

Gait or Walking Problems

THE BASIC FACTS

MULTIPLE SCLEROSIS



Many people with MS will experience difficulty with walking, which is also called ambulation. The term “gait” refers more specifically to the manner or pattern of walking (for example “unsteady gait”). Studies suggest that half the people with relapsing-remitting MS will need some assistance with walking within 15 years of their diagnosis.

Gait problems in MS are caused by a variety of factors. MS frequently causes fatigue, which can limit walking endurance. MS damage to nerve pathways may hamper

coordination and/or cause weakness, poor balance, numbness, or spasticity (abnormal increase in muscle tone). Visual or cognitive problems can also interfere with walking. Concerns about falling and appearing impaired in public cause problems too, sometimes leading to social isolation.

“Gait problems in MS are all over the map,” observes Sue Kushner, a physical therapist at Slippery Rock University in Pennsylvania, with long experience in multiple sclerosis. “This makes walking problems difficult to address.” Difficult, but not impossible.

Speak Up

If you are having difficulty walking or keeping your balance, if fatigue turns your legs to jelly, don't despair — speak up. Many walking problems can be significantly improved with physical therapy, exercise, the right assistive device, or medication, including the newly-approved Ampyra® [dalfampridine, see below]. You are not “giving in” when you seek treatment. Untreated walking problems can lead to emotional distress, injuries, added fatigue, and suspicion by other people that your abnormal gait stems from alcohol or drugs.

Talking with your primary healthcare provider about getting an accurate assessment of your gait pattern is an important step toward maintaining and enhancing your mobility.

Diagnosis

Your healthcare provider will probably refer you to a physical therapist (PT) for this assessment. In order to analyze the biomechanics of your gait, a PT may ask you to walk across a room or down a hallway in order to observe coordination, positioning of feet, posture, and momentum. You may be asked to provide your medical history. You may also be asked to perform tests that measure muscle strength, fatigue levels, range of motion, spasticity, and balance. Some PTs use video cameras to record their observations. Computerized devices such as a mat or a platform with sensors can also be used to quantify gait and balance. The good news is that gait evaluation is not painful or invasive.

Ampyra®

Ampyra® (dalfampridine, formerly called fampridine SR) was approved by the U.S. Food and Drug Administration (FDA) in January 2010 to improve walking in people with MS. This oral medication contains a sustained-release formula of 4-aminopyridine, which blocks tiny pores (or potassium channels) on the surface of nerve fibers. Blocking potassium channels may improve the conduction of nerve signals in nerve fibers whose insulating myelin coating has been damaged by MS. In the clinical trials of Ampyra, a significantly greater proportion of people on treatment had a consistent improvement in walking speed compared to those who took placebo. And those who experienced increased walking speed also demonstrated improvement in leg strength. Ampyra can be used by people with all forms of MS, along with whatever disease-modifying therapy they are taking. This medication should not be used by anyone with a history of seizures or moderate to severe renal disease. For additional information, contact the Ampyra support line at 1-888-881-1918.

Once the factors involved in your particular gait problems are identified, you, your PT and your healthcare provider will work together on a plan of action.

Your insurance may have tight limits on reimbursement for PT. Review your coverage to avoid nasty surprises. Your physician and the National MS Society may be able to help you battle for the coverage required to address your problems. Or you may need to pay physical therapy costs yourself. It is wise to be frank and upfront with your PT about cost, payment plans, and the benefits you can expect from therapy.

Weakness

Muscle weakness clearly interferes with walking. Damage to neurons (nerve cells) can affect a particular muscle group or groups so they no longer respond to the nervous system input that normally guides the act of walking. The result may be legs that tire quickly or feel wobbly.

Foot drop is a specific kind of weakness that results from poor nerve conduction to the muscles used to flex the ankle. A person with foot drop finds it difficult to lift one or both feet fully while walking, making it difficult to manage curbs, stairs, and uneven surfaces. The right assistive device is often the most effective strategy. A brace called an ankle-foot orthotic (AFO) is often prescribed. AFOs are lightweight and designed to be hidden by socks or pant legs.

