

Mobility Resources

Many people think that using an assistive device is “giving in” to the disease or shows that your mobility problems have gotten worse. This is a common reaction, but a mobility device actually can *enhance* your function so you will be able to do better—be safer, be more independent, and do more of the things you want to do. When rehabilitation does not improve walking to a sufficient degree, mobility can often be enhanced with the use of a mobility device. Finding a device that is suitable and appropriate to your particular needs is very important. Without the proper devices, your mobility problems are likely to interfere with your participation in home, work, family, social and leisure activities.

It is very important that you consult a physical or occupational therapist to help select the right equipment for *you*. The therapist should assist you to select the correct device that will enhance your mobility, adjust the device for optimal fit, and train you to use it appropriately and safely. Additionally, the therapist may be knowledgeable about insurance considerations for various mobility devices.

How Do I Know When I Need a Mobility Device?

You may need a mobility device if:

- You are experiencing frequent falls
- You hold on to furniture or walls while walking
- You expend too much energy when walking
- You avoiding certain activities because of mobility difficulties or fear of falling

How Do I Know When I Need a Different Mobility Device?

It may be time to be evaluated for a more supportive mobility device if:

- You hesitate to participate or in the activities that you want to do
- You are falling or have a fear of falling while using your mobility device
- You are unable to walk for short distances in a reasonable time period
- You become very tired after going short distances
- You experience hand or wrist pain, or back or knee pain
- You cannot sit comfortably in your wheelchair/scooter
- You are unable to operate or maneuver your device as it requires



What Types of Equipment is Available to Improve Mobility and Safety?

Orthotics

Orthotics are braces that position a weak or spastic foot properly and compensate for *foot drop*, a symptom that causes the toe of your shoe to scrape the ground when you walk and may cause you to trip or fall. Wearing orthotics may decrease fatigue, increase ankle stability, and decrease falls.

An Ankle-Foot Orthosis, or AFO, is the most commonly prescribed orthotic. This plastic brace fits inside your shoe and comes up along the back of your calf.



How do I know whether an AFO is the right device for me?

- An AFO may be indicated if you experience “foot drop” or a weak ankle that causes you to drag your foot and trip or fall when walking.
- An AFO can also be used to position and support your foot on the foot rest of a wheelchair.
- Either an articulated or rigid AFO may be recommended depending on the flexibility of your ankle.

Functional Electrical Stimulation (FES)

This new technology can supplement the benefits of a rigid AFO in some people with MS. FES devices are wireless stimulators that activate the peroneal nerve on the outer part of the calf just below the knee. Activation of this nerve stimulates the muscle to contract and pick the foot up for clearance in walking. You should be evaluated by a physical therapist to determine if one of the devices (WalkAide or Bioness) would work for you. They are also a great deal more expensive than AFOs—\$5,000- \$6,000—and are typically not covered by insurance.



How do I know whether a FES device is right for me?

- May be useful if you have a “foot drop” or a weak ankle that causes you to drag your foot and trip or fall when walking.
- Is not effective if your ankle is not flexible.

- Before purchasing a FES device, it is important to be evaluated by a physical therapist or orthotist to determine if you are a suitable candidate.

Hip Flexor Devices

Hip flexors are the muscles that lift the leg and swing it forward. They may be weak as the result of MS, and can cause you to stumble or fall because your foot drags on the ground. A lightweight and low-cost device called a Hip Flexion Assist Device (HFAD) may improve your walking and leg strength. It uses a combination of straps and elastic bands to supplement the activity of weak hip flexors.



How do I know whether a HFAD is right for me?

- Have hip flexor, knee flexor, or ankle dorsiflexor weakness
- Fatigue when walking, resulting in limited endurance
- Drag the weaker leg with compensatory movements
- Have tried to use an AFO to compensate for foot drop, but still struggle to walk due to hip and knee flexor weakness

Weighted Vest

Motion Therapeutics, Inc. conducted research with two academic institutions to explore how wearing a strategically weighted vest (BalanceWear) might improve gait and mobility in people with MS. The research findings suggest that the vest can help some people achieve better balance, which leads to greater stability in walking. Proper fitting and placement of the weights in the vest is critical.



How do I know if a weighted vest is right for me?

- Individuals with significant leg spasticity or very weak hips often do not experience walking improvements.
- Drop foot is typically not helped.

