

PERIPHERAL NERVE INJURY IN SPORT

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Peripheral nerve injuries are uncommon in sport, and are too often poorly understood from a biomechanical perspective. Whereas it is relatively straightforward to localize a peripheral nerve injury, such localization does not lead to meaningful management decision-making. Unless a nerve injury is the result of acute trauma, it is the result of repetitive overuse, which has training and recovery implications. The purpose of this lecture is to provide a broad overview of some common peripheral nerve injuries in sport, and to focus on biomechanical predispositions that have management implications.

Overuse peripheral nerve injuries may present as any combination of pain, numbness, weakness or loss of functional movement. Athletes may first notice small decrements in performance that may not be discerned as true motor weakness by either the athlete or the clinician. Overuse injuries develop when cumulative repetitive force generated by the athlete in sport is greater than that which underlying tissue is able to withstand. This is commonly called repetitive micro-trauma. Understanding overuse injuries requires an understanding of the athlete's training regimen, the biomechanics of training that are unique to the sport and the athlete, relevant equipment, and periodization. All play a key role in the continuum from repetitive stress to repetitive micro-trauma to frank injury.

Diagnosing peripheral nerve injury in sport requires an understanding of both nerve anatomy and the relationship of the nerve to surrounding soft tissue. Soft tissue can become remodeled through repetitive use, and such remodeling can lead to nerve entrapment or displacement. Soft tissue remodeling may be adaptive or maladaptive. When maladaptive, the discerning clinician must understand how the breakdown occurred. Breakdowns may simply be lack of recovery, but may also be from a poor kinetic chain continuum. The kinetic chain is the successive application of force from the ground/lower extremities to the trunk and upper extremities. When there is poor form or injury at any point of the kinetic chain, repetitive overuse and maladaptation are more likely to occur.

Diagnosing peripheral nerve injuries can be done through any combination of clinical skills, EMG/NCV, dynamic ultrasound and MRI. Localization is necessary but insufficient in diagnosis. Management of peripheral nerve injury must take into account mechanism of action of the nerve injury and functional restoration of movement.

This course will utilize the above framework to evaluate several peripheral nerve injuries in case report format.

Reference:

Hainline B. Peripheral nerve injury in sport. *Continuum: Lifelong Learning in Neurology*. 2014;20:1605-1628.