Two devices — the WalkAide and NESS L300 — are available to assist in the management of foot drop. They work by sending low level electrical impulses to the peroneal (sometimes called fibular) nerve, which signals leg muscles to lift the foot. Although many users find these devices easier to wear and more convenient than AFOs, not everyone with MS experiences positive results with them. For the devices to work, the peroneal nerve must be capable of sending a signal and the muscles must be capable of receiving it. In MS, a variety of complications may prevent this from happening. You should be evaluated by a PT to determine if the WalkAide or NESS L300 would work for you.

These devices are also a great deal more expensive than AFOs — about \$5,000-\$6,000 — and typically not covered by insurance.

Sue Kushner points out that, “Muscle weakness in MS isn’t the same as the couch-potato syndrome that can be addressed by strength training.” In fact, the wrong kind of exercise will do nothing to improve walking and can lead to fatigue and increased weakness.

Dr. Francois Bethoux of the Mellen Center for MS Treatment and Research in Cleveland is a strong advocate of exercise for people with MS. However, he cautions that most people with MS “cannot tolerate the levels of exercise recommended for healthy individuals. Intense exercise can cause a temporary increase in MS symptoms,” if it raises a person’s core body temperature or induces muscle fatigue, he says. “Similarly, what is good exercise for one

person with MS may not be good for another.” Experience shows that even a small amount of exercise helps, as long as it is repeated at least 5 days per week. Working with an experienced PT, people can learn appropriate exercises as well as ways to compensate for lost strength.

Muscle weakness that interferes with walking is not the same thing as MS fatigue, which is a feeling of lack of energy. But MS fatigue can make walking problems worse. Since fatigue is so common in MS, an assessment will include exploration of these problems too — and you may be advised to use a mobility aid to manage fatigue and muscle weakness.

But, you say, you want to improve your walking, not give up on it! Using an aid is not an all or nothing choice. Many people continue to walk, and to work on improving their walking, while using an aid. They find that assistive devices allow them to get where they want to go without exhausting all their energy reserves, and without being at risk of falling. Marie E., of Rhode Island, who lives with progressive MS, got a fold-up wheelchair for outings that involve long distances. Using it lets her focus on shopping or seeing the sights instead of concentrating all her energy on not tripping.

Balance

Impaired balance not only makes walking difficult, it can result in falls and injuries. A loss of balance and coordination can produce a swaying, uneven gait — called ataxia — that is often mistaken for drunkenness.

“Balance is a complex system,” observes Susan E. Bennett, PT, DPT, NCS, Clinical Associate Professor at the University at Buffalo. “When it doesn’t work effectively, a comprehensive examination by a physical therapist should be performed. The examination includes evaluation of muscle strength, spasticity or stiffness of the muscles, and the specialized balance system consisting of vision, inner ear and sensation in the legs. It is important to identify the underlying problems so the best rehabilitation can be initiated.”

“Therapeutic strategies that may help balance deficits include eye muscle exercises, movements of the head activating the inner ear, as well as “core” strengthening, stretching and strengthening the legs. Aerobic activity, stretching, and strengthening specific muscles can address some of the “secondary” reasons for balance difficulties,” says Bennett.

“A cane or walker may be prescribed for safe and independent walking. Utilizing an assistive device is much safer than reaching for the walls or furniture,” Bennett notes.

Installing grab bars around the home can also make transfers easier and daily activities safer. Getting rid of clutter and area rugs minimizes the risk of tripping and falling.

Numbness

Loss of feeling or tingling in the legs or feet indicate that the brain is not receiving accurate sensory input. As Marie E. describes it, “It’s like I’m wearing thick heavy boots so I can’t feel where I’m stepping.”

Solutions may involve using a cane, walker, or Canadian crutch (which has an arm cuff and grab handle). The mobility aid relays missing information to the brain by carrying sensations from the ground through the device into the hand and arm. Visual cues may also work. People learn to watch where their feet are falling to compensate for the lack of sensation.

