

Enhancing Functional Capacity for Clients with Physical Limitations Associated with Multiple Sclerosis

Katherine Greg, OTD Margaret Newsham Beckley, Ph.D.

Multiple sclerosis (MS) is a progressive neurological disease of the central nervous system, and it is most prevalent in the adult population. The central nervous system is made up of the brain and the spinal cord (Figure 1). When a person has a diagnosis of MS, their immune system attacks the protective coating of nerve fibers in the brain and spinal cord. The protective coating is known as myelin. If myelin is missing on nerve fibers, a plaque will develop in its place, and communication along the nerves will be interrupted. The disruption of communication between the brain or spinal cord and the body can result in movement, sensory, and/or mental impairments. For example, when the brain is trying to communicate to the arm to move, the communication will be slowed or blocked (Lundy-Ekman, 2018), and as a result, the arm's movement will be limited or absent.

Signs and symptoms that result from MS may include weakness, limited motor movement and coordination, impaired vision, double vision, limited sensory abilities, and impaired or slurred speech. In addition, one may have difficulty with memory, concentration, and attention (Lundy-Ekman, 2018). The signs and symptoms of MS may fluctuate, yet as the disease progresses, symptoms often become permanent. The visual, sensory, movement, and cognitive problems that may develop with MS can greatly impact functional abilities for adults in the areas of self-care, productivity, and leisure activities. This article will focus on strategies for improving function for individuals with visual and physical deficits that are associated with MS.

Impact of MS on Vision

The plaques that develop with MS can cause inflammation to the optic nerve, anywhere along the optic nerve's pathway, and/or in the visual cortex, which is found in the occipital lobe (Figure 2). Symptoms of visual impairment may include blurry vision, double vision,

The New RE:view

Winter/Spring, 2025, Vol. 3(1) 41-45

DOI: 10.56733/TNR.23.006

© 2025 Association for Education and Rehabilitation of the Blind and Visually Impaired

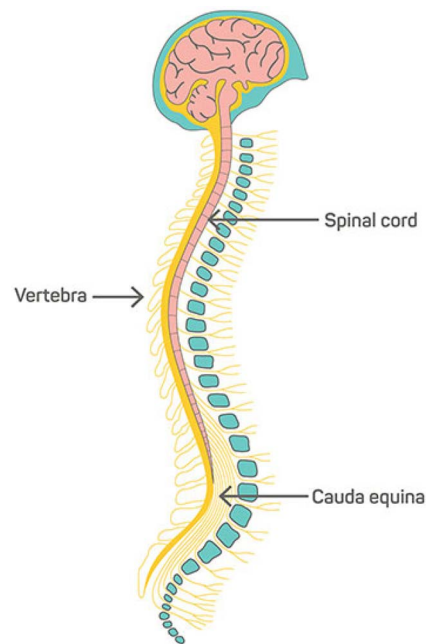


Figure 1. Brain and spinal cord; <https://www.shutterstock.com/image-vector/vector-illustration-human-brain-spinal-cord-117741244>

or visual field loss. Visual deficits may include a partial or complete loss of vision, depending upon the disease process. As with all symptoms from MS, vision impairment fluctuates, depending on whether or not the individual is in an exacerbation. An exacerbation is a period of time when the symptoms of MS flare, and therefore, vision can worsen.

Additional Impact of MS on Function

The plaques that develop with MS can also cause inflammation to the motor cortex, sensory cortex, or cerebellum in the brain or anywhere along the spinal cord

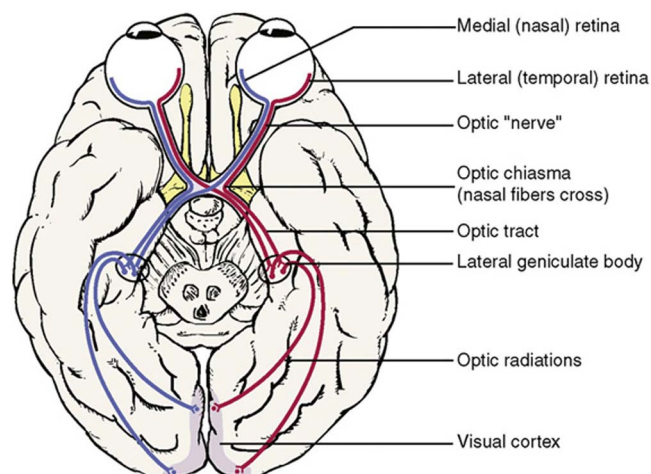


Figure 2. Eye, optic nerve, and brain; <https://www.shutterstock.com/image-vector/optic-nerve-tract-medical-vector-illustration-1436683388>

(Figure 1 and Figure 2). As a result, a person may have weakness in the trunk, arms, or legs, an abnormal or loss of sensation, poor balance, and limited endurance for daily activities. Again, sensory, motor, balance, strength, and endurance will worsen when one is having an exacerbation. In addition, another symptom that is associated with MS is systemic fatigue, which can be commonly reported in periods of exacerbation. Fatigue may negatively impact one's ability to engage in important activities of daily living, such as self-care, productivity, and leisure. Furthermore, the persistent fatigue that is associated with MS can have psychosocial implications, such as depression and social isolation, and consequently, it can further affect a person's level of participation and involvement in various aspects of life.

