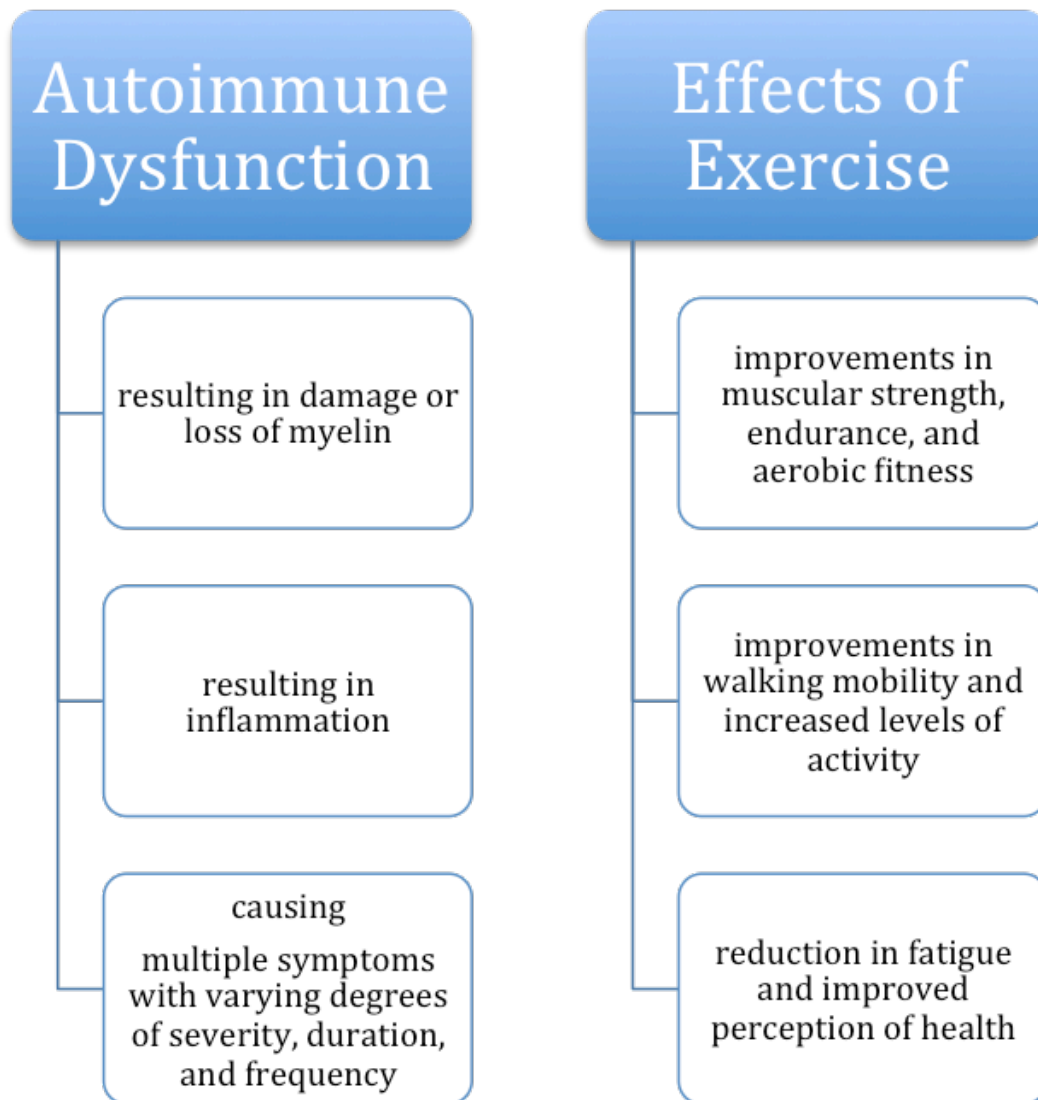


# Multiple Sclerosis

## Introduction

Multiple sclerosis (MS) is an autoimmune disease. The immune system uses antibodies to search for invaders (pathogens) of the body. Antibodies typically are used by the autoimmune system to seek and destroy pathogens such as bacteria, viruses, and infection. Individuals with autoimmune diseases often have unusual antibodies circulating in their blood that target their own body tissues.

MS damages the insulating myelin of the central nervous system resulting in inflammation. Episodes of inflammation can occur randomly with varying degrees of severity, duration, and frequency. Myelin is the fatty tissue that insulates nerves and allows for smooth conduction along the neural pathways within the central nervous system. This smooth conduction results in coordinated movement. With MS, there is a loss of myelin that effects this coordination of movement. Symptoms include spasticity, impaired balance, lack of coordination, fatigue, muscle weakness and/or some degree of paralysis, sensory loss, numbness, heat sensitivity, tremor, and cardiovascular dysautonomia (a dysfunction of the autonomic nervous system which may cause problems with reduction in blood pressure response and cardioacceleration which effects the heart rate and force of the heartbeat).



## Recommendations

It is recommended that individuals with MS seek professional guidance from a certified fitness trainer for exercise safety and program effectiveness. The variability in exercise capacity and lack of research uniformity makes it difficult to develop absolute exercise standards for those with MS. However, research has shown improvement in overall functional fitness with moderate exercise.

Below are some recommendations for exercise programming:

- Fatigue can reduce amount of exercise that can be tolerated. Start low and go slow.
- Impaired balance may affect the type of exercise that can be performed. Stationary bike, walking or swimming may be good choices.
- Intolerance to heat may affect intensity or duration of exercise. Stay cool. Drink fluids.
- Spasticity may affect foot dropping while exercising. Foot strapping may be advisable.
- Caution with upright activities such as walking or running due to sensory loss.
- Muscle weakness or paralysis may affect exercise intensity and duration.

Special considerations include the following:

- Many individuals with MS may exhibit cognitive deficits that may affect their understanding of exercise instructions or memory. Allow additional time for learning the routine and reinforcing safe exercise principles.
- During symptom exacerbation, hold off on exercise until full remission. Adjust the goals accordingly.
- Be diligent about drinking water before, during and after exercise due to sensitivity to heat.

## MyFitScript™

Exercise has no effect on the progression of MS however it may improve short-term physical fitness and functional performance resulting in improved quality of life. The greatest benefits are seen with a combination of cardiovascular (aerobic) exercise combined with progressive strength training exercise. Exercise prescription for persons with MS should include components of cardiopulmonary endurance, strength exercise, joint flexibility, balance, and functional fitness for improved activities of daily living. The MyFitScript™ F.I.T.E. acronym is the guideline-based prescription and stands for frequency of exercise, intensity of exercise, time or duration of exercise, and type or mode of exercise as it pertains to aerobic and strength components of the exercise program.

## References:

ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities - Third Edition, 2009.  
Kurt Jackson, PhD, PT, GSC; Janet A. Mulcare, PhD, FACSM. Multiple Sclerosis.

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*For specific exercise guidelines and program refer to the MyFitScript exercise prescription for MS.*