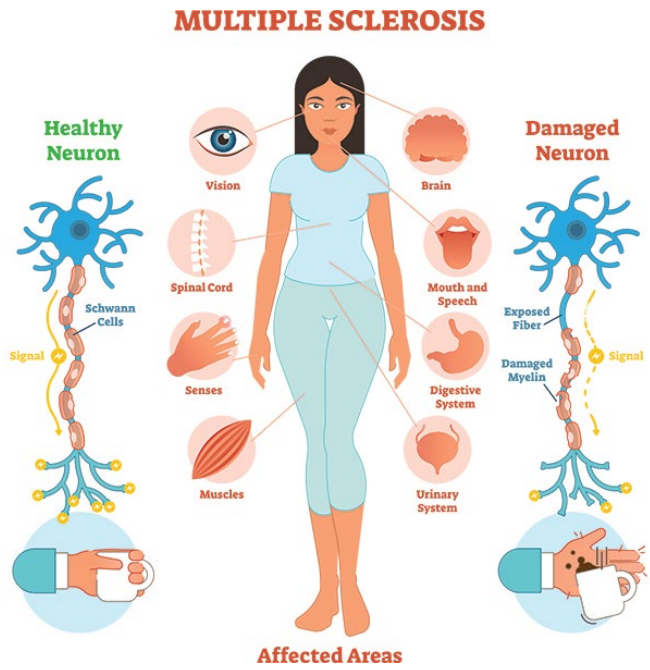
Physiotherapy for Athletes with Multiple Sclerosis

Introduction:

Multiple sclerosis (MS) is a condition of the central nervous system, interfering with nerve impulses within the brain, spinal cord and optic nerves.



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A wide range of variability in symptoms and severity exist, with GBS ranging from very mild cases with mild weakness to severe cases with individuals presenting with severe weakness and paralysis. Individuals will often present with progressive bilateral and symmetrical weakness and paralysis of the lower limbs as well as disturbed sensory sensations.

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Types of MS:

Relapse-Remitting MS (RRMS): is the most common form of MS; it is characterised by flare-ups of the neurological symptoms of MS, also known as relapses or attacks, followed by periods of recovery or remission.
Secondary Progressive MS (SPMS) – is a secondary phase of relapsing remitting MS that can develop years to decades following the initial onset of relapsing symptoms. SPMS is characterised by a progressive worsening of symptoms (accumulation of disability) over time, with no obvious signs of remission.

Primary Progressive MS (PPMS) – is diagnosed in approximately 10-15% of people with MS. PPMS is characterised by a progressive worsening of symptoms and disability right from the beginning, without periods of recovery or remission.

Note that no two people with MS present in the same way but symptoms can include:

- Loss of coordination, muscle weakness, spasms
- Speech difficulties
- Swallowing issues
- Hand shaking/tremor
- Loss of bladder/bowel control
- Fatigue
- Heat intolerance
- Visual impairments (blind spots, double vision)
- Memory lapses
- Vertigo and balance issues
- Weakness, loss of sensation or changed sensation including pain and tingling

Potential Impact of symptoms:

- Increased energy-cost of movement
- Impact on gait and transfers
- Poor posture/ positioning
- Contractures
- Pain/discomfort
- Decreased sensory awareness
- Skin breakdown /sheer
- Interference with respiratory function

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Physiotherapy Considerations:

- Due to the fluctuating nature of MS, no two individuals present with the same impairments and associated functional limitations; therefore, considerable variability in symptoms and response to exercise and interventions exist. Responses can vary from day to day or within a treatment session.
- Physios should maintain a flexible and adaptable approach when working with individuals with MS, and adjust goals as required to encourage appropriately challenging, yet achievable outcomes, as at times the overall pace of progress may be slower.
- As athletes with MS experience high levels of pain on a daily basis, gain an early understanding of pain, including management strategies and medications used. There is growing evidence in the space of pain medication specific to MS. Recommend medical review where appropriate.
- Cognitive difficulties including learning, processing speed and recall must be considered. Use precise vocabulary and descriptions, and be prepared to modify demonstration techniques. Slow down the exercise or movement patterns to ensure the skill is practiced and learnt effectively.
- Be aware of any movement restriction, balance and coordination challenges, and take these into consideration with any relevant drills or exercises. It's good to help athletes practice their balance in a safe way, as well as lay down the foundation for optimal basic movement patterns.
- The athlete may have impaired sensation in their hands or feet. This can be a safety issue in sports requiring grip. Modified interfaces increasing grip may be required or visual compensatory techniques utilised. For example, textured shoe innersoles or handgrips might be helpful.
- Depending on the athlete and the stage of their condition the use of adaptive equipment and assistive devices (temporary or permanent) may be necessary. Strategic use of adaptive equipment may be useful, for example during specific times of day (i.e. when fatigue is more pronounced) or when the environment is challenging (crowded spaces, uneven terrain etc).

