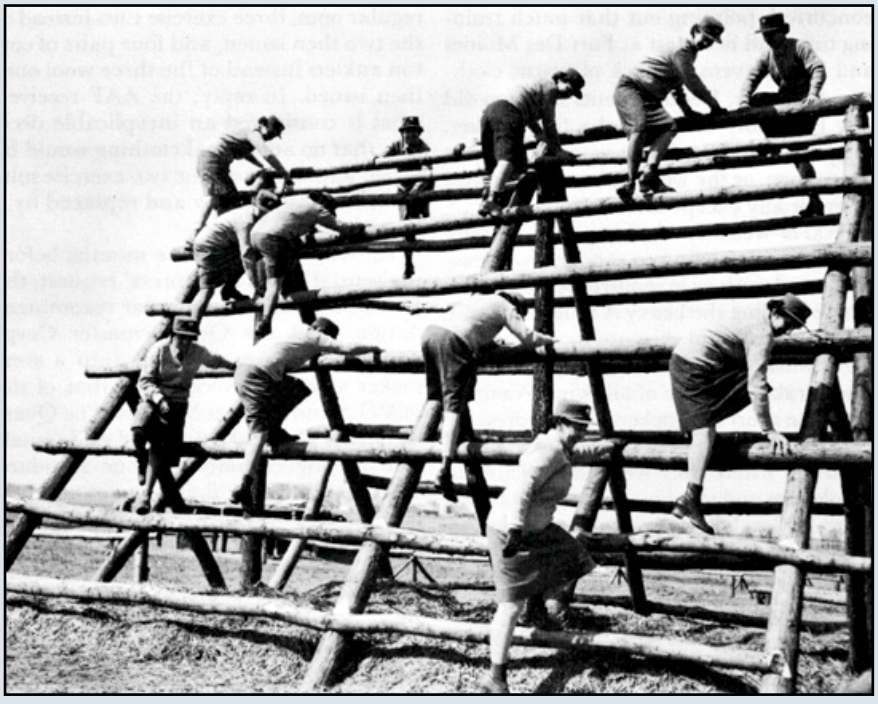
Physiological Capabilities

Conceivably, in the all-women's Army, men could perform as well as women in stressful and prolonged physical activities such as Ranger School if small doses of female sex steroids were administered to increase endurance. Experiments with healthy young men have demonstrated that it is possible to improve their endurance metabolism with short-term estrogen administration.[7] It is well established that in women's bodies, estrogen causes better lipid utilization for energy metabolism while sparing muscle protein and glycogen.[8] This enhances women's ability to function in a high-stress environment and sustain submaximal exercise performance substantially longer than men.[9] Women are better able than men to access lipids for energy in such conditions, and they appear better able to sustain small-unit leadership performance in a week of intensive, continuous operations with no food and no planned sleep.[10]

Women are also at reduced risk for environmental injuries such as heat illness and acute mountain sickness. The better performance of women in hypoxic environments is likely associated with a progesterone effect on chemoreceptor sensitivity and a more appropriate ventilatory response to hypoxia.[11]

It would be difficult, if not impossible, to find out if men, despite their physiological limitations, could succeed in demanding specialties such as Army Rangers or Special Forces. Assumptions that men could not perform as well as women would justify the Army's reluctance to open even training opportunities for men.

Some readers may find it ridiculous to prevent men from participating in special operations, or to assume they could not match women's endurance physiology. But, the women's Army uses other kinds of physical tests than the absolute strength tests designed to favor men (e.g., rope climbs, pull-ups, or 200-pound dummy drags). Men would have trouble competing with women in tests of endurance and stress limits designed around the well-trained special operations woman. What is not well known for men or women is just how much improvement in new recruits can be achieved with scientifically based physical training programs, especially in terms of specialized resistance training and its proper balance with aerobic training.[12] To determine if men's physiology could allow them to perform



(Photo courtesy of the National Archives and Records Administration)
Women's Army Auxiliary Corps (WAAC) volunteer recruits climb an obstacle during physical training in 1943 at an Army Air Forces Training Command base.

