



### Concussion Protocol

A concussion is defined as a complex pathophysiological process affecting the brain, induced by a traumatic and direct blunt force injury to the head. Several common features that incorporate clinical, pathophysiological, and biomechanical injury that may be used in defining the nature of the trauma include:

1. Concussion may be caused by either a direct blow to the head, face or neck with an “impulsive” force transmitted to the head.
2. Concussion typically results in the rapid onset of short-lived impairment of neurological function. Symptoms may include but are not limited to; amnesia, confusion, disorientation, headache, nausea, uncoordinated hand-eye movements and loss of consciousness.
3. Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than structural injury.
4. Concussion results in a set of clinical syndromes that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follows a sequential course.
5. Concussion symptoms and severity are very individualized. Therefore, every athlete should be evaluated individually and not following generalities of a grading scale.

Amnesia, not loss of consciousness may be the main indicator of concussion severity and making a return-to-play decision. It is also the best predictor of post-injury of neurocognitive deficits.

No athlete with a concussion or suspected concussion should ever return to play before the brain has healed completely and the individual is asymptomatic. ***“WHEN IN DOUBT, SIT THEM OUT”***

#### **MANAGEMENT**

Acute response: when a player shows any signs or symptoms of a concussion after having a trauma to the head, neck or facial region.

1. The player will be evaluated by the allied health professional on site (Doctor or ATC).
2. If any symptoms of a concussion are present, the athlete will not be allowed to return to practice or game.
3. The player will be monitored for deterioration of symptoms.
4. Depending on the severity of the head injury, the player should be medically evaluated following the injury.
  - a. Rule out a more serious intracranial pathology
  - b. Neuropsychological testing
  - c. Follow-up evaluation of post-concussion symptoms should be done 48 hours after initial head injury (Impact test)

- d. Allow for necessary changes and accommodations at school (school attendance, gym class, academic and athletic participation)
5. If an intracranial hemorrhage is suspected at any point during evaluation, EMS will be notified.
6. Return to play must follow a supervised and gradual progression.

## **REHABILITATION**

It is important to note that the athlete must be completely asymptomatic and have normal neurological and cognitive evaluations prior to the start of the rehabilitation program. Moreover, the athlete must re-take the Impact test with a score close to his/her baseline.

The more prolonged the symptom duration, the longer the athlete will have to sit out, restricted from athletic activity. It is recommended that each step in the return-to-play protocol would, in most circumstances, be separated by 24 hours. Again, it is important to note that concussions are very individualized and each athlete's return-to-play progression will differ.

If at any time while proceeding through the return-to-play protocol, the athlete begins to have symptoms associated with a concussion, all activities will stop immediately and progression will begin at step 1 once the athlete is asymptomatic again.

## **RETURN-TO-PLAY PROTOCOL**

Athletes should complete the following step-wise process prior to returning to athletic activity.

1. No activity, complete rest until asymptomatic for a complete 24 hours.
2. Once asymptomatic, the athlete can begin light aerobic exercise (walking, stationary bike, light jogging).
3. If asymptomatic, the athlete can progress to weight training and longer periods of cardiovascular training at a reduced intensity.
4. If still asymptomatic, athlete can progress to sport-specific training (skating in hockey, running in basketball/football, ball drills in soccer, etc).
5. If still asymptomatic, athlete can progress to non-contact training drills.
6. If still asymptomatic, athlete can progress to full-contact training drills
7. Resume normal activities, practice and games.

It is important to note, that if at any time during this progression, the athlete becomes symptomatic he/she will stop activity and resume from step 1 once asymptomatic for 24 hours.