



Center for the Intrepid Program Trains Wounded Soldiers to Run Again

By Meghan Portillo

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Master Sgt. Tim Crusing dug his toes into the carpet and took off running down the hallway, a smile across his face.

He had just met with prosthetist Ryan Blanck for a fitting of his Intrepid Dynamic Exoskeletal Orthosis, or IDEO, a device used by Soldiers who have trouble walking or standing because of lower leg injuries. Crusing is not an amputee, but the IDEO he wears resembles a prosthetic. It is worn over his injured leg, allowing him to run once more.

Crusing laughed. “This feels great. Can I get one for my good leg?”

After suffering a severe wound to his leg during training and then breaking it while hiking years later,

doctors had told Crusing they might need to fuse his ankle, which would have taken away his range of motion. But Crusing refused to give up hope and opted for a less aggressive, cutting-edge approach. His doctor, who had completed his residency at the Center for the Intrepid (CFI), part of the Brooke Army Medical Center at Fort Sam Houston, Texas, sent Crusing there for an evaluation. Crusing was thrilled to learn he was approved as a candidate for the center’s Return to Run Clinical Pathway.

Whether Soldiers want to get back to the fight or simply want to be able to chase their kids around the backyard, the Return to Run program changes their lives. For now, the IDEO is only available at the CFI. As more become aware of what the device can do, the



Prosthetist Ryan Blanck examines the fit of Master Sgt. Tim Crusing's Intrepid Dynamic Exoskeletal Orthosis and knee brace June 17, 2013, at the Center for the Intrepid at Fort Sam Houston, Texas. Blanck created the IDEO to help limb-salvage patients regain their ability to run. (Photo by Meghan Portillo)

program has remained at capacity, and several new participants join each week to learn to use the IDEO and train their muscles to run again.

“Don’t think that this is just for someone who has had a traumatic injury like a limb salvage from a blast injury,” said Johnny Owens, a physical therapist and director of limb salvage rehabilitation at the CFI. “Now we’re really getting a lot more who have bad arthritis or an ankle sprain from a jump and just can’t run any more. If there is any lower leg pain or loss of leg power, that individual may be a candidate for the program.”

The start of something new

In 2008, Owens and Lt. Col. Joseph Hsu, an orthopedic surgeon at the U.S. Army Institute of Surgical Research, noticed that though new surgical techniques were allowing many wounded warriors to keep their

legs, the Soldiers often returned years later requesting amputations. Soldiers expressed disappointment because of the limitations imposed on them by their injuries, and envied the amputees who were able to run, jump, climb, participate in active sports and remain on active duty. “They wanted to amputate because of their inability to run,” Owens said. “There were a lot of reasons why they were not able to run — they didn’t have power in their legs from their injury, the joint was too destroyed and they had a lot of pain, or they didn’t have the range of motion they needed at the foot and ankle. We needed a solution.”

Hsu and Owens shared their ideas with Ryan Blanck, a prosthetist at the CFI. Using inspiration from an amputee’s running prosthetic, Blanck created the IDEO, an energy-storing device that is worn over the injured leg and supports the foot and ankle.

The device can fit into boots or tennis shoes, with a foot and ankle plate connected by carbon-fiber rods to a cuff below the knee. When the foot hits the ground, the IDEO cycles the energy and delivers it back to propel the individual forward.

Patients’ success with the device increased dramatically with intense rehabilitation and instruction on how to use it correctly, so Owens integrated use of the IDEO into the CFI’s existing rehabilitation program to create the Return to Run Clinical Pathway.

A life-changing program

Every IDEO is custom-made. Initially, each Soldier is evaluated by either Blanck or John Ferguson, director of prosthetics at the CFI. Using a mold of the Soldier’s leg, they create a temporary, plastic version of the device. The Soldier wears the plastic IDEO to ascertain its effectiveness, and is given a physical therapy evaluation by Owens. Together the team decides if an individual is a good candidate for the program. Crusing, whose injuries made him an ideal fit for the program, recalled the liberation he felt the first time he tried on the IDEO.

“Just putting on that fragile plastic mold of the IDEO, it was the first pain-free step that I had taken in 12 years,”

he said. “I almost broke down. ... I have pain every day, but when I’m wearing it, it immediately takes it away.”

Command Sgt. Maj. Rory L. Malloy, commandant of the U.S. Army Sergeants Major Academy at Fort Bliss, Texas, had a similar experience. During a training exercise June 16, 1995, Malloy stepped on a tree branch while carrying a fellow Soldier, breaking his own leg in seven places. Luckily, a surgeon was able to save Malloy’s leg, and he remained on active duty. But over the years, he developed debilitating arthritis in his ankle.