Strategies to Support Clients with MS

While symptoms associated with MS vary from client to client, there are strategies to support an individual's ability to continue to complete meaningful activities to some degree. These strategies include the incorporation of energy conservation techniques, including activity modification, environmental modification, ergonomic principles, adaptive equipment, and assistive technology.

Energy Conservation Techniques

Energy conservation techniques (ECTs) involve the planned management of the client's energy levels by balancing activity with rest, particularly during episodes of fatigue or exacerbation. ECTs help maintain valued activities and can be integrated throughout a daily routine. Some examples of ECTs include activity modifications, environmental modifications, principles of ergonomics, and the use of adaptive equipment or assistive technology. Sensory limitations brought on by MS can be taxing for an individual, especially when weakness, a lack of sensation, and visual deficits coexist. The successful adoption of ECTs requires client education on ways to incorporate scheduled rest, simplification of activities, and planning of energy expenditure and may include training on the use of adaptive equipment.

Activity Modification

Activity modification is an example of an ECT that can help to minimize labor, increase efficiency, and prevent fatigue in activities or tasks. Examples of activity modification include sitting instead of standing while chopping vegetables in a meal preparation activity or planning a task ahead of time to avoid unwanted energy expenditure. An example of planning a task ahead of time is organizing transportation before going to a scheduled appointment. It can also include prioritizing specific

tasks, such as doing laundry at a time of the day when energy levels are higher or eliminating tasks by delegating them to others in an effort to save energy.

Environmental Modification

Environmental modifications create a safe and more efficient environment for the client in order to maximize function. Examples of environmental modifications may include proper lighting throughout the home, the provision of accessibility to equipment and tools in the bathroom or kitchen, the removal of hazards such as throw rugs, and the incorporation of contrast on appliances or to mark doorways or stairs. Proper lighting includes the placement, such as overhead lighting or task lighting, the direction of the light with blinds or lamp shades, and the use of an appropriate type of bulb, such as a dimmable or anti-glare LED. Simple environmental solutions can be easily implemented and can optimize a client's function and independence.

Ergonomic Principles

Incorporating ergonomic principles to avoid improper posture or positioning may be another way to conserve energy. Techniques such as using pillows to help maintain an upright posture in a sitting task or positioning reading materials within the field of vision are examples of ergonomic principles.

Adaptive Equipment

The use of adaptive devices may assist in energy conservation for daily tasks. Examples of adaptive devices include a reacher or long-handle shoehorn to facilitate putting shoes on without having to bend over, an electric can opener, or the use of a rolling cart to transport objects instead of carrying them. Lightweight plates and built-up utensils for eating may also facilitate feeding for an individual with weakness. Adaptive equipment can be tailored to each individual's unique needs and can serve to reduce energy expenditure in daily activities.

Assistive Technology

Assistive technology (AT) consists of low-tech and high-tech devices that can be useful for clients who are suffering from visual deficits and physical limitations, such as grasping, manipulating, or reaching. Electronic aids to daily living (EADLs) are technologies that can make a home operable with the touch of a remote control, such as the remote control of lights and appliances. Other kinds of AT may include electronic alarms and timers, features for smart phone technology that allow for messages to be read or magnified for low vision, and low vision magnifiers for use in the community.

Conclusion

While the symptoms associated with MS are progressive in nature, there are strategies that one can implement to curtail the physical, sensory, and psychosocial limitations associated with this illness. The strategies discussed above are ones that can easily be adopted to aid in maintaining function in everyday activities. In addition, the maintenance of functional abilities contributes to psychosocial factors. Psychosocial well-being is maintained by the client's engagement in meaningful activity. For example, a loss of function can greatly impact a client's ability to socialize and participate in the community. Optimizing function for MS clients by incorporating energy conservation techniques and other strategies contributes to overall wellness and quality of life.

Additional Resources

- MS local support groups: <https://www.nationalmssociety.org/Resources-Support/Find-Support/Join-a-Local-Support-Group>
- National MS Society: <https://www.nationalmssociety.org>
- Doctors and other service resources for people with MS: <https://www.nationalmssociety.org/Resources-Support/Find-Doctors-Resources>
- Resources and seminars for service providers: <https://www.nationalmssociety.org/For-Professionals/Clinical-Care/Professional-Education/Professional-Education-Calendar>

Reference

Lundy-Ekman, L. (2018). *Neuroscience* (5th ed.). Elsevier.

Katherine Greg, OTD, OTR/L, CHT, Barry University College of Health and Wellness;
Margaret Newsham Beckley, Ph.D., Ed.D., OTR/L, SCLV, CLVT, COMS, CVRT,
Occupational Therapist and Vision Rehabilitation Specialist, Clinical & Educational
Consultants.

Corresponding Author: Katherine Greg, email: kgreg@barry.edu.

Published online 16 April 2024