In July 1942, 440 women, including forty African-Americans, began WAAC basic officer training at Fort Des Moines, Iowa. Proper clothing was an immediate issue since no uniforms had yet been designed specifically for women, and availability of smaller-size combat fatigues and footwear was limited. Obtaining appropriate duty uniforms in proper sizes remained an issue for the remainder of the war. Basic combat training drills were the same as regular Army training except women were not issued fatigue uniforms or weapons.[26] Press interviews "revealed that the average officer candidate was twenty-five years old, had attended college, and was working as an office administrator, executive secretary, or teacher. One out of every five had enlisted because a male member of her family was in the armed forces and she wanted to help him get home sooner. Several were combat widows of Pearl Harbor and Bataan. One woman enlisted because her son, of fighting age, had been injured in an automobile accident and was unable to serve. Another joined because there were no men of fighting age in her family. All of the women professed a desire to aid their country in time of need by 'releasing a man for combat duty.'"[27]

special operations or combat jobs, longitudinal physical training studies would be needed, but these are difficult and expensive. When some of these kinds of studies finally were conducted to test concepts of strength improvement in women (accompanied by newspaper headlines about the Army attempting to create "female Rambos"), it was astonishing to discover the high trainability of men *and* women.[13]

Body Fat Standards and Cardiovascular Health Risks

The big problem for men is that their bodies store the first thirty kilograms of excess fat intra-abdominally.[14] Women's bodies, by contrast, protect the abdomen and preferentially distribute fat to subcutaneous sites. For men, this intra-abdominal fat accumulation leads to acute as well as long-term health consequences from associated metabolic derangements, and this occurs at lower levels of adiposity than it does for women.[15] Impaired glucose regulation, with a largely undiagnosed but high prevalence in the United States today, also affects a soldier's cognitive performance. The burden of measuring and enforcing fat standards is, arguably, greater with men than with women.

Excess fat in women can be reasonably monitored with a simple body mass index calculation, but this approach is inadequate for assessment in men because their greater variability in lean mass confounds the measurement.[16] This makes it necessary to estimate the percentage of body fat. Estimation of the percentage body fat involves measuring abdominal circumference to capture the dominant site of male pattern fat deposition. As it turns out, this site also conveniently represents the fat deposit most associated with cardiovascular and metabolic health risks, a primary marker of underexercise and overnutrition, and the key offender of military appearance standards. Abdominal fat in men is also a sensitive biomarker of longstanding psychological stress.[17]

These facts indicate that any easing of body fat standards would have a greater impact on the health and performance of men. The Army probably would not have needed to implement body fat standards, as was done in 1983, in an all-women's or mostly women's Army. In the men's Army of 2015, the approach to body composition management measures

readiness of men more effectively than it measures the readiness of women.

Frontal Lobe Development and Self-Control

Young men engage in reckless and antisocial behaviors more often than women do. If more men were introduced into a women's Army, these behaviors could cause numerous problems from misconduct, alcohol and other substance abuse, suicide, and uncontrolled aggression—such as sexual aggression and even misconduct in war. These would be issues of great concern. They likely would be the focus of study to develop behavioral screening techniques for use at recruitment stations and behavioral training for use during initial entry training.[18]

If including men in a women's Army were considered important, brain and behavioral maturation in teen boys could even become the focus of national attention, as the question of suitable future recruits could be construed as a national security issue.[19] Arguments that impulsive, aggressive, or risk-taking behaviors make great warriors need to distinguish between unrepressed response and carefully measured action. Research needs to consider how men and women perform under the demands of a variety of situations. For example, in one experiment of soldiers standing watch, men and women began to fatigue from their continued vigilance activities after about two hours, after which errors increased—with a distinct gender difference in which men were more likely to fire at friend or foe alike.[20]

It may be that high-risk jobs require a personality type that cannot also be a good father and husband, but this has not been established. Regardless, Army culture should have zero tolerance for any kind of sexual misconduct, if only because it has such a huge impact on the health and performance of soldiers and unit readiness. Sexual harassment and sexual assault are not just misconduct; they are a kind of aggression perpetrated almost entirely by men. According to one study, 50 percent of enlisted women have experienced sexual or physical violence before joining the Army.[21] In the all-women's Army, concerns about sexual aggression are virtually nil, and these soldiers should not have to face new threats from their fellow (male) soldiers during military service. Therefore, with the many behavioral problems that likely would accompany admitting men to all Army occupations, it is possible that the Army would bar them from service entirely.

