Fatigue and exercise in multiple sclerosis (MS)

What is MS-fatigue and why do I feel tired before exercising?

**MS-fatigue** is described as an overwhelming feeling of tiredness, general weakness or lack of energy. It can occur after relatively mild exertion, such as a short period of walking. Unlike ordinary fatigue, MS-related fatigue usually occurs more rapidly, lasts longer and takes more time to recover from. It can be temporary or ongoing (chronic).

- **Temporary MS-fatigue** can occur before or during an MS relapse, during an infection, or when initially taking some MS medications.
- **Chronic MS-fatigue** is frequently present, even at rest. It is usually greater in the second part of the day and worsened by stress or heat. There is some evidence that damage to the nerves in the brain could account for this unexplained fatigue, unique to people with MS.

**Secondary fatigue** is not directly related to MS, but other factors such as:
- depression
- chronic pain
- poor sleep patterns
- abnormal blood pressure or heart rate
- poor diet
- hormonal changes
- medication side effects.

Why do I feel tired when I only exercise in small amounts?

- **Central fatigue** is caused by nerve damage in specific areas of the brain, which reduces the brain impulses that send messages to the muscles. It not only affects the ability to initiate and sustain physical tasks, but mental tasks as well. Effort required to perform activities is disproportionately high, even in the absence of weakness or depression. Central fatigue is not unique to MS and is also observed in Chronic Fatigue Syndrome and other conditions.

- **Poor fitness or stamina** can cause a person to experience secondary fatigue following minimal physical activity. Lack of exercise or a sedentary lifestyle can result in poor cardiorespiratory reserve. This means a person becomes overly puffed or breathless or has a marked increase in blood pressure and heart rate during exercise. This fatigue usually improves with fitness (aerobic) exercise.

- **Sub-optimal conditions during exercise.** Heat and dehydration can result in decreased performance and fatigue during exercise. Even a small increase in temperature can cause a temporary worsening of symptoms, usually resolving within a short time after completing the exercise session. Fever from infection can also raise core body temperature and cause symptoms to worsen. It is best to avoid strenuous exercise if you are experiencing an infection, fever, or are feeling unwell.

- **Fatigue due to exertion.** Muscle tremor, spasticity (stiffness), or weakness requires higher energy expenditure than is normal during physical activities. More effort is needed to overcome resistance or abnormal patterns of movement. Conserving and finding ways to replenish your energy can help reduce this fatigue.
My legs don’t want to work any more but I don’t feel tired.

- **Muscle fatigue.** Muscles that start out strongly can decline in strength following repeated or sustained activities (e.g. ‘foot drag’ after a prolonged period of walking). This is due to problems with conduction of messages along demyelinated nerves (where the myelin coating of the nerve fibres has been damaged), and a reduction in brain impulses that directly command muscles. ‘Conduction failure’ is common during and while recovering from an MS relapse. It is usually temporary and reversible within a few minutes of ceasing exercise.

- **Peripheral fatigue.** Changes in the muscle fibres, or a reduction in the muscle’s capacity to use energy or oxygen, can cause muscles to fatigue early. This fatigue is mostly due to prolonged muscle disuse or physical inactivity.

Exercise will only make me more tired. Why exercise?

If you are not used to physical activity, you may initially experience an increase in fatigue immediately following exercise. However, with regular physical activity, the musculoskeletal, cardio-respiratory and central nervous systems will slowly adapt. This will lead to a reduction in the level of fatigue experienced in the long-term.

An initial increase in fatigue can be avoided by starting with low-intensity exercise, gradually building up the intensity, frequency and duration of your exercise program.

Despite this approach, you may not notice an improvement in your level of fatigue. However, maintaining some form of physical activity, such as walking (even in short bouts), can prevent secondary fatigue from worsening. This will have other significant health benefits including improved functional ability, elevation of mood, improved pain tolerance, and prevention of other diseases such as diabetes, heart disease and osteoporosis.

How can I minimise fatigue experienced during exercise?

Before embarking on a new exercise program, identify and eliminate any secondary factors contributing to your fatigue. Ensure you apply appropriate cooling strategies to minimise any increase in temperature. Finally, choose exercises that suit your needs, interests and current levels of fitness.

- **Stretching exercises** are the least tiring of all exercises. They are helpful if you experience an increase in fatigue due to spasticity (muscle stiffness). Stretching exercises help loosen muscles temporarily, reducing the amount of energy required to move.

- **Strengthening exercises** are helpful where fatigue results from muscle weakness, making the completion of everyday tasks tiring. Strengthening exercises can require more mental effort due to the postural control and dexterity required. If you experience central fatigue, you may find strengthening exercises more tiring than other forms of exercise. ▶
**Muscle endurance training exercises** are repetitive low-resistance exercises that are performed to the point of muscle fatigue. Signs of fatigue include a decline in performance, decreased range of movement, and uncomfortable sensation or pain in the muscle. Do not push beyond these signs of fatigue as this can result in a ‘conduction block’ (a temporary but reversible paralysis), and can strain the supporting tissue. Recovery is longer if you push past this point.

**Fitness (aerobic) exercise** is the most tiring but the most beneficial form of exercise for your heart, lungs and brain function. It is the most tiring because it requires large amounts of oxygen for a sustained period of time. While the frequency, intensity and duration of physical activity will vary according to your needs, just a small amount of exercise can increase your level of fitness.

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### Further reading

Other related MS Limited - ACT/NSW/TAS/VIC information sheets available:

- **Exercising and MS**
- **Aquatic exercise and MS**
- **Fitness exercise and MS**
- **Strength exercise and MS**
- **Top ten ways to beat the summer heat**

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**For more information about MS and MS Limited - ACT/NSW/TAS/VIC services:**

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