

# American Fitness

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HEALTH ON THE PULSE

Balance Training  
for Clients With  
Multiple Sclerosis

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*Counteraction*  
required

Multiple sclerosis (MS) is an often-disabling disease in which the body's immune system eats away and deteriorates the myelin, or protective sheath, that covers the nerve fibers. Myelin is a fatty substance that helps these nerve fibers to conduct electrical impulses. Damage to the myelin causes interference in the central nervous system, which includes the brain, spinal cord and optic nerves.

In MS, myelin is lost in multiple areas resulting in sclerotic, or scarred, tissue—hence the name, “Multiple Sclerosis.” Additionally, the nerve fibers may be exposed, damaged or broken. When this happens, the ability of the nerve to conduct electrical impulses to and from the brain is disrupted. As a result, physical difficulties manifest.

Symptoms vary amongst each individual, and are dependent upon the severity of nerve damage. Common symptoms include:

- Numbness, tingling or weakness in one or more limbs.
- Partial vision loss, especially in one eye.
- Electrical shock that occurs with various head movements.
- Dizziness and fatigue.
- Gait, balance and coordination issues.
- Bowel or bladder dysfunctions or emergencies.

MS is irreversible, and unfortunately those who experience total destruction of the nerve fibers are left with permanent disability. The disintegration of the myelin is caused from an abnormal response of the immune system. The National Multiple Sclerosis Society calls it an immune-mediated disease.

Diagnosing MS is challenging as symptoms fluctuate. Nevertheless, diagnosis requires individuals to undergo an MRI of the brain and spine, nervous system examination and spinal tap test.

According to the National MS Society, approximately 2.1 million people worldwide have MS. The cause is unknown. However, cloudy and dreary geographical locations have higher incidence of MS. In addition, females are affected more than males, and most cases involve individuals between the ages of 20 and 50.

Each person experiences the disease differently. Generally, people will encounter one of the four following courses.

## Relapsing-Remitting MS

In this course, the disability increases over time. Some may experience relapses, flare-ups or exacerbations, which are “bad” periods, followed by complete recovery, or remission, and the cycle continues between “good” and “bad” times. Another form of this course is that one can endure a gradual “worsening” of the disease with slight bouts of recovery. Approximately 85% of MS cases are diagnosed as Relapsing-Remitting.

## Primary-Progressive MS

This course is a slow progression in disability with no distinct relapse or remission. Some may have a plateau prior to the next bout of disability. Approximately 10% of cases are in this phase.

## Secondary-Progressive MS

This stage starts with relapsing-remitting and steadily worsens, with or without

flare-ups, plateaus or remissions. Long-term data are not yet available to determine if treatment with disease-modifying medications significantly delays this transition ([www.nationalmssociety.org](http://www.nationalmssociety.org)).

## Progressive-Relapsing MS

This course is characterized by the steadily worsening of the disease from the beginning and exhibits a definite decline in neurological function. Patients may or may not experience bouts of recovery. This rare stage affects 5% of MS cases.

## MS and Exercise

Exercise greatly helps and stimulates the mental, physical and emotional states. The following are benefits of exercise for individuals with MS:

- Improve ambulation endurance and balance control.
- Develop a deeper and controlled breath.
- Circulate oxygen more effectively in the body.
- Increase joint range of motion and muscular strength.

However, during exercise, trainers should be conscious of these challenges:

- Heat Exhaustion: An increase in core temperature may slow down nerve function, resulting in a temporary worsening of symptoms known as pseudo exacerbation. Symptoms will return to baseline once normal core temperature is recovered.
- Lhermitte's Sign: Some individuals experience an electrical sensation that travels along the spine to their legs when they bend their heads forward. Keep these three levels of MS clients in mind for program design:

- Level 1: No to mild symptoms. Walks independently.
- Level 2: Motor-physical limitations. Needs assistance for walking and getting onto the floor.
- Level 3: Greater functional impairment/paralysis. Needs personal attention.

## MS and Balance

MS can affect active or sedentary adults, and each may experience exercise and exacerbations differently. Most common MS symptoms include loss of motor control and function of the optical and vestibular (sensory and inner ear) systems.

