

Multiple sclerosis and physical activity

What is multiple sclerosis?

Multiple Sclerosis (MS) has an annual incidence rate of 4.3 cases per 100 000 in Europe [1]. MS is a disease of the central nervous system affecting brain, spinal cord and optic nerves. The myelin sheath surrounding and protecting the nerve cells and the nerve cells themselves are incorrectly damaged by the immune system, slowing or interrupting the messages between the brain and body. MS symptoms may include visual problems, muscle weakness, fatigue, sensitivity to heat, balance and coordination disorders, cognitive disorders, and sensory modifications (numbness, prickling, “pins and needles”) [2]. There is growing evidence that genetic (female sex) and environmental (smoking, vitamin D deficiency and insufficient sun exposure) factors are associated with MS [3].

What are the effects of physical activity on multiple sclerosis?

Through its anti-inflammatory effect, physical activity may slow down the disease process, but it will likely not reverse disease-related impairment. However, exercise will reverse the impairment related to physical inactivity secondary to the disease [4]. Resistance training improves both functional capacity and muscle strength in lower and upper extremities [4, 5]. Also, it has a positive influence on fatigue [5]. Aerobic training results in short-term immune system adaptations but also enhancement in the cardiovascular and neuromuscular systems [4-6]. Increased physical activity is associated with better quality of life in MS patients with enhancement of energy, social functioning, mental and physical health [7]. Aquatic exercise improves also fatigue and quality of life [8]. Balance exercises can reduce the risk of falling [9].

What are the risks?

Generally, exhaustive training should be avoided. In addition, exercise is not recommended during cortisone treatment, which may damage bones, muscles and tendons. The increase in body temperature may aggravate MS symptoms. However, this possible worsening of symptoms normalizes half an hour after exercise cessation [10]. In addition, special care should be paid to the peripheral nerves and overstretching should be avoided [5]. To ensure safety, resistance and endurance training should be supervised by an expert.

Recommendations

Physical activity is strongly recommended in the management and evolution of MS [11]. It should be lifelong change. Resistance training increases functional capacity and strength, and should consist of 3-4 sets of 4-8 different exercises at an intensity of 8-15 repetition maximum (i.e. the maximal number of repetitions of a given load that can be lifted with proper technique) on 2-3 days per week. Aerobic exercise (like bicycling ergometry, arm-leg ergometry, arm ergometry, aquatic exercise or treadmill walking) recommendations state 10-40 minutes mild to moderate intensity (60-80% of the maximal heart rate) on 2-3 days per week [4]. 10-15 min of daily stretching to maintain and improve flexibility of muscles and tendons and a 24h recovery time are recommended [5]. In addition, balance and dual task exercises should be initiated at the onset of MS disease. The intensity of the exercises should be increased slowly and not to the point of pain [5].

References

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