



Concussions in Young Athletes

What Athletes, Coaches, and Parents on the Sidelines Should Know

What is a concussion?

Although there is no universally recognized definition of a concussion, it generally includes any traumatically induced alteration in mental status that may or may not involve loss of consciousness. Common symptoms include the following:

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| Confusion | Dizziness |
| Headache | Unsteadiness |
| Nausea | Feeling “in a fog” |
| Vomiting | |

Who gets a concussion?

Participants in contact and collision sports are especially susceptible to concussions. It has been estimated that 300,000 sports-related concussions occur every year and that 63% of these injuries are sustained by high-school football players. Twenty percent of all high-school football players are believed to receive a concussion annually. Other sports that are associated with mild traumatic brain injuries are soccer, wrestling, boxing, lacrosse, and hockey. Athletes who are not expecting a sudden impact sustain the most concussions.

What are the different types of concussions?

There are 3 different grades of concussions for which doctors systematically evaluate. The symptoms for the 3 types are shown below.

	Grade 1 (mild)	Grade 2 (moderate)	Grade 3 (severe)
Symptoms	Concussive symptoms, such as headache, dizziness, and memory loss, that clear in less than 15 minutes	Concussive symptoms that clear in more than 15 minutes	Loss of consciousness for any amount of time

The key rule to observe is that an athlete who has sustained a concussion should not be allowed to return to play while still displaying symptoms. In general, athletes who sustain a concussion should consult with their physician prior to returning to competition.

How do you treat someone who gets a concussion?

Treatment of a concussion is based on the severity of the head injury. The following chart describes the course of action generally followed after an athlete has been evaluated and the grade of concussion has been determined.

	Grade 1 (mild)	Grade 2 (moderate)	Grade 3 (severe)
Return to Play	Remove from game and examine every 5 minutes. May return to play if there are no symptoms within 20 minutes.	Remove from game. May not return to competition for 1 week from time of resolution of symptoms with exertion.	Remove from game and transport to local emergency department. Eventually refer to neurologist prior to resumption of contact sports.

It is very important that an athlete who has sustained a concussion be examined frequently, even following return to play, and should not be left unattended until all symptoms have ceased and examinations are completely normal. Concussions are serious injuries, and return to activity is an important consideration.

What is the prognosis for an athlete who has sustained a concussion?

Many athletes who sustain mild concussions will return to previous mental status and be able to return to play soon after injury, provided that all symptoms have ceased. However, a complication of concussions that often goes unrecognized is postconcussion syndrome (PCS). Postconcussion syndrome can last between 1 week and 6 months following a mild head injury and is recognized by headaches (especially during physical activity), irritability, dizziness, impaired memory and concentration, sleep disturbance, and fatigue. Treatment for PCS is usually rest and close follow-up, although symptoms may persist for months. Athletes should not return to play until all symptoms, such as headaches, are resolved. Many experts believe that, to avoid serious injury to the brain, a third concussion should end an athlete's season indefinitely.

How can head trauma be avoided?

Prevention of head injuries in contact sports is crucial because the brain cannot regenerate after injury. Coaches and athletes should maintain appropriate conditioning for participation in sports, especially focusing on the neck muscles, which, when strengthened, will increase the amount of force needed to cause a concussion. In addition, appropriate protective gear, especially helmets, should be worn at all times during play. Helmets should be fitted for each individual athlete and should be discarded if worn out. Medical care can be optimized if those on and off the field are able to recognize and categorize concussions and are aware of the serious implications of such head traumas.