

**Special  
Reprint  
Edition**

**USA  
TODAY**

NO. 1 IN THE USA

As seen in



**News**

December 27, 2009

# Bioness device helps former Navy man walk after stroke

By Lindsey Anderson  
USA TODAY

Oct. 16, 2006, began like any other day for former Navy officer Steven Peace, who has served around the world, including three tours in the Persian Gulf from 2001 to 2003. Peace, now 35, went to work, had dinner with friends and watched television in his San Diego apartment before bed.

But when he stood up to walk to his bedroom, he had a stroke.

"Bam! It's like it hit me all of a sudden, and I didn't know what it was," Peace says.

He lay on the floor for 14 hours. A Navy friend called him and pounded on the locked apartment door to no avail, then called an ambulance.

The cause of Peace's stroke is still unknown. He spent Halloween, Thanksgiving and Christmas that year in Scripps Memorial Hospital Encinitas in California with no use of his right side. After months in outpatient care at Sharp Memorial Hospital in San Diego, he could walk only with a hard-plastic leg brace and a cane.

Now, with the help of a cane and an electronic device called the NESS L300, Peace competes in triathlons and is training to bike for the U.S. Paralympic Military Program.

The stroke left him with about 10% to 15% use of his right arm and 60% of his right leg. He has occasional difficulties transforming thoughts into words and has "foot drop," a condition in which the foot remains pointed toward the ground, not parallel, when he picks up his right leg to walk. The NESS L300, which is manufactured by Bioness, helps correct

the condition through electrical stimulation.

The device consists of three parts: a blood pressure-like cuff that wraps around the leg just below the knee, a heel switch worn in the shoe that senses the foot's movement, and a hand controller worn around the neck.

## Similar devices on the market

It is not for all patients with foot drop, only patients whose foot drop was caused by disease or injury to the brain or spinal cord and who can walk relatively well with the help of a cane or walker.

It will not help patients who have nerve problems or patients who have needed a wheelchair for a long period of time, says Michael O'Dell, chief of clinical services, rehabilitation medicine at New York-Presbyterian Hospital-Weill Cornell Medical Center and professor of clinical rehabilitation medicine at the Weill Cornell College in Manhattan.

The NESS L300 costs about \$6,200, says Peace's orthotist, Brodie Houser of SCOPe Orthotics and Prosthetics. Similar devices are on the market, including the WalkAide by Innovative Neurotronics and the ODFS by Ackofin Inc. in Great Britain. Like the L300, the ODFS uses pressure plates in the heel of the shoe to determine when to stimulate the foot. The WalkAide bases stimulation on the angle of the leg.

## Hidden from view

Before electronic devices, plastic braces were used to help patients walk. Braces aid patients' feet in clearing the

ground when they walk, but "they're not too pretty," O'Dell says.

Devices such as the NESS L300 can be hidden under clothing. They are particularly appealing for women, O'Dell says, because the old plastic braces severely limited the shoes women could wear.

"It's amazing what technology can do," Peace says. "My quality of life is different because unless you actually know I'm wearing this, you don't even know I have it on."

There is also a therapeutic advantage to the NESS L300, O'Dell says. When patients are sitting, watching TV at home for example, they can turn on "training mode" to work the leg muscles. The device helps stretch the tendon behind the calf by eliciting a foot-flexing response.

"There is pretty significant evidence that the more you use the muscle, the more it's likely to get better," O'Dell says.

In September, with the help of a cane and the NESS L300, Peace competed in a 26-mile triathlon in Malibu, Calif. In October, he biked 56 miles in a San Diego triathlon.

In a video from the Mission Bay Triathlon in October, he can be seen walking slowly and steadily, leaning on a cane and on the arm of an ER nurse from Sharp Memorial Hospital. And he finishes the race.

"It felt wonderful," Peace says. "Tears in my eyes welled up, and I couldn't believe I was actually finishing it. Because before I got an injury I would never have dreamed of doing a triathlon and now, three years after having a stroke, here I am looking for more triathlons."