

Concussion Information Sheet

Common Signs and Symptoms of a Concussion

Signs observed	Signs reported by athlete
Appears to be dazed or stunned	Headache
Is confused about assignment	Nausea
Forgets plays	Balance problems or dizziness
Is unsure of game, score, or opponent	Double or fuzzy vision
Moves clumsily	Sensitivity to light or noise
Answers questions slowly	Feeling sluggish
Loses consciousness (even temporarily)	Feeling "foggy"
Shows behavior or personality change	Change in sleep pattern
Forgets events prior to hit (retrograde amnesia)	Concentration or memory problems
Forgets events after hit (anterograde amnesia)	

In a University of Pittsburgh Medical Center (UPMC) study of high school and college athletes with concussion, **on-the-field amnesia, not loss of consciousness, as long thought, was predictive of post-injury symptom severity and neurocognitive deficits.**

Post-Concussion Syndrome

Although the majority of athletes who experience a concussion are likely to recover, an unknown number of these individuals may experience chronic cognitive and neurobehavioral difficulties related to recurrent injury. Symptoms may include:

- Chronic headaches
- Fatigue
- Sleep difficulties
- Personality changes (e.g. increased irritability, emotionality)
- Sensitivity to light or noise
- Dizziness when standing quickly
- Deficits in short-term memory, problem solving and general academic functioning

This constellation of symptoms is referred to "Post-Concussion Syndrome" and can be quite disabling for an athlete. In some cases, such difficulties can be permanent and disabling.

In addition to Post-Concussion Syndrome, suffering a second blow to the head while recovering from an initial concussion can have catastrophic consequences as in the case of "Second Impact Syndrome," which has led to approximately 30-40 deaths over the past decade.

Concussion Assessment

Upon ruling out more severe injury, acute evaluation continues with assessment of the concussion. First, the clinician should establish the presence of any loss or other alteration of consciousness (LOC). LOC is relatively rare and occurs in less than 10% of concussions.

The identification of LOC can be very tricky, as the athlete may lose consciousness very briefly and this event may not be directly observed by others. By definition, LOC represents a state of brief coma in which the eyes are typically closed and the athlete is unresponsive to external stimuli. LOC is most obvious when an athlete makes no attempt to

brace his or her fall following a blow to the head. Any athlete with documented LOC should be managed conservatively, and return to play is contraindicated.

Although helpful in identifying more serious concerns (e.g. skull fracture, hematoma, contusion), traditional neurological and radiologic procedures, such as CT, MRI, and EEG, are not useful in identifying the effects of concussion. Such tests are typically unremarkable or normal, even in athletes sustaining a severe concussion. The reason for this issue is that concussion is a metabolic rather than structural injury. Thus, structural neuroimaging techniques are insensitive to the effects of concussion.

Concussion Recommendations

According to the Vienna Concussion Conference Recommendations, athletes should complete the following step-wise process prior to return to play following concussion:

- Removal from contest following signs and symptoms of concussion
- No return to play in current game
- Medical evaluation following injury
- Rule out more serious intracranial pathology
- Step-wise return to play
 1. No activity - rest until asymptomatic
 2. Light aerobic exercise
 3. Sport-specific training
 4. Non-contact drills
 5. Full-contact drills
 6. Game play

In the event that your athlete has sustained a concussion at a school event, you will be notified by the Athletic Trainer and a evaluation/treatment plan will be implemented. Some concussion may become evident after the fact that the event is over, or that the athlete did not notify the Athletic Trainer. If this occurs, please seek medical attention and notify the athletic trainer as soon as possible.