Canes

A straight cane or *quad* cane (one with four “feet” at the tip) can provide support when balance and/or weakness of the legs begin to be a problem. If one leg is weak, a single cane is used in the hand opposite the weak leg. Two canes can be used if both legs are weak. Sizing a cane correctly is critical to its safe and effective use, so consult with a physical therapist about the correct length and for instruction on the best way to use the cane.

How do I know whether a cane is the right mobility device for me?

- If you can walk by yourself but feel that you need extra support for balance, a cane might be the right device for you.

Walking Sticks

A walking stick may appeal to you because it appears ‘sportier’ and more attractive than a cane. It may be a good alternative to a cane for some people but, again, it is important to be evaluated by a rehabilitation professional to determine whether a walking stick or sticks will provide the amount of support you need. Two walking poles—such as ski poles—may be useful for some people, as well, and improve your balance, posture, and confidence.



How do I know whether walking sticks are is the right mobility device for me?

- If you can walk by yourself but feel that you need extra support for balance, walking sticks might be the right device for you.

Crutches

Crutches provide greater stability when weakness is more severe and canes are not sufficient to provide support. Forearm crutches, also called Canadian or *Lofstrand* crutches, are stable and allow you to use one hand to open a door when the cuff is secured on your forearm. *Axillary* crutches, which come up to the underarm, provide greater stability than the forearm crutch. As with the canes, crutches should be sized specifically for you, and you should be given instructions in how to use them.



How do I know whether crutches are the right mobility device for me?

- you can walk by yourself but feel that you need extra support for balance on one or both sides of your body
- you have good arm, shoulder, and hand function to control the crutches

Walkers or Rollators

Walkers may be prescribed if you have weakness in your legs or if balance is a problem. There are a variety of walkers, from the standard one with 4 fixed legs, to 2-wheeled and 4-wheeled versions (rollators). Most can be folded, so they are easy to transport in a car. Four-wheeled walkers have hand brakes and seats that are helpful if you begin to experience fatigue while you are walking.



How do I know if a walker or rollator is the right mobility device for me?

- You can walk by yourself but feel that you need extra support for balance on both sides of your body
- You find that you are continuously holding onto the walls and furniture within your home for support
- You have good arm and hand function to move the walker or rollator forward while walking
- If you occasionally get tired and require frequent rest periods when out in the community, a rollator with a built-in seat may be a good option for you.

Wheelchairs and Scooters

Wheelchairs or three-wheeled scooters provide mobility in your home and in the community when walking becomes limited or is no longer a safe means of locomotion. They can also be used to conserve energy. Motorized scooters and manual (arm propelled) wheelchairs are often used by people who can walk a short distance but who need to conserve their energy. People who use scooters must have sufficient trunk control and good balance in a seated position to sit comfortably and safely. It is also important to recognize the possible need for



ramps to allow access in and out of your home, and you may need to use a lift to get your wheelchair in and out of your car.

Manual wheelchairs can have customized seating, but most people who can propel their own chairs simply use a standard seat cushion. Individuals who use a motorized wheelchair, or “power chair,” have a variety of options for seating and positioning, as well as options for modifications to the joystick for propulsion. You need to consult with an Assistive Technology specialist, OT, or PT when making decisions about the type of wheelchair you should purchase.

How do I know whether a wheelchair or scooter is the right mobility device for me?

A manual wheelchair is indicated when:

- you are no longer able to walk functional distances independently in a safe and efficient manner — meaning that you cannot go from point A to point B without getting too tired and/or experiencing increased fear of falling
- you can use a manual wheelchair within your home and work environment

A scooter may be indicated for you if you:

- are able to sit down and stand up from a chair safely and independently
- have enough strength and coordination in your arms to operate the scooter’s tiller steering mechanism
- have good trunk control and good balance while sitting

A basic power wheelchair is indicated for you if:

- you are getting increasingly tired and do not have the energy to propel a manual wheelchair
- you are at high risk for developing upper extremity injury from propelling a manual wheelchair
- you feel progressively weaker (with increased fatigue) and have less energy for your daily activities
- you have been using a scooter but are unable to continue doing so because of a decline in your physical condition

- you use a scooter that is difficult to maneuver in your home
- you need more trunk support to maintain proper posture and balance

Adapted from *How to Choose the Mobility Device that is Right for You*

Are There Medications that Improve Walking?

Medication to improve walking

Only one medication is approved specifically to improve walking. 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 (4-AP), which 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. Those participants in the study 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. *Ampyra 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.

