

### Understanding MS-Related Symptoms

In multiple sclerosis, damage to the myelin in the CNS—and to the nerve fibers themselves—interferes with the transmission of nerve signals between the brain and spinal cord and other parts of the body. This disruption of nerve signals produces the primary symptoms of MS, which vary depending on where the damage has occurred.

Over the course of the disease, some symptoms will come and go, while others may be more lasting. The severity of the symptoms that individuals experience varies from person to person.

### Exacerbation vs. Pseudoexacerbation

An MS exacerbation, also called “relapse” or “acute attack,” is characterized by an appearance of new neurological symptoms or worsening of old ones lasting at least 24 hours. The exacerbation is a result of an inflammatory or demyelinating lesion and can be treated with corticosteroids to reduce inflammation.

A pseudoexacerbation is a temporary worsening of symptoms caused by a fever, heat, infection, fatigue or exhaustion, stress, and sleep deprivation. This is because such worsening of damaged or demyelinated nerve causes blocking of electrical impulses. Heat, fever, infection or fatigue does not cause more nerve damage. The symptoms will resolve once the precipitant resolves or disappears.

It is not uncommon for people with MS to feel an increase in their symptoms during and following exercise. Such symptoms most commonly include fatigue and numbness and are not cause for concern if they last less than 1-2 hours. If the symptoms persist or are unusual, such as chest pain or dizziness, then exercise should be halted and the person’s physician contacted.

### Fatigue

Fatigue is one of the most common symptoms of MS, occurring in more than 80% of people. Fatigue can significantly interfere with a person’s ability to function at home and at work, and may be the most prominent symptom in a person who otherwise has minimal activity limitations. MS fatigue is commonly described as a feeling of “exhaustion” or being “wiped out,” with reported worsening in mid-to-late afternoon that is unrelated to level of exertion.

### Heat Intolerance

An increase in core body temperature caused by conditions such as hot weather, high humidity, hot baths, heated swimming pools, physical exertion, or fever can slow nerve conduction and temporarily worsen MS symptoms. When overheating causes worsening of symptoms that last for a day or more, it may be referred to as a pseudoexacerbation. The symptoms return to baseline when the person’s body temperature returns to normal. Usually, that takes an hour or two, but sometimes the symptoms may last for more than a day and may be confused with a MS exacerbation.

While many people with MS experience heat intolerance, not all do. Discuss heat issues with clients or students to determine whether or not they tend to experience heat intolerance.

### Walking (Gait), Balance, & Coordination Problems

Problems with gait (difficulty in walking) are among the most common mobility limitations in MS. Gait problems are related to several factors:

- **Weakness**  
Muscle weakness is a common cause of gait difficulty. Weakness can cause problems such as toe drag, foot drop, “vaulting” (a compensatory technique that involves raising the heel on the stronger leg to make it easier to swing the weaker leg through), compensatory hip hike, trunk lean, or circumduction (swinging leg out to the side). If there is weakness in one extremity, for instance within the quadriceps muscles, it could lead to knee instability and cause a fall. Weakness can often be compensated for with the use of appropriate exercises and assistive devices, including braces, canes or walkers.
- **Spasticity**  
Muscle tightness or spasticity can also interfere with gait. Spasticity refers to feelings of stiffness and a wide range of involuntary muscle spasms (sustained muscle contractions or sudden movements). It is one of the more common symptoms of MS. Spasticity may be as mild as the feeling of tightness of muscles or may be so severe as to produce painful, uncontrollable spasms of extremities. Spasticity may also produce feelings of pain or tightness in and around joints, and can cause low back pain. Although spasticity can occur in any limb, it is much more common in the legs. In addition, spasticity can also be experienced in the mid-section or chest area limiting the range of a twisting motion. Stretching exercises and anti-spasticity medications are generally effective in treating this symptom.
- **Loss of Balance**  
Balance problems typically result in a swaying and “drunken” type of gait known as ataxia. People with severe ataxia generally benefit from the use of an assistive device such as a cane or walker.
- **Sensory Deficit**  
Some people with MS have such severe numbness in their feet that they cannot feel the floor or know where their feet are, which can directly affect their gait. This is referred to as a sensory ataxia.