“I told my surgeon, Dr. Justin Orr in El Paso, ‘Either cut my leg off or fix it. I can’t handle the pain anymore,’” Malloy said. “That’s how bad it got.

“The only options were to live with the pain, amputate the leg or cut the ankle out and do a fusion — put a few cadaver parts in. So that’s what I went with, and all of the expectations that I had for the surgery were exceeded by far. Dr. Orr is just a phenomenal surgeon.”

Malloy said though the surgery relieved more than 80 percent of his pain, he would not be able to walk normally and would never be able to run again. However, the IDEO changed all of that. Eighteen years after his injury, he is learning how to run again and is 100-percent pain-free.

“Before, I always had to think about what I couldn’t do,” Malloy said. “My daughter would say, ‘Hey dad, let’s go out and shoot some hoops,’ or ‘Let’s go for a hike.’ Well, I couldn’t. When my wife and I would go to the mall, we always had to figure out where we could park, what doors we could go into that had benches nearby for me to rest my foot.

“Now, I go out and I walk all day without any pain. I’m able to ride a bicycle now; we are going rock climbing this Friday. I’m able to throw a rucksack on and do all of the military stuff I used to do. They have given me my life back.”



Prosthetic orthotic technician Megan Wright, left, constructs a hip brace, while Richard Perez, also a prosthetic orthotic technician at the CFI, works on an IDEO. (Photo by Meghan Portillo)



Joseph Mallett, right, a physical therapy assistant, shows Staff Sgt. Krish Lalu how to correctly perform an exercise as part of the Return to Run Clinical Pathway program June 17, 2013, at the Center for the Intrepid at Fort Sam Houston, Texas. On each leg, Lalu wears an IDEO, a device developed at the CFI to help wounded warriors run again. (Photo by Meghan Portillo)

Rehabilitation: Pushing the limit

Four to six weeks after Soldiers' initial trip to the CFI, a carbon and fiberglass version of the device is made, and they return to the center for about a month of physical therapy and training. Malloy emphasized that this period of instruction and rehab is as important as the IDEO itself.

"It has taken months for me to get this far, and it may be even another year before I can run 2 miles," he said. "The instruction Soldiers receive through the Return to Run program sets them up for success. Without that time and training, they will not be able to reap the benefits of the IDEO."

As muscles change and grow, the IDEO needs to be altered. During participants' time in the program, it is continuously adjusted to provide a comfortable fit.

"As you go through the training, it's like a prosthetic — you have to tweak it," Owens said. "At the end of the training, we hope to have a perfectly fitting device."

Soldiers work hard during training to push themselves to their limits, because if something goes wrong with the IDEO, therapists hope it will happen while they are at the center so corrections can be made.

"Your body changes, and you don't really know what you need until you try it out," Crusing said. "That's one of the reasons the Return to Run program is so important. You have to come here and use it in a pretty vigorous fashion in order to figure out what's going to work for you. Plus, if you adjust anything, it

will affect other things. With each adjustment, it gets better."

Training begins with simple but clear instruction on how to step with the device; Soldiers are taught how to use their hips, to keep their weight forward and to not turn out their feet. As they progress, they begin to exercise harder, jumping from side to side and strengthening their legs with weight training. Wearing the IDEO, they work the muscles they need to run.

Crusing and Staff Sgt. Krish Lalu were among the Soldiers training in the program on a hot July afternoon. Sweat ran down the Soldiers' foreheads as therapists led participants

in exercises to challenge their bodies and the IDEO. They hopped over obstacles, participated in boxing drills and sprinted as fast as they were able, planting their feet firmly in the grass as they turned sharply around the trees.

Lalu, who had lost 85 to 90 percent of both shin muscles due to a late diagnosis of compartment syndrome, said he was no longer on medication, and no longer in pain.

"Right now, only my pride hurts," he said after finishing the outside group exercises. "It's so hot out there, and some of those exercises are quite challenging."

Participants' levels of fitness and ability varied widely. Some had injuries more serious than others, but the looks of determination made it clear that each was there for a purpose — they were there to run.

Because Lalu lacks strength in his shin muscles, his toes flop to the ground first when he walks. The IDEO forces him into a normal gait, and he has now been cleared to return to a conventional unit. He reports in September to the 82nd Combat Aviation Brigade at Fort Bragg, N.C.

"I'm looking forward to it," Lalu said. "It will be a miracle if I can work myself up and go to jump school. That gives me something to strive for. Jumping won't be a problem, but I need to work on my running. That's the only thing that scares me — being able to keep up with the running that is required at Airborne school. If I can overcome that hurdle, then I should breeze through it."



