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Walter Reed patients receive first commercially available bionic foot 'Powerfoot' designed to restore lost muscle function in amputees

WASHINGTON, D.C. – Walter Reed Army Medical Center has begun fitting wounded service members with a new lower leg system called the Powerfoot BiOM. The BiOM, developed by iWalk, is the first bionic lower leg system that can restore lost function of the lower limb amputee patients.

The bionic technology lower leg system replicates the action of the foot, ankle and calf muscles that work together to assist the individual's forward motion while ambulating. While a traditional prosthesis can store energy and then return it, the bionic lower leg system actually produces as much energy as the anatomical lower leg.

Preliminary results from a patient testing study conducted at San Antonio's Brooke Army Medical Center show that when a unilateral below the knee amputee is walking at comfortable speeds using the prosthesis, the powered ankle matches the function of the uninjured side.

"This is very promising technology. Early feedback from our service members indicates that the BiOM performs much more like their anatomical foot and ankle," said Army Col. Paul Pasquina, M.D., chief, Department of Orthopaedics & Rehabilitation, Walter Reed National Military Medical Center. It is hopeful that the introduction of power to a prosthesis will not only help improve mobility, but also help to prevent some of the long-term complications that individuals with lower limb loss face."

The Department of Defense and Department Veterans Affairs provided grant funding to support research and development of the new Powerfoot BiOM. Walter Reed physicians, therapists and technicians also provided feedback in the development of the device to ensure that it met the needs of its mobile, athletic patients.

About Walter Reed Army Medical Center (www.wramc.army.mil)

*The Walter Reed Army Medical Center is the hub of the Walter Reed Health Care System and provides comprehensive health care to more than 150,000 Service Members, retirees and their families. Walter Reed Army Medical Center is the largest Department of Defense military hospital serving the military community from the Washington area and around the world. **Follow Walter Reed on Twitter at www.twitter.com/walterreedarmy or become a Walter Reed fan at www.facebook.com/WalterReedArmy.***

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Some Facts About Powerfoot BiOM

Why is PowerFoot BiOM unique?

Traditional carbon fiber passive prosthetic feet are meant to return up to 80% of the energy stored in the carbon material. The PowerFoot BiOM actually produces energy enabling the user to feel less tired when using the system. PowerFoot BiOM reacts in real time so the user does not have to wait for the prosthesis to respond, thus returning the ankle to near human function and react immediately to the terrain and the environment.

How does it work?

The PowerFoot BiOM uses a combination of processors, sensors, motors, and springs which provide the user with powered push off and increased range of motion with each step.

What are the unique functions of the PowerFoot BiOM?

Powered Plantar flexion results in near metabolic normalization and faster walking speeds. Real time terrain adaptation adjusts to changes in speed and terrain immediately actually replacing energy instead of storing it as in a standard prosthetic foot ankle system. Relaxed mode allows the foot to position normally when sitting and standing applying less pressure on the sound side of the body.

What do users say are the benefits of the PowerFoot BiOM over their current prosthesis?

The PowerFoot BiOM is the first lower leg system to be clinically shown to do what patients are feeling. Which means then they report less fatigue, increase in daily activities, fewer pressures inside of the socket, and more stability on uneven terrain. Preliminary results in several studies indicate there is science & technology to support their claims.

Who is the ideal PowerFoot BiOM candidate?

The Power Foot BiOM is currently available for transtibial (below knee) amputees who weigh between 190 to 250lbs.

How much does it weigh?

The entire system weighs 4.5 lbs. Though this is heavier than the traditional passive prosthetic foot, most users report the perceived weight is negated by the powered momentum the BiOM creates on a well suspended socket.

Can it get it wet?

Users should avoid allowing water and other debris into the ankle as it could damage the electronics.

Does it require batteries?

Yes, the Power Foot BiOM uses a lithium polymer battery that must be charged on a daily basis