

Concussions In Young Athletes

McKenzie Pediatrics

April 2008

What Is A Concussion?

The simplest definition is that a concussion is *a trauma-induced alteration in mental status that may or may not be associated with a loss of consciousness, and that may or may not be long-lasting.*

When Do They Occur?

Concussions occur in contact sports and in any activity that involves rapid acceleration, deceleration, or rotational forces. The athlete suffers either a direct blow to the head or neck from falling and hitting the ground or other surface, colliding with another player, or being struck by an object such as a ball, puck, or bat.

The sports with the highest risk of concussion are football, ice hockey, soccer, wrestling, basketball, field hockey, baseball, softball, and volleyball.

Adolescents are more prone to concussion than younger children. And compared with adults, children and adolescents with concussion generally require more time to recover and are at greater risk of repeat concussion.

Estimates are that 3 to 5 percent of young athletes suffer a concussion at some time, but the true numbers are probably higher because an athlete may not report an injury or symptoms because he (she) does not want to be prevented from playing.

When Do Signs Of Concussion Appear?

Symptoms and signs may appear immediately after the brain injury, or be delayed for days or weeks. Changes in a child or adolescent's behavior, mood, or personality may result from concussion, and warrant examination by a physician.

What Are The Key Features of A Concussion?

- Confusion
- Loss of Memory
- Impaired Information-Processing Speed

Post-traumatic amnesia, a key feature of concussion, may appear as late as 20 minutes after injury to the brain. Resolution of amnesia is indicated by the athlete's ability to recall fully the events that preceded the injury.

What Should Happen After An Athlete Suffers A Head Injury?

Any child or adolescent who loses consciousness for any duration should be transported to an emergency department. Certainly, any athlete who suffers a seizure, or weakness, numbness or tingling to an extremity must also have immediate medical attention.

The young athlete who has *not* lost consciousness after a head injury must still be removed from practice or play for the day. The athlete should *not* be left unattended on the sideline, and must be re-assessed periodically for new signs or symptoms. Acute symptoms usually resolve within a few minutes, after which the athlete may be allowed to go home, with instructions for a follow-up office visit the next day. No athlete should return to play after a concussion until he (she) is fully asymptomatic and has normal findings on a physician examination.

What Signs or Symptoms On The Sideline Or At Home Warrant Immediate Medical Attention?

Worsening headache, drowsiness or difficulty awakening, difficulty recognizing people or places, repeated vomiting (vomiting once, within the first three hours, is okay), increasing confusion, increasing irritability, unsteady walking, or slurred speech.

What Questions Should Be Asked On The Field After A Head Injury?

- Test orientation to person, time and place by asking the athlete his (her) name, age, where he (she) is, the time of day, day of week, and month of year.
- Test attention by asking the athlete to subtract seven from 100 and keep subtracting. Typically, the athlete should be able to complete a serial seven in 90 seconds with fewer than four errors.
- Test attention by having the athlete spell a five-letter word, and then spell it backwards
- Test delayed recall by having the athlete repeat five words you speak. Ask them to repeat them again five minutes later.
- Test concentration by having the athlete recite the months of the year in reverse
- Test recent memory by asking the current score of the game, the quarter of play, and the name of the opponent. If during a practice, ask questions relating to that day's practice.
- Test distant memory by having the athlete tell you his (her) elementary school, and place of birth.

What Is Post-Concussive Syndrome?

Signs and symptoms relating to concussion may persist for several weeks, sometimes months. These include: nausea, balance problems or dizziness, fatigue, drowsiness, feeling "in a fog", difficulty concentrating, difficulty remembering, worsened academic performance and concentration at school, moodiness, social withdrawal, sensitivity to light or noise, or feeling slowed down. Most athletes with mild concussion recover fully within 7 to 10 days; severe concussions may take 1 to 3 months

When Is An Imaging Test (CT or MRI) Needed?

For any athlete who has focal neurologic signs (for instance, weakness or a seizure in one extremity), severe acute headache, loss of consciousness lasting more than a few seconds after the injury, progressively worsening signs or symptoms in the following hours or days, or failure of symptoms to resolve after two weeks.

When Can The Athlete Return To Play After A Concussion?

If the athlete with a mild concussion has had complete rest after the injury, and is then seen the following day after injury, and has a normal examination, has no difficulties in memory or concentration, has otherwise no physical symptoms, and has no symptoms after completing a 40-yard sprint, five push-ups, five sit-ups, and five jumping jacks, he (she) may return to noncontact training that or the next day. Return to full contact training depends on each situation, and is decided case-by-case.

What If My Athlete Has A Second Concussion?

The likelihood of long-term and permanent impairment in brain function increases with each concussion. Short intervals of time between concussions increase the severity of impairment. A second moderate or severe, or third mild, concussion in a season should end play for that season.

This handout is by no means a COMPLETE overview of the recognition, management, and treatment of concussions. It is meant only to offer parents the basic information necessary to recognize and understand young athlete concussions, and to know when medical care is needed. For more information, please contact our office.