Medications to manage spasticity

A number of medications are available to treat spasticity. Each of these requires “fine tuning” of the dose to achieve the optimal antispasticity effect with minimal side effects.

- **Baclofen** is a muscle relaxant and antispasticity agent that acts on the brain and spinal cord to relieve muscle cramping and tightness. Baclofen is usually taken by mouth, but also be administered through an implanted pump if you have severe spasticity or are unable to tolerate the side effects of oral baclofen or other oral antispasticity medications. The pump delivers the baclofen directly to the spinal cord. Because it does not circulate in its full dose throughout the body, as is the

case with oral baclofen, it can be taken in smaller doses and with less systemic side effects.

- **Tizanidine** (Zanaflex[®]) is also effective in treating spasticity. It works by inhibiting motor nerve function in the spinal cord. Tizanidine is available in both pill and capsule forms. It is started at a low dose, then gradually increased until spasticity is controlled with minimal side effects. Side effects may include dry mouth, drowsiness, weakness and dizziness with sudden changes in position due to low blood pressure
- **Diazepam** (Valium[®]) is also effective for treating spasms. It acts as a central nervous system depressant that calms the nervous system. Side effects include weakness and sedation.
- **Dantrolene** (Dantrium[®]) is a muscle relaxant that may relieve muscle cramping, spasms, and tightness caused by MS. Unlike baclofen, tizanidine, and diazepam, it acts directly on the muscles rather than on the central nervous system.
- **Botulinum toxin** (Botox[®]), in addition to being used for cosmetic purposes, has also been used successfully to treat spasticity in small muscle groups in the hands and/or feet. It chemically paralyzes the muscle for a period of 3- 6 months, so the treatment must be repeated periodically.

Medications to manage fatigue

- Modafinil (Provigil[®]) is a wakefulness-promoting agent that is approved for the treatment of narcolepsy; it reduces self-reported fatigue in some people with MS.
- Amantadine (Symmetrel[®], Symadine[®]), is an antiviral medication used to prevent or treat certain influenza infections; although the mechanism of action is unknown, is sometimes effective in relieving fatigue in multiple sclerosis.

Multisensory Organization

Balance is maintained through a complex interaction of the brain, optic nerves and involves three primary sensory systems:

- Somatosensory
- Visual
- Vestibular

The three sensory systems provide information to the central nervous system, which then in turn processes and interprets the information and instructs the muscles on how to respond.

Somatosensory System

The somatosensory system relies on receptors in the skin and joints to detect events in the environment and send that sensory information to the CNS. The sensors in your skin help to detect surfaces like hard or soft ground, or rocky and imbalanced terrain. Sensors in the joints and muscles detect the position of the joint in relation to space.



Visual System

The visual system is typically the most dominant of the three systems. It provides important information that allows your body to adjust for obstacle in your path, the height of the curb, or an uneven ground surface. It uses visual references to determine your body's position in space. Impairments in vision that are common with MS may include decreased depth perception, increased sensitivity to glare, and slow accommodation to changes in light. All of these can affect your balance.



Vestibular System

Structures in your inner ear provide your brain and eyes with crucial information about the position of your head and its movement in space with respect to gravity. An intact vestibular system allows you to do many activities without losing your balance, such as walk on a cruise ship or a plane in flight, ride an elevator, or turn quickly when walking. The vestibular system also enables you to coordinate your eye and head movements, thus, for example, allowing you to read signs as you walk. The vestibular system is important in these and other activities, especially when the visual and somatosensory systems can't provide sufficient or accurate information.

Using a Cane

Article Link: <http://www.webmd.com/a-to-z-guides/using-a-cane-topic-overview>

Topic Overview

A walking aid—a walker, crutches, or a cane—helps substitute for a decrease in strength, range of motion, joint stability, coordination, or endurance. It can also reduce the stress on a painful joint or limb. Using a walking aid can help you be more safe and independent in your daily activities.

Almost everyone has used a walking aid at some time, even if it was just playing around with crutches that belonged to someone else. As a result, most people think they know how to use this equipment. But there are some simple principles that will make using your walking aid easier and safer.

