



Consumer Alert: Two new devices for foot drop

by Marcella Durand

In MS, difficulty lifting the foot—or foot drop, as it's often referred to—is caused by damage to the central nervous system, which prevents dorsiflexion, or the ability of the ankle and toes to turn upward. People with foot drop often try to adapt by using different gaits, which in turn may cause poor balance, pain and fatigue.

Although many MS rehabilitation specialists believe physical therapy is the best first treatment for foot drop, a common solution is a brace, usually made of plastic, called an “ankle foot orthosis,” or AFO. The brace is worn around the lower leg and foot. It supports the ankle and holds both foot and ankle in a flexed position.

Two new devices—the WalkAide and NESS L300—are now on the market to alleviate foot drop. Seen as easier to wear and more convenient by many users, they are also more expensive. Currently, they are not covered by most insurance, and have not been extensively studied in people with MS.

How they work

The WalkAide and NESS L300 systems use **functional electrical stimulation** (FES), sending low-level electrical impulses to the fibular (sometimes called peroneal) nerve, which signals leg muscles to lift the foot. The L300

uses a gait sensor that attaches to a shoe and communicates wirelessly with the stimulator; it also features a remote control that can be used to control the level of stimulation. The WalkAide uses a tilt sensor built into the stimulator that tracks the angle and speed of the leg.

For the devices to work, the nerve must be capable of sending a signal, and muscles capable of receiving it. In MS, a variety of complications may keep the device from working.

“In MS, foot drop is rarely limited to the muscle that picks the foot up,” said Susan Bennett, PT, EdD, NCS, MSCS, a clinical associate professor of rehabilitation and assistant professor of neurology at the University at Buffalo. “Some people with MS may not have the ability to use their hamstrings or hip muscles to bend the knee and/or hip, and, despite the FES activating the muscle that

picks the foot up, they will still have an abnormal gait pattern.”

What the studies show

The scientific studies on FES and foot drop have focused primarily on people who have had a stroke. More research on FES and people with MS is needed, especially, as Dr. Bennett points out, “to help us define who would most benefit.”

The preliminary results of a study conducted at the University of Alberta and funded by the Canadian Institutes for Health

Research and the Christopher Reeve Foundation were recently presented at the 2007 conference of the International FES Society. The study looked

at over 70 people with a variety of neurological disorders—nearly half of whom had MS—who used the WalkAide for three to 12 months.

According to Dr. Richard Stein, who invented the WalkAide, the results suggest that “people with MS do show an improvement in walking speed—the increases were almost as large in the progressive group as in the non-progressive group.” However, he cautioned, “the foot-drop stimulator is not a cure, but it can extend the period that people can remain ambulatory in their own home.”

Dr. Nicholas LaRocca, vice

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president, Health Care Delivery and Policy Research for the Society, commented, “One of the striking aspects of this study were the carryover effects. In this study, the device seems to be doing more than just altering gait in situ. It also ‘retrains’ gait to some extent. If confirmed, this would be important since it means that use of the device is akin to an exercise program, i.e., some permanent or semi-permanent physiological changes for the better are occurring.”

George H. Kraft, MD, MS, Alford Professor of MS Research at the University of Washington in Seattle, recently completed a small comparison study of FES devices and AFOs. “FES devices might be the ideal solution for people with mild foot elevation weakness,” he told **Momentum**, “but people who have been using plastic AFOs for a period of time who then switch to an FES device generally feel unstable without the rigidity of the plastic brace.”

The bottom line

The WalkAide costs approximately \$4,500 and the NESS L300 costs about \$5,900. Both companies say they are working on getting Medicare coverage, but couldn’t provide a timeline. Only in isolated cases have people been reimbursed by private insurance companies.

Keith McBride, MPT, DPT, director of Clinical Support and Education at Bioness, which manufactures the NESS L300,



The WalkAide (above) and NESS L300 (right).

suggests customers sign on for a one-month trial, which can be renewed for up to four months. “We recommend it prior to deciding to purchase the device,” he said.

Put it on and go? No.

“You’re not just going to put the FES device on and walk better,” Dr. Bennett explained. “When used **in conjunction** with other therapeutic interventions and with the input of a physical therapist, FES can be effective.”

Bioness works through partner facilities, where people are fitted by a physical therapist or orthotist and receive gait training and therapy with the L300 under the aegis of a physical therapy clinic. WalkAides are fitted and individually programmed by an orthotist, who also provides follow-up care. In addition, free evaluations and trials are available without a prescription through an orthotist.

Maureen Shanahan, who began using a WalkAide in 2006, wound up seeing a physical therapist for gait retraining. “Fixing my drop foot unmasked

other issues—ones I wasn’t aware of before because I was tripping over my foot,” she said.

Both devices need to be fitted professionally and, as they work through electrodes placed on the skin, placement is an issue. According to Dr. Kraft, a number of people with MS are unable to tolerate FES devices because of an MS-related pain called paresthesia. The electrodes should never be used on broken skin and can deliver

an unpleasant jolt if they are mistakenly placed on a bone. A trained physical therapist or orthotist can find the right places for attachment.

The plus side

For Shanahan, the WalkAide is one tool of many. “I have a walker, a forearm brace, a scooter, and a WalkAide, and I use each one in different situations,” she said.

She uses the WalkAide to get cardiovascular exercise. “Normally I can’t generate enough speed to get my heart rate up, so it allows me to do that.” The WalkAide also gave her something else.

“The nicest thing is to walk on the beach,” she said. “It’s wonderful to go barefoot and feel all those little muscles in my foot helping me balance.”

Marcella Durand is an associate editor of **Momentum**.