Lalu, left, and Crusing wear IDEOs as they exercise the muscles they need to run during the Return to Run program in June 2013 at the CFI. (Photo by Meghan Portillo)

Joseph Mallett, a physical therapy assistant and contractor at the CFI who is also a staff sergeant in the Army Reserve, explained that the program concentrates on running as the basis for other activities.

“Running is pretty much the starting point for any activity, whether it is Airborne, air assault, or whether they want to do triathlons,” Mallett said. “It’s inspiring. They are able to use this as a platform.”

Mallett said many in the program haven’t run in years. They are encouraged by the progress of others in the program or of the amputees they see at the CFI, and they make new goals for themselves. Mallett said he often sees participants reach levels of fitness far beyond what they had achieved before their injury.

“They go on a lot of trips such as skiing, hiking, skydiving or kayaking,” he said. “They push themselves to reach new goals, and having someone else there who has a similar injury is more inspiration. They drive a little bit harder together.”

Program participants return to the CFI several weeks after finishing their training to pick up a backup IDEO as well as a thinner, lightweight version that can be worn in dress shoes. If they feel they need more practice and if their unit approves, Soldiers may stay a few extra weeks for more training. Once they leave with their backup device, they usually only return to the CFI for replacements or adjustments.

Back in action

Many factors influence a wounded Soldier’s decision to remain in or leave the military, but the ability to run is often the deciding factor for whether he or she is allowed to stay on active duty or considered for medical discharge, Owens said.

More than 450 Soldiers have received IDEOs and participated in the Return to Run Clinical Pathway since the program’s inception. Of the first 146 who went through the program, Owens said 51 percent returned to active duty.

Many of those who have returned to their units have deployed several times, and they bring back a wealth of information that helps the CFI team improve the IDEO.

“Anytime one of our guys is deployed, we try and get a breakdown of how things went,” Owens said. “One thing a lot of them said was that with fast-rope operations, they felt like their knee might buckle. So we built a knee portion specifically for fast roping and jumping. Some said the device was busting through their shoes, so we are working with New Balance to develop a new shoe design — more robust to hold up to it. What they tell us after these deployments is huge, because it’s all brand new.”

‘Give Soldiers the opportunity to heal’

While Malloy was training at the CFI, he saw a young recruiter come into the program with only a week to get the IDEO and learn how to use it. Malloy said he was enraged when the recruiter’s commander called and said,



The IDEO’s footplate and ankle brace are connected by carbon-fiber rods to a cuff below the knee. When the foot hits the ground, the IDEO cycles the energy and delivers it back to propel the individual forward. (Photo by Meghan Portillo)



Lalu, right, practices boxing drills with an instructor during the Return to Run program June 17, 2013, at the CFI. The drills teach program participants how to properly use their hips while wearing the IDEO. (Photo by Meghan Portillo)

“It must be nice just to get to do PT every day,” Malloy said he called that commander and had a chat with him.

“Participating in the Return to Run program for at least 3 to 4 weeks is critical,” he said, “because you get the strength back, you understand the device, you learn how to use it so it doesn’t become something that just sits on a bookshelf when you leave here.

“A lot of senior leaders in our Army will talk a good game, but it’s much harder to step up to the plate and actually do it. If you have someone who is injured, embrace the situation and give them the opportunity to heal. In my case,

my senior leaders have allowed me to get the surgery and have time for recovery and to get the IDEO. Not all Soldiers are afforded that opportunity, because some leaders are being very narrow-minded.”

Malloy emphasized that if leaders give their Soldiers the time and the tools they need to recover, in return they will get back a stronger Soldier who can actually perform. Without that support, Soldiers will be limited in what they can do for the Army.

“I’m very blessed that I have Sgt. Maj. of the Army Raymond Chandler, John Sparks and other folks who have supported me in getting through this,” Malloy said. “SMA Chandler is a great example of the leadership we need all the way across our force. He could have easily said, ‘Hey, you’re broken; you are going to be out for a month getting the surgery and another month getting the IDEO. I need a commandant full-time, so I’m going to have to replace you.’ He could have done that, but he didn’t. Instead, he encouraged me to come down here to the CFI and get myself fixed so that I can get back into the fight and continue to serve.” ■

Could this be for me?

If you think you might be a good candidate and could benefit from the Return to Run Clinical Pathway, contact your primary doctor for a referral. For more information about the program, contact the CFI at 210-916-6100. To visit the BAMC website for more information about the CFI, [click here.](#) →

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