General safety when using walking aids

- Look straight ahead, not down at your feet.
- Clear away small rugs, cords, or anything else that could cause you to trip, slip, or fall.
- Be very careful around pets and small children. They can be unpredictable and get in your path when you least expect it.
- Be sure the rubber tips on your walking aid are clean and in good condition to help prevent slipping. You can buy replacement tips from medical supply stores and drugstores. Ice tips are also available to use outdoors in winter weather.
- Avoid slick conditions, such as wet floors and snowy or icy driveways. In bad weather, be especially careful on curbs and steps.
- Never use your walking aid to help you stand up or sit down. Even if you still have one hand on your walking aid, put the other hand on the surface you are sitting on or the arm of your chair. Use that hand to guide you as you sit down, and to push with as you stand up. If you are less steady on your feet, rest your walking aid securely nearby, so it doesn't fall and you can reach it easily. And use both hands on the sitting surface to help you sit down or stand up.
- Always use your strong or uninjured leg to take the first step when you go up stairs or a curb (see instructions for curbs and stairs below). When you go back down, step with your weak or injured leg first. Remember

"up with the good, and down with the bad" to help you lead with the correct leg. **Ask for help if you feel unsure about going up and, especially, down stairs.**

Using a cane

If you are using a cane because one leg is weak or painful, hold the cane on the **opposite** side from the weak or painful leg. For example, if your right hip is sore, hold the cane in your left hand.

If you are using the cane for a little help with balance and stability, hold it in the hand you use less. If you are right-handed, you'll probably want to hold the cane in your left hand to leave your right hand free for other things.

Hold the cane close to your body so you can push straight down on it. If you feel as though you need to put a lot of weight on the cane because your balance is not good or you have significant pain or weakness, talk to your doctor about trying crutches or a walker.

Be sure your cane fits you. When you stand up in your normal posture with the cane tip on the ground, the handle of the cane should be next to the top of your leg. Your elbow should be slightly bent.

A cane can help if you have minor problems with balance or steadiness on your feet. It can also help take a little weight off one leg by shifting some weight to the cane. Your doctor may recommend a cane if you just need a little help walking comfortably and safely.

To walk using a cane

The best way to think about walking with a cane is that you are taking normal steps and just moving the cane when you would normally swing your arm forward.

Move the cane at the same time as the opposite leg, just as though you were swinging your arm. For example, if you are holding the cane in your left hand, move the cane forward when you step with your right foot. If you are using the cane because of a painful or weak leg, you will be moving that leg at the same time as the cane.

1. Set the cane comfortably ahead of you, so it is even with the foot you are stepping with. Don't lean forward to reach farther.
2. Step past the cane with the other foot.
3. Repeat.

To go up or down a curb using a cane

Try this first with another person nearby to steady you if needed.

1. Stand near the edge of the curb, and get your balance.
2. If you are going up, step up with your stronger leg, then bring your other leg and the cane up to meet it. If you are going down, move the cane down first. Step down with your weaker leg first, then bring your stronger leg down to meet it. Remember "up with the good, and down with the bad" to help you lead with the correct leg.
3. Get your balance again before you start walking.

To use your cane on stairs

Try this first with another person nearby to steady you if needed.

If a banister is available, hold on to the banister, and use your cane in the opposite hand. You will still step with the stronger leg first to go up stairs, and with the weaker leg first to go down stairs.

1. Stand near the edge of the stairs.
2. If you are going up, step up with your stronger leg first, then bring your other leg and the cane up to meet it. If you are going down, move the cane down first. Step down with your weaker leg, then bring your stronger leg down to meet it.
3. Repeat.
4. When you reach the level surface, get your balance again before you start walking.

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Using a Walker

Article Link: <http://www.webmd.com/a-to-z-guides/using-a-walker-topic-overview>

Topic Overview

A walking aid—a walker, crutches, or a cane—helps substitute for a decrease in strength, range of motion, joint stability, coordination, or endurance. It can also reduce the stress on a painful joint or limb. Using a walking aid can help you be more safe and independent in your daily activities.

Almost everyone has used a walking aid at some time, even if it was just playing around with crutches that belonged to someone else. As a result, most people think they know how to use this equipment. But there are some simple principles that will make using your walking aid easier and safer.