Hormones and Mood

Mood and performance fluctuations associated with variation in sex steroid secretion rates in men are not reliably predictable. Unlike women, men cannot anticipate their own hormonal fluctuations and any accompanying mood effects. Psychological stressors as simple as losing an athletic match, or physiological stressors such as not eating enough, can cause rapid changes to testosterone secretion rates in healthy young men. They may experience unpredictable mood swings associated with their rapidly changing testosterone levels.

For example, a study published in 2000 showed that except during periods of significant refeeding, men's testosterone levels hovered at castration levels during the eight weeks of Ranger training.[22] Men who are testosterone deficient have impaired cognitive functions, including spatial ability and math skills, which are improved with testosterone administration.[23] Mood effects associated with a reduction of testosterone are improved with hormone replacement treatment, a basis for Veterans Affairs hospitals providing hormone replacement treatment for aging males. However, there has been relatively little research on the relationship between short-term changes in male sex hormones and neurocognitive and mood effects, especially in high-stress periods with critical decision making. This relationship could turn out to be as irrelevant as earlier studies that suggested women had statistically better psychomotor performance (i.e., marksmanship ability) during a certain phase of the menstrual cycle.

Reproductive Health

Men's reproductive function has a special vulnerability because of the external testes, as compared to the protected intra-abdominal ovaries of women. Based on data from the Joint Trauma Registry, traumatic injury to the genitals has been a problem for over 1,500 serious casualty survivors since 2005.[24] If protected against their extreme vulnerability to traumatic injury from blast, the male genitals can experience a trade-off due to continuous high heat exposure—from interventions such as the pelvic protection system fielded in 2011.

This chronic heat exposure could compromise male fertility. However, the contribution from the male partner to infertile heterosexual couples is often difficult to identify without comprehensive clinical workups, and few studies have been conducted on infertility in male soldiers.[25] Consequently, the extent to which military activities cause male infertility remains unknown.

Conclusion

We started with a U.S. Army of men, perhaps because they were available and the women were already busy with other work. It is not clear that men would have been allowed into a women's Army, when some of the physiological differences and vulnerabilities of men are considered.

The point is that there are challenges and advantages for both men and women, and we should call attention to some of these male-specific health and performance issues in just the same way we have identified issues for women. Unquestionably, it is time to stop searching for what women cannot do and to focus instead on how to get the best performance out of all soldiers, both men and women. In this manner, we can transform military culture to accept the greater effectiveness that comes with diversity.

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Notes

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(Photo courtesy of Rare Historical Photos website; original photo from the Soviet Archives)

Soviet Army Female Snipers during World War II

In the photograph at left, Soviet Red Army Lt. Nina Alexeyevna Lobkovskaya (second row from top, second from left), commander of a sniper company under the 3rd Shock Army, 1st Belorussian Front, poses with some of the snipers under her command, 4 May 1945.

Lobkovskaya joined the Red Army after her father was killed in combat by the Germans. In 1942, seventeen-year-old Lobkovskaya attended nine months of training in Moscow at the Central Women's School of Sniper Training—which graduated 1,885 women during World War II. Lobkovskaya then was sent to the Kalinin Front to fight. At age twenty, she was promoted to lieutenant and given command of an all-female sniper company that would serve in the Battle of Berlin. By 1945, Lobkovskaya was credited with eighty-nine confirmed kills, and her unit was credited with 775 confirmed kills.

About 800,000 women served in the Red Army during the war, thousands in combat roles such as sniper. Some estimates credit Soviet female snipers with over twelve thousand confirmed kills. Maj. Lyudmila Pavlichenko, nicknamed "Lady Death," was said to have 309 confirmed kills, the unbroken record for female snipers. The Soviets considered women well suited for marksmanship, for reasons that included having excellent aerobic conditioning, tolerating stress and cold, and being "patient, careful, [and] deliberate" when shooting. Maj. Gen. Morozov, father of the Soviet sniper movement, reportedly said, "a woman's hand is more sensitive than is a man's. Therefore, when a woman is shooting, her index finger pulls the trigger more smoothly and purposefully."[28]