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- Seated athletes in particular may experience spasticity and spasm when their lower legs are positioned in certain postures. The athlete will often be able to inform what these triggering positions may be. Adaptive equipment or modification to wheelchairs may be indicated to compensate.
- Athletes with MS can have fluctuations in function, ensure adaptive equipment or training aids can be suitably modified to cope with these fluctuations.
- Adapt equipment to compensate for any postural asymmetries. Work with Sports Seating and Engineering to develop customised equipment interfaces. Will often need to accommodate to the posture rather than correct to an “anatomical norm”. Aim for symmetry as much as possible for ideal joint and body loading, recognising that this isn’t always possible.
- For those athletes who are wheelchair users, ensure there is appropriate time out of the wheelchair as well so that the athlete can change position and lengthen out through legs, hips and spine where possible. Lying prone can be particularly helpful with lengthening out through the hips and providing a sustained stretch.
- For athletes that are wheelchair users encourage regular maintenance and review of their chair to ensure optimal function and promote injury prevention.
- Ambulatory and non-ambulatory individuals with MS can present with respiratory muscle weakness- consider respiratory muscle training or assessment of breathing mechanics.

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Other considerations:

Fatigue: Fatigue is a significant challenge for athletes with MS. More frequent rest breaks may be necessary during exercise. It is necessary to re-prioritise exercises in a manner that accommodates the evolving ability of the athlete.

Energy Conservation/Management Techniques - 4 Ps: Pacing, Planning, Prioritising, Positioning

- Task Simplification
- Adaptive equipment/assistive devices
- Environmental modifications
- Strategic rest breaks

Heat intolerance: Athletes with MS frequently suffer from perceptual issues around heat. Often moderate increases in core temperature are perceived as extreme. When athletes with MS train in a hot environment it exacerbates their symptoms. It is helpful to time training sessions during cooler periods of the day. If competitions will occur in hot, humid environments incorporate a graduated acclimatisation to heat schedule within the training program. For some, acclimatisation may not be effective. Another option is to try pre-cooling techniques such as ice vests, ice towels, drinking slurpees or ice-cold drinks. Alternatively they may need to plan the competition schedule around climates and avoid those that are problematic.

For seated wheelchair athletes consider the materials and seating used to minimise heat build up. Instead of full foam contoured supports use swing away supports to encourage more air flow for example. Memory foam can trap heat therefore use sparingly or avoid. Use upholstery materials that allow air flow.

Strength training: It is important to note that people with MS who experience symptomatic fatigue will require a flexible approach to weight training and progression. For example, to manage fatigue or avoid heat induced symptoms, alternate between upper and lower limb exercises, exercise when it is cooler, perform exercise earlier in the day to avoid tiredness, or undertake short sessions of exercise throughout the day. For athletes with specific regional weakness (e.g. foot drop), physiotherapy input into strength programming is important. Increasing training load very gradually is helpful. It is imperative to work with individuals to balance positive training adaptation with symptom progression. Overloading an athlete with MS can be detrimental to their condition.

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Medical risk factors:

Heat affected fatigue: People with MS often experience a reaction to heat (or increased heat) and a build up of symptoms as a result, such as fatigue, and visual disturbances. The symptoms will pass with time. Be prepared to cease activity early if heat-related symptoms are progressive.

Incontinence: If required, the athlete should have an established plan in place.

Pain: Is a common condition with MS and many athletes take pain relief medication. Ensure relevant medication is checked against antidoping (SIA) regulations and documentation up to date. A therapeutic use exemption (TUE) can be applied for if required. Athletes can be encouraged to time their pain relief to maximise effects during training or competition if indicated. Athletes can also be encouraged to use alternative approaches to pain relief like cold therapy, massage, counter-irritation, meditation/relaxation etc.

Resources, Links and References

https://www.msaustralia.org.au

https://brainfoundation.org.au/disorders/multiple-sclerosis/

http://www.nationalmssociety.org/NationalMSSociety/media/MSNationalFiles/Brochures/Clinical_Bulletin_Physical-Therapy-in-MS-Rehabilitation.pdf

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