Marie likes the convenience of collapsible canes, which can be easily stowed in a bag or under a chair.

Spasticity

Spasticity is abnormal muscle tone or tightness of muscles, often accompanied by muscle spasms. Spasticity can be uncomfortable, and interferes with movement.

As a person moves, the nervous system sends streams of signals to muscle groups to expand or contract in sequence. MS damage can interfere with these coordinated events, making certain muscles contract when they shouldn’t. Spasticity can cause uneven gait. In addition, muscles in spastic limbs may atrophy from lack of use, and joints may develop contractures (freezing in one painful position) if they remain rigid over time. Loss of range of motion can make it difficult to perform simple daily activities. Muscle spasms can be painful, and can interfere with sleep at night.

The right mix of stretching, exercise and medications can control spasticity, improve comfort and function, and prevent the serious complications described above. A PT can recommend individualized and safe techniques for stretching and exercising, and appropriate assistive devices. Baclofen and tizanidine are the medications most often used to treat spasticity. Other treatments such as botulinum toxin (Botox®) and intrathecal baclofen (baclofen pump) can be helpful in some patients. Controlling spasticity is a long-term effort. Good management calls for a team approach, with the individual, the physician or nurse, and the PT all contributing to the treatment outcome.

Sometimes spasticity actually helps preserve function. For example, the increased tone allows some people who have weak legs to walk or stand more easily. However, Dr. Mindy

Aisen, Chief Medical Officer at Rancho Los Amigos National Rehabilitation Center (Rancho), which is part of the Los Angeles County Department of Health Services, warns against relying on spasticity too much. “Excessive stress on joints or muscles can lead to unnecessary permanent damage,” she says.

Fear of Falling

It is embarrassing as well as frightening to fall down in public. People have been known to stop going out at all to avoid the possibility of a fall. But staying put at home is not much of a solution. In fact it may have unintended consequences.

Kathy Dieruf, assistant professor in the Physical Therapy Program at the University of New Mexico in Albuquerque, explains, “The painful consequences of a prior fall or current fear of falling may lead to a devastating downward spiral of decreased activity, decreased strength and endurance, diminished range of motion, and increased impairment that may actually add to the risk of falling.”

While it is essential to preserve one’s mobility in and outside their home, this should be done in a safe way. Modifications to the environment (e.g., ramps), devices (e.g., cane, walker, scooter), and common sense all can help you enjoy an active life without excessive fatigue or risk of injury from falling.

It’s Important to be in the World

Janet L., of Philadelphia, pulled up to a neighborhood delicatessen and decided to leave her cane in the car. “It didn’t seem that far to walk,” she thought. As she threaded her way past some outdoor tables, she suddenly lost her balance — and fell across a stranger’s lap. “I was so mortified I wanted to cry,” she recalled. But she had the presence of mind to keep her sense of humor.

“Come here often?” she asked. They both started laughing. She pulled herself up and explained that she sometimes loses her balance due to multiple sclerosis.

Janet works as a peer counselor at the Greater Delaware Valley Chapter of the National MS Society. She knows that it’s not always easy to keep a sense of humor in this kind of situation, but for her it’s the best strategy. As she puts it, “MS is not something you have control over — but you do have control over how you choose to handle the problems.” A former dancer, Janet is keenly aware of the ways in which her loss of balance and muscle weakness have changed her gait. Her advice?

“Keep moving! It’s important to be in the world.”

Assistive Technology

We human beings are distinguished by our ability to develop technologies that make tasks easier. In a sense, all technology from safety pins to super-sonic jets is “assistive” technology, helping us to accomplish feats we couldn’t do otherwise. When physical disability develops, canes, braces, walkers, wheelchairs, and scooters assist. They help people move about more easily.

The idea is not appealing initially. To many people, a cane represents “feebleness” — a wheelchair or scooter says that MS has “taken over.”