Balance training is vital as almost every daily movement incorporates balance: walking, standing up from a chair, bending and picking up groceries, or stepping into the shower from a dry to wet surface. From a sensory perception aspect, the eyes must move or fixate on an object while not moving the head. A real-world example is when driving a car and the eyes fixate on a street sign while not moving the head as the sign passes.

## Balance Guidelines

- Offer two or three levels per exercise

- Have balance support options (chair/wall)
- Integrate static and dynamic balance poses
- Progress from hard to soft surface structures

It is ideal to find a healthy mix of static and dynamic poses and progress as ability dictates. Surface structures vary amongst facilities, but it's best to progress from hard (wood floor, thin yoga mat, Berber carpet) to soft (shaggy carpet, thick mat, Airex® Pad) surfaces.

Each session should start with awareness and breathing. Below are the various components of an MS Balance Program.

## Balance Challenge Variables

- **Awareness:** This unites the brain and body connection and enhances focus and concentration. Students are present in the moment and are able to recognize breath patterns. Awareness is crucial to execute balance effectively, as fluttering minds distract concentration. For example, trainers may educate clients on the consciousness and movement of the sole of the foot on the floor.
- **Visual Effect:** Visual effect either assists or challenges balance based on the visibility or focal point. Closing the eyes stimulates sensory receptors and proprioception. Partially or fully closed eyes train the body for real-life situations such as fogged glasses, a dark room or loss of some or all optical function. Visual options include: Partially closing the eyes. Closing one or both eyes. Looking at a focal point. Visual fixation on stationary target with head moving. Visual fixation on moving target with head stationary. Eye gaze moving with the head.
- **Contact Point:** This refers to anything that promotes balance while assisting alignment. A chair, wall or a trainer's shoulder helps balance. Reducing contact points, such as lifting one foot off the floor or releasing hands off the hips, challenges balance.
- **Movement:** Movement includes any small or large range of motion of one or more body parts. In balance, a student may move his or her head, upper/lower body or whole body. As a general rule of thumb, the more body parts that move, the more challenging the exercise. This progresses static to dynamic poses.
- **Outside Forces:** Outside Forces introduce either equipment or perturbation into the exercise. A soft weighted ball or trainer's touch may promote alignment or balance assistance. These forces combined with movement incorporate sensory stimulation with cognitive object concentration.

## MS Balance Exercises

Perform each exercise for approximately 60 seconds.

### Squat With T-Spine Rotation

**Purpose:** Strengthens lower extremities while using all sensory systems combined with an outside force and enhances upper extremity mobility. **How to implement the pose:** Stand with feet apart and lower hips toward a static squat position. With the Pilates ball in hands, shift the ball into the left hand and

rotate the torso simultaneously. Keep eyes on the ball. Rotate to center and shift the ball into the right hand and rotate the rib cage toward the right.

**Progression:** Rotate head with one or both eyes closed.

## T'ai Chi Push-Pull

**Purpose:** Improve dynamic postural control while in a moving split-leg position.

**How to perform:** Split the stance so one foot is forward with hands in front of the chest. Slowly, shift the weight onto the back leg, lifting the front toes, and then shift the weight forward, extending the arms and lifting the back heel off the floor. **Progression:** While gazing at a focal point, move hands in front of the focal point to improve concentration while a moving object distracts. Or close one or both eyes.

## Standing Hip Flexion

**Purpose:** Improves dynamic postural control and single-leg stance ability. **How**

**to Perform:** Stand erect with abdominals engaged and hands on hips. Slowly, lift the right leg to 90 degrees; hold for 10 to 20 seconds and return back to center. Slowly, lift the left leg to 90 degrees and repeat. **Progression Options:** Move to slightly unstable surface or place arms at shoulder height.

## Standing Hamstring Curl With Contralateral Arm Movement

**Purpose:** Improves balance, coordination and functions of gait. **How to**

**Perform:** Stand erect with a bar (or wall) in right hand. Slowly, flex the right knee and simultaneously lift the left arm overhead. Return to the starting position and continue the motion before switching sides. **Progression:** Complete without the bar. Or keep toes off the floor throughout the knee flexion and extension. **AF**

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