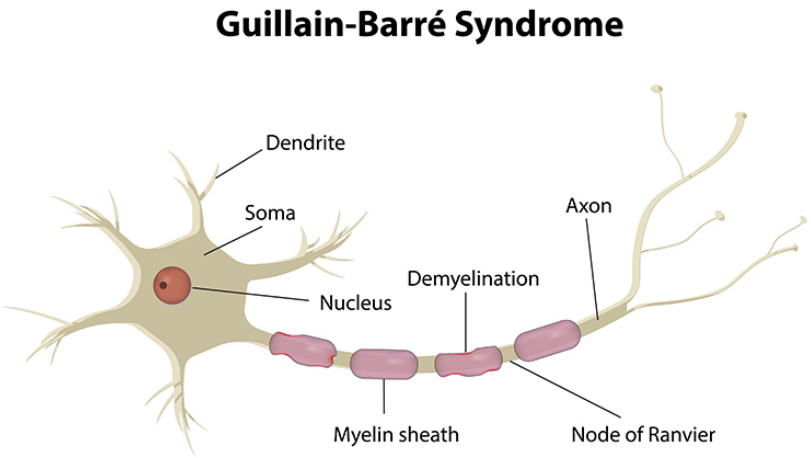
Physiotherapy for Athletes with Guillain-Barré Syndrome

Introduction:

Guillain-Barré syndrome (GBS) is one of several disorders involving weakness due to peripheral nerve damage caused by an individual's immune system. GBS is a rare autoimmune neurological disorder in which the body's immune system mistakenly attacks part of its peripheral nervous system. Often it will damage the myelin (the nerve insulation) and the axon (the inner covered part of the nerve), resulting in alterations in signals between these nerves and the rest of the body. As a result, the nerves cannot transmit signals efficiently and the ability of the muscles to respond effectively to messages from the brain become compromised.



https://www.ausmed.com.au/cpd/articles/guillain-barre-syndrome

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.

This document was prepared in collaboration with
Paralympics Australia and the Queensland Academy of Sport.

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

- Muscle weakness
- Altered sensations, including pins and needles etc.
- Pain that can be severe, particularly at night
- Abnormal heart beat/rate and/or blood pressure
- Problems with digestion and/or bladder control.
- Coordination and balance difficulties
- Difficulty with eye muscles and vision
- Difficulty swallowing, speaking, or chewing
- Breathing difficulties
- Dizziness

Potential Impact of symptoms:

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

There is no known cure for Guillain-Barré syndrome, and while GBS comes on rapidly over days to weeks, in 70% of cases, the individual usually recovers, whilst some individuals experience ongoing, long-term symptoms. There is a huge variation in recovery times, lasting anywhere between six months to two or more years.

Physiotherapy Considerations:

- Due to the fluctuating nature of GBS, 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 GBS, and adjust goals as required to encourage appropriately challenging, yet achievable outcomes, as at times the overall pace of progress may be slower.

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- As athletes with GBS can experience high levels of pain on a daily basis, gain an early understanding of pain, including management strategies and medications used. Recommend medical review where appropriate.
- 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.
- 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.
- 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.
- Athletes with GBS can have fluctuations in function, ensure adaptive equipment or training aids can be suitably modified to cope with these fluctuations.
- 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.

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Strength Training Considerations:

It is important to note that people with GBS who experience symptomatic fatigue will require a flexible approach to weight training and progression. It is imperative to work with individuals to balance positive training adaptation with symptom progression. To manage fatigue or avoid heat induced symptoms, the following strategies may be useful:

- Alternate between upper and lower limb exercises.
- Exercise in cooler parts of the day.
- Perform exercise earlier in the day to avoid fatigue, or undertake short bouts 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.
- Overloading an athlete with GBS can be detrimental to their condition.

Medical risk factors:

Fatigue: Fatigue is a significant challenge for athletes with GBS. 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

Pain: Is commonly experienced in individuals with GBS, with many individuals taking medication for pain relief. It is vital to ensure that relevant medication is checked against ASADA regulations and documentation is up to date. A therapeutic use exemption (TUE) can be applied for if required. It can be beneficial for athletes to time their pain relief medication to maximise effects during training or competition if indicated. It is important that athletes are also encouraged to use alternative approaches to pain relief like cold therapy, massage, counter-irritation, meditation/relaxation etc.

Pressure Injuries: For those athletes who are wheelchair users, a lack of sensation and tissue bulk loss leave the athlete at high risk of developing pressure injuries in the areas that the athlete cannot feel. Some of the common sites for skin and pressure injuries include the buttock and sacrum (from prolonged sitting) and other areas over bony prominences. It is vital to ensure regular checks of the seated equipment (sporting and day use) occur to ensure appropriate seating and pressure management is in place. It is important that the athletes spends an appropriate amount of time out of the wheelchair so that they can change position and lengthen out through their legs, hips and spine. Adoption of appropriate hygiene strategies are essential to minimise risk.

Heat intolerance: Athletes with GBS frequently suffer from perceptual issues around heat. Often moderate increases in core temperature are perceived as extreme. When athletes with GBS 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.

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.

Other strategies that may be helpful in hot and humid environments include: pre-cooling techniques such as ice vests, ice towels, drinking slurpees or ice-cold drinks. Alternatively the athlete may need to plan the competition schedule around climates and avoid those that are problematic.

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

Resources, Links and References

https://www.ninds.nih.gov/disorders/patient-caregiver-education/fact-sheets/guillain-barr%C3%A9-syndrome-fact-sheet

https://www.ausmed.com.au/cpd/articles/guillain-barre-syndrome

https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/guillain-barre-syndrome

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