The majority of people with MS who use the right assistive technology end up with a very different perspective. They recognize that a brace or cane allows them to walk with confidence; a wheelchair or scooter provides safety, speed, and saves energy for more important things. A rehab professional with MS experience can help people improve their gait and manage fatigue, weakness, and balance problems. In other words, professionals look for individual solutions to individual gait problems.

The assistive technology industry offers options aplenty — from rolling walkers to weighted 4-pronged canes; from ultra-light power-assist wheelchairs to fully-powered multi-level wheelchairs. There are excellent web sites with information about such equipment. A good starting place is ABLEDATA (abledata.com),

a federally-funded project that offers product information, resources, and links. Their advice is worth noting: “To select devices most appropriate to your needs, we suggest combining ABLEDATA information with professional advice, product evaluations, and hands-on product trials.”

Do-It-Yourselfers run the very real risk of using devices incorrectly and causing unnecessary damage to their muscles or joints.

Dr. Bethoux notes that a physical or occupational therapist should assist you in selecting the correct device to enhance your mobility, in adjusting the device, and in training you so you can use it appropriately and safely. Sue Kushner encourages her clients to choose devices that are aesthetically pleasing. And there are attractive choices available.

Janet, the former dancer, used the Internet to locate designer cane makers, and she now has a collection in different colors and styles, including a glittery Lucite cane that she used when she was a bridesmaid in a friend’s wedding.

Reimbursement

Full or partial reimbursement for assistive technology (or durable medical equipment) may be available through private or public insurance, community organizations, social service agencies, or your state’s vocational

rehabilitation agency. Remember to explore veteran's benefits if you have done military service. Reimbursement programs require a prescription from a physician or a rehabilitation professional, and a statement that explains the medical necessity of the purchase. The statement may take some careful preparation.

People with MS often fail to fit into standard disability categories because gait problems (like other MS symptoms) can come and go, and vary in intensity.

- Take some time to understand what your policy or program requires for reimbursement.
- Clearly communicate these requirements to your physician or therapist, as reimbursement will depend on supporting material from your healthcare providers.
- Contact your National MS Society chapter for assistance if your healthcare provider is unfamiliar with the procedures.

“It is important to have a strong advocate to explain why a device is justified,” says Dr. Aisen.

Gait Research & Technology

At present, people with walking limitations related to MS remain mobile and independent through physical therapy, exercise, medication, and assistive technology. New ways to prevent permanent losses and to improve the technology that compensates for losses are in development.

Dr. Aisen, for one, is optimistic that research being done in other conditions, such as spinal cord injury and stroke, will eventually prove useful in MS. There is some evidence that intensive, repetitive physical therapy can improve damaged neural function, perhaps by stimulating the brain to create new neural pathways. Studies in MS have shown that various forms of aerobic exercise and weight training regimens can improve muscle strength and the ability to walk. According to Barbara Giesser, MD, Clinical Director of the MS Program at the University of California at Los Angeles (UCLA) David Geffen School of Medicine, “The research is helping us identify what types of exercise work best to address MS symptoms, as well as how frequent and intense the exercise should be. This knowledge must then be tailored to the needs of each individual.”

Innovations in assistive technology are also expected to continue at a brisk pace — in part to keep up with aging baby-boomers. Lighter, more flexible mobility aids with sporty styling and cheerful colors are already available. “Sick” is out and “active” is in for people who compensate for disabilities with assistive devices.

Resources

Medication Sheet

nationalMSsociety.org/dalfampridine

Ampyra is a trademark of Acorda Therapeutics.
Botox is a registered trademark of Allergan, Inc.

The Society publishes many other resources about various aspects of MS. Visit nationalMSsociety.org/all-brochures or call 1-800-344-4867.

- Exercise as Part of Everyday Life
- Fatigue: What You Should Know
- Managing MS through Rehabilitation
- Minimizing Your Risk of Falls
- Spasticity: The Basic Facts
- Stretching for People with MS
- Stretching with a Helper for People with MS

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