

Female Athlete Series

Concussion



Boston Children's Hospital
Sports Medicine

bostonchildrens.org/sportsmed
617-355-3501

When comparing sports played by both male and female athletes, studies suggest that girls are at higher risk of concussion than boys, and that girls may also have more severe concussion symptoms that take longer to resolve. Fortunately, there are ways to prevent, reduce and react to concussions. Female athletes should embrace their sports with healthy competition and be smart about safety.

What is a concussion?

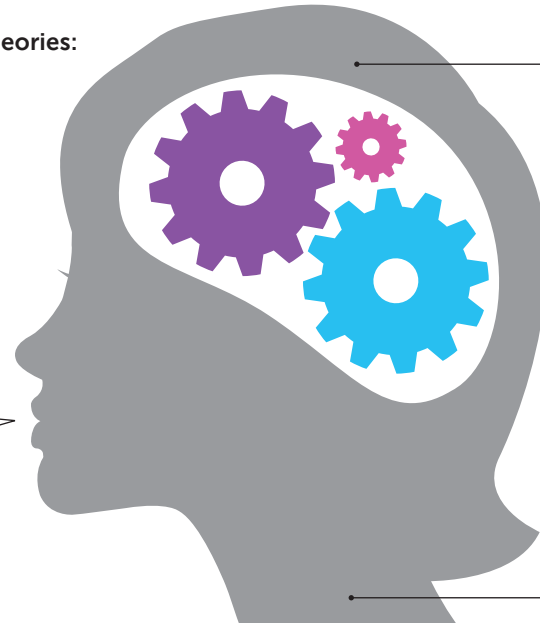
Concussions are traumatic brain injuries that result from a shake or rapid motion of the head. This is most often because of a direct blow to the skull, but can also be caused by a blow to the body that rotates or snaps the head. Anyone experiencing even slight concussion symptoms should stop activity and immediately see a health care provider.

Why are females at a higher risk?

Though some research highlights females' susceptibility to concussions, there is little evidence to explain why differences in concussion rates and symptoms have been found in girls versus boys.

Here are some theories:

Increased reporting of symptoms. While female athletes may be better at reporting their symptoms, this is probably not the whole story. Some studies show that girls may have more changes on neurocognitive testing after concussion.



Smaller mass of the head and neck, making it harder for females to absorb the shock of an injury.

Less developed neck muscles meaning less control of head movement during an injury.

Common concussion myths

Myth No. 1: It's only a concussion if you lose consciousness.

False! Loss of consciousness is not necessary for a concussion, and many symptoms can be delayed, so it's important to pay attention to the subtle signs after an injury.

Myth No. 2: If you're not sure if you have a concussion, it's OK to finish the game.

False! If you have any symptoms at all, you should immediately stop playing, tell your coaches and other officials, and be evaluated by a health care professional. Continuing to play could make symptoms and recovery worse and recovery harder. Rest—both physical and cognitive—is crucial for full recovery. A health care professional who is trained in concussion can help create an appropriate plan for the type and duration of rest, in addition to other testing and treatment that may be beneficial.

Myth No. 3: Concussion is a bruise on the brain.

False! Concussion is primarily a functional problem of the brain, in which signaling patterns of the brain are not working normally. Tests like MRI and CT scan do not show any evidence of bleeding or bruising after concussion.



Preventing, identifying and treating concussions

Prevention Talk with coaches, athletic trainers and other authorities about the importance of concussions, and practice safe playing techniques. These include wearing proper, well-fitting equipment and playing by league rules.

Identification Pay close attention to the subtle symptoms, and do not push yourself to continue playing. Confusion, ear ringing, nausea, headaches and dizziness are all common symptoms, but delayed symptoms also include personality changes, irritability, depression, poor concentration and sleep problems.

Treatment Proper recovery is paramount. As soon as you identify signs that suggest a concussion, see a health professional trained in concussion immediately. Based on your individual case you may be asked to rest both physically (no exercise) and mentally (no academics or screen time). You should only return to your normal routine once your health professional has given you permission.

Avoidance of repeated concussions Studies have shown that players who suffer one concussion have a greater chance of sustaining another, and athletes who have sustained several concussions may experience memory loss and a decline in their ability to think, concentrate and reason.

Know your risk!

Cheerleading: Risky stunts, like tossing a participant high in the air, have led to an increase in cheerleading concussions.

Bicycling: When a rider traveling at a high speed falls from a bike, serious head injuries can occur.

Skiing and snowboarding: About 20 percent of skiing and snowboarding injuries are head injuries. Hard falls and collisions with trees, signs and other skiers may lead to concussions.

Basketball: Hitting your head on the floor or being hit hard by an opponent may cause a concussion.

Soccer: Research suggests that female soccer players are second only to male football players in the number of concussions that they develop each year. Head injuries can be caused by falls and player-to-player contact. Research suggests that even heading the ball (repetitive sub-concussive blows) may lead to mild cognitive dysfunction.

Softball: Concussions may result when players collide with other players, run into fences and backstops, or are hit by a ball or bat.

Neurocognitive baseline testing

Neurocognitive testing is a tool that determines how your pre-concussion memory and reaction time compare with post-concussion responses. Ideally, pre-season, before a concussion even occurs, you take a 30-minute test that measures memory and reaction time, and in the event that you do experience a concussion, that test data is used to help measure your readiness to return to sports. Without this data, it can be difficult to tell if you have completely recovered, which may put you at risk for future injury. To get your baseline testing at Boston Children's call 781-216-1328 for an appointment.



Boston Children's Hospital

Until every child is well™

Reviewed by Cynthia Stein, MD, MPH, Boston Children's Hospital

This sheet is part of the Female Athlete Series, which is a suite of educational materials to help female athletes live the healthiest lives possible while competing. For more materials on enhancing athletic performance, call 617-355-3501 or visit bostonchildrens.org/sportsmed.