### Numbness

Numbness of the face, body, or extremities (arms and legs) is one of the most common symptoms of MS, and is often the first symptom experienced by those eventually diagnosed as having MS.

### Vision Problems

A vision problem is the first symptom of MS for many people. The sudden onset of double vision, blurring, poor contrast, loss of peripheral vision or eye pain can be terrifying—and the knowledge that vision may be compromised can make people with MS anxious about the future.

### Dizziness and Vertigo

Dizziness can also occur in MS. People may feel off balance or lightheaded. Much less often, they have the sensation that they or their surroundings are spinning, a condition known as vertigo.

### **Pain**

Pain syndromes are common in MS. In one study, 55% of people with MS had “clinically significant pain” at some time. Almost half were troubled by chronic pain. Pain in MS can result from damage to nerves in the CNS (neurogenic pain), or result from altered gait patterns or inappropriate use of assistive devices (orthopedic pain). This type of pain may be felt as tingling or burning. Pain may also result from altered gait patterns or inappropriate use of assistive devices (orthopedic pain).

Other things to know about pain:

**L’Hermitte’s Sign:** Some people with MS experience an uncomfortable, abnormal neurological sensation called L’Hermitte’s sign. This electrical sensation travels down their spine and into their legs when they bend their head forward. One should be aware of L’Hermitte’s sign especially when planning physical activities for people with MS. This may be seen when students perform certain movements.

### **Emotional Changes**

Emotional changes are more common in MS than in other chronic illnesses—because of neurologic and immune changes caused by the disease, and as a reaction to the stresses of living with a chronic, unpredictable illness. Bouts of severe depression (which is different from the healthy grieving that needs to occur in the face of losses and changes caused by MS), mood swings, irritability, and episodes of uncontrollable laughing and crying (called pseudobulbar affect) pose significant challenges for people with MS and their family members .

### **Cognitive Function**

Cognition refers to a range of high-level brain functions, including the ability to learn and remember information: organize, plan, and problem-solve; focus, maintain, and shift attention as necessary; understand and use language; accurately perceive the environment, and perform calculations. Cognitive changes are common in people with MS— approximately 50% of people with MS will develop problems with cognition.

### **Bladder Dysfunction**

Bladder dysfunction, which occurs in at least 80% of people with MS, can usually be managed quite successfully. Symptoms of bladder dysfunction can include frequency and/or urgency of urination, hesitancy in starting urination, frequent nighttime urination, and incontinence. These symptoms can be caused by a “spastic” bladder that is unable to hold the normal amount of urine, or by a bladder that does not empty properly and retains some urine in it. Retaining urine can lead to complications such as repeated infections or kidney damage.

### **Bowel Dysfunction**

Bowel dysfunction can cause a great deal of discomfort and humiliation, and could aggravate other MS symptoms such as spasticity or bladder dysfunction. Constipation is a particular concern among people living with MS, as is loss of control of the bowels. Diarrhea and other problems of the stomach and bowels can also occur but are much less common.

### **Sexual Dysfunction**

Sexual problems are often experienced by people with MS, but they are very common in the general population as well. Sexual arousal begins in the central nervous system, as the brain sends messages to the sexual organs along nerves running through the spinal cord. If MS damages these nerve

pathways, sexual response—including arousal and orgasm—can be directly affected. Sexual problems also stem from MS symptoms such as fatigue or spasticity, as well as from psychological factors relating to self-esteem and mood changes.

### Less Common Symptoms

In addition to the list of symptoms that are commonly experienced by those living with MS, as noted in the above section, there are some symptoms that occur less frequently. These symptoms include speech disorders, tremors, hearing loss, and headache. In rare instances itching, respiration/breathing problems, and swallowing problems can be experienced.