General safety when using walking aids

- Look straight ahead, not down at your feet.
- Clear away small rugs, cords, or anything else that could cause you to trip, slip, or fall.
- Be very careful around pets and small children. They can be unpredictable and get in your path when you least expect it.
- Be sure the rubber tips on your walking aid are clean and in good condition to help prevent slipping. You can buy replacement tips from medical supply stores and drugstores. Ice tips are also available to use outdoors in winter weather.
- Avoid slick conditions, such as wet floors and snowy or icy driveways. In bad weather, be especially careful on curbs and steps.
- Never use your walking aid to help you stand up or sit down. Even if you still have one hand on your walking aid, put the other hand on the surface you are sitting on or the arm of your chair. Use that hand to guide you as you sit down and to push with as you stand up. If you are less steady on your feet, rest your walking aid securely nearby, so it doesn't fall and you can reach it easily. And use both hands on the sitting surface to help you sit down or stand up.
- Always use your strong or uninjured leg to take the first step when you go up stairs or a curb (see instructions for curbs and stairs below). When

you go back down, step with your weak or injured leg first. Remember "up with the good, and down with the bad" to help you lead with the correct leg. **Ask for help if you feel unsure about going up and, especially, down stairs.**

Using a walker

A walker with four legs is the most stable walking aid. Your doctor will recommend a walker if you need to keep all or nearly all the weight off one leg, if your general strength or endurance is decreased, or if your balance is not always good.

Be sure your walker fits you. When you stand up in your normal posture and rest your hands on the walker's hand grips, your hands should be even with the tops of your legs. Your elbows should be slightly bent.

To walk using a walker

1. Set the walker at arm's length in front of you, with all four legs on the floor. If your walker has wheels on the front legs, just take your weight off your hands and push the walker forward.
2. Use the handles of the walker for balance as you move your weak or injured leg forward to the middle area of the walker. Don't step all the way to the front.
3. Push straight down on the handles of the walker as you bring your good leg up, so it is even with your injured leg.
4. Repeat.

To go up or down a curb using a walker

Try this first with another person nearby to steady you if needed.

1. Stand as close to the edge as you can while keeping all four legs of the walker on the surface you're standing on.
2. When you have your balance, move the walker up or down, to the surface you are moving to.
3. Push straight down on the handles for balance and to take weight off your injured leg.
4. If you are going up, step up with your stronger leg first, then bring your weaker or injured leg up to meet it. If you are going down, step down

- with your weaker leg first, then bring your stronger leg down to meet it. Remember "up with the good, and down with the bad" to help you lead with the correct leg.
5. Get your balance again before you start walking.

To use your walker on stairs

Most people should not use a walker on stairs. Talk with your physical therapist to see whether it is appropriate for you to use your walker on the stairs. If it is, have your physical therapist show you how to do this correctly.

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How do I use my wheeled walker (rollator) safely?

Article link: <http://www.walker-facts.com/How-To-Use-a-Wheeled-Walker.asp>

There are four main activities that you need to perform safely when using your walker. These are: standing up, walking, turning, and sitting down. The following are general guidelines and are not appropriate for everybody. You are strongly encouraged to seek guidance from a therapist for your unique situation.

Preparing to Stand Up:

1. Engage the brakes.
2. Move forward and sit as close to the edge of the chair as you feel comfortable.
3. Keep your feet as far under you as possible. Aim to place your toes directly below the edge of the chair.
4. Place both hands on the arms/seat of your chair OR one hand on the chair and one hand on the walker. Do not tip the walker by placing too much weight on one side of the walker as you stand.
5. Lean forward until you feel some of your weight on your feet.
6. Use your legs to stand as much as possible – your arms should only lift what your legs cannot. Use your arms mostly to help keep your balance as you stand.
7. Do not walk forward until you have tested your balance and you feel strong enough to walk.
8. Disengage the brakes

Preparing to Sit Down:

1. Stand directly in front of the chair, facing away from it. The back of your legs should be almost touching the chair. Do not start to sit until you are balanced and standing still.
2. Move the walker a little away from you so that you can bend slightly forward as you sit down.
3. Engage the brakes.
4. Reach behind for the chair with both hands (preferred) or with one hand and one hand on the walker. Do not tip the walker by placing too much weight one side as you sit.

5. Slowly lower yourself using your legs as much as you can.
6. If you “plop” into the chair, try leaning a little more forward as you sit and bend your knees to lower yourself to the chair.

Walking with a Wheeled Walker:

1. Place your walker ahead of you before you take any steps.
2. Gently roll the walker ahead of you as you walk. Keep the walker close enough to you that it is supportive.
3. If your steps are uneven, its best to shorten your longer step rather than work to lengthen your shorter step. The shorter step is usually the step where you have less balance.
4. To turn around: stay within the width of the walker even if you are slightly behind. Roll the walker around you without twisting your back – you should always be facing the front of the walker.
5. When standing in the kitchen and bathroom: use the counters for your support rather than the walker – but keep the walker within reach.

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