

A concussion is any injury to the brain that disrupts normal brain function on a temporary or permanent basis. Concussions are typically caused by a blow or jolt to the head. The following is information from the American Academy of Pediatrics about concussions, including guidance on treatment and prevention.

## When do concussion occur?

Concussions can happen in any sport but more often occur in **collision sports**, such as football, rugby, or ice hockey. They also are common in contact sports that don't require helmets, such as soccer, basketball, wrestling, and lacrosse. However, a concussion can also occur from collision with the ground; a wall; a goalpost; or a ball that has been thrown, hit, or kicked. Many concussions also occur outside organized sports. For example, a child **riding a bike** or skateboard can fall down and bump his head on the street or an obstacle.

## Symptoms

The symptoms of a concussion range from subtle to obvious and usually happen right after the injury but may take a few hours to days to show up. Athletes who have had concussions may report feeling normal before their brain has fully recovered. With most concussions, the player is not knocked out or unconscious.

Symptoms of a concussion include the following:

- Headache
- Nausea or Vomiting
- Dizziness or Balance problems
- Double or Blurry vision
- Sensitivity to light
- Sensitivity to noise
- Feeling dazed or stunned
- Feeling mentally “foggy”
- Trouble concentrating
- Trouble remembering
- Confused or forgetful about recent events
- Slow to answer questions
- Changes in mood – irritable, sad, emotional, nervous
- Drowsiness
- Sleeping more or less than usual
- Trouble falling asleep
- What to do if you suspect a concussion

All concussions are serious, and all athletes with suspected concussions **should not return** to play until they see a doctor. A doctor can confirm the diagnosis of concussion; determine the need for any

specialized tests, such as CT scan, MRI, or neuropsychological tests; and decide if it is OK for the athlete to return to play. Prematurely returning to play after a concussion can lead to another concussion or even death. An athlete with a history of concussion may be more susceptible to another injury than an athlete with no history of concussion.

No one knows how many concussions are too many before permanent damage occurs. Repeated concussions are particularly worrisome, especially if each one takes longer to resolve or if a repeat concussion occurs from a light blow. The doctor needs to know about all prior concussions, including those that occurred outside of a sports setting, in order to make proper recommendations regarding return to play and future sports participation.

## Treatment

The best treatment for a concussion is complete rest from all physical and mental activity. Children should be monitored often, but there is no need for wake-up checks during sleep. Loud music, computer, and TV should be limited or stopped if they increase the symptoms. School attendance and work may need to be modified with tests and projects postponed. Students need to be excused from gym class or recess activities. Any worsening of concussion symptoms or changes in behavior (eg, agitation, grogginess, and disorientation) should be immediately reported to your doctor.

## Returning to physical activity

Recovery time from concussion is variable based on the individual, the severity of the concussion, and the history of prior concussions. An athlete may feel better and want to return to play before their brain has completely recovered. Given the uncertain and unpredictable time frame for recovery, all sports activity should be suspended until symptoms have completely resolved at rest. At this point, a stepwise return to physical activity can begin if the athlete's doctor says it's OK. The stepwise plan should be progressive and individualized. Having an athlete trainer involved in monitoring this plan can be very helpful. It is important to pay close attention to worsening symptoms (like increasing headache, nausea, or dizziness). Any concussion-related symptoms that return with exertion are a clear indicator that the concussion has not healed. Final clearance to return to full activity should be at the direction of a physician.

## Prevention

Not all concussion can be prevented, but some may be avoided. Helmets should be worn for any riding activities (like horseback, all-terrain vehicle [ATV], motorbike, bike, skateboard, or snowboard) or contact sports (like football, hockey, or lacrosse). Helmets should fit appropriately and be in good condition. Athletes should be taught safe playing techniques and to follow the rules of the game. Most importantly, every athlete needs to know how crucial it is to let their coach, athletic trainer, or parent know if they have hit their head or have symptoms of a head injury – even if it means stopping play. Never ignore a head injury, no matter how minor.

“When in Doubt, Sit Them Out!”