

Concussions in Sports

By: Keith Owen Yeates, Ph.D., ABPP/CN

*Director of Pediatric Neuropsychology, Nationwide Children's Hospital
Nationwide Children's Sports Medicine*

What is a concussion?

Concussions are a surprisingly common occurrence in sports. High school athletes suffer thousands of concussions every year, most often in football, ice hockey, and soccer. Concussions do not always involve being “knocked out,” or a loss of consciousness. A concussion occurs whenever a child’s mental status changes as a result of trauma (usually a blow to the head). A child who shows signs of mental confusion or is “dinged” by a blow to the head has suffered a concussion.

What happens after a sports-related concussion?

Sports-related concussions often result in mental and physical symptoms (e.g., inability to concentrate, forgetfulness, headache, fatigue, dizziness). For many athletes, the symptoms disappear after about 10 days, and they typically do not last more than several months. In some cases, though, concussions lead to persistent complaints of physical, mental, emotional, and behavioral symptoms, sometimes referred to as post-concussion syndrome. We do not know whether persistent post-concussive symptoms result from primarily medical or psychological causes. In rare cases, when repeated concussions occur over a brief interval, athletes may suffer from second impact syndrome, a pathological response of the brain that can be life-threatening if not treated promptly. Parents should seek careful evaluation and management of any sports-related concussion.

How should a sports-related concussion be evaluated?

Concussions are typically managed according to their severity. Immediately after a concussion, medical evaluation is needed to determine a child’s vital signs and level of consciousness and to rule out any other injuries, such as those to the spine. Recent guidelines indicate that any child who loses consciousness as a result of trauma during a sporting event should be evaluated by a hospital emergency department. In cases of less severe concussion, athletes are typically evaluated on site rather than in hospital emergency departments. There are a variety of approaches to the “sideline” assessment of concussion. Guidelines are also available to assist in deciding when a child is ready to return to play after a concussion.

Can Neuropsychological assessment help?

Neuropsychological assessment is widely regarded as the most sensitive way of detecting disturbances in brain function associated with concussion. The National Football League and the National Hockey League have both instituted systematic programs of neuropsychological testing, as have many colleges. Athletes are administered brief tests of attention, memory, and speed of information processing before the season. Athletes who sustain concussions are tested again, typically within 48 hours of the injury and at regular intervals afterward. Recovery to baseline levels of performance is typically required before athletes are allowed to return to play. Similar cooperative programs can be instituted for organized athletic programs at the high school level. In the absence of programmatic testing, athletes who complain of persistent post-concussive symptoms should be considered for a more comprehensive neuropsychological evaluation.

What can be done to prevent or treat concussions?

Changes in the rules for athletic competition have reduced the number of sports-related concussions. After the National Collegiate Athletic Association made the use of the head when tackling illegal in 1976, the annual number of head and neck injuries in football declined by about 50%. The required use of helmets in many contact sports and advances in helmet design also has resulted in fewer head injuries. Improved conditioning of young athletes, especially strengthening of neck muscles, may also help to prevent concussions.

If a child sustains a concussion, parents should seek appropriate medical care. They should request a description of symptoms indicative of worsening brain injury and of common post-concussive symptoms, as well as guidelines for return to play and for medical follow-up. For athletes who experience persistent difficulties after a concussion such as headaches, difficulty concentrating, irritability, sleep disturbances, or dropping grades, an effective treatment plan will often combine education, cognitive rehabilitation, psychological support, and in some cases medication.

Consult your primary care physician for additional information regarding sports-related concussions. As an added resource, the staff at Nationwide Children's Hospital Sports Medicine is available to assess and treat sports-related injuries for youth or adolescent athletes. To make an appointment, call 614-355-6000.