

Sports Concussion Concerns:

Speedy diagnosis and treatment can reduce lifelong effects

Sports Health

Every time an athlete steps on the playing field, he or she faces the very real possibility of concussion. In fact, U.S. athletes at all levels of competition suffer more than 1 million concussions each year.

Most concussions (80 to 90 percent) will resolve within seven to 10 days. But for reasons not yet well understood, some patients take much longer to recover. What many parents, coaches, athletic trainers and athletes may not realize, however, is that the effects of a concussion can last several months, and rarely, may have long-lasting effects, even into adulthood. Expedient diagnosis and management of concussions are the best ways to reduce the potential long-term risks.

Cleveland Clinic Sports Health fields a dedicated team of primary care sports medicine physicians, orthopaedic surgeons, physical therapists, athletic trainers, nutritionists, radiologists and exercise physiologists that use a team approach to evaluate and manage concussions.

Our Sports Health team also collaborates with other Cleveland Clinic experts in neurology, neurosurgery, pediatrics and basic science research to further improve understanding, diagnosis and treatment of this traumatic brain injury.

What is a concussion?

Concussions are injuries to the brain after a traumatic event such as a bump, blow or jolt. Concussions can also be caused from a blow to the body that causes the head to move rapidly back and forth.

With today's bigger, stronger, faster athlete, concussions from "hits" and falls are becoming more prevalent

at sporting events. Sports-related concussions occur annually in the United States. They are becoming so widespread, the NFL, NCAA and National Federation of High School Sports, in 2010, have adopted more stringent rules pertaining to concussions and return to play.

The National Collegiate Athletics Association (NCAA) and the National Federation of State High School Associations (NFSHSA) recommend any child or adolescent who has any signs or symptoms of a concussion be removed from play and be evaluated by a physician. Those athletes diagnosed with a concussion should be symptom-free both at rest and with exertion prior to being allowed to return to play. While athletes from any sport may suffer a concussion, those involved in contact sports are at highest risk. Cleveland Clinic Sports Health offers the latest diagnostic and rehabilitative sports concussion programs available.

Testing Guides Treatment

Because conventional imaging techniques, such as MRI and CT scans, do not detect concussions, sports health physicians use a well-accepted computerized test known as Immediate Post-concussion and Cognitive Testing (ImPACT) to make a more precise sports-related concussion diagnosis and to monitor the progress of the athlete and assist in return-to-play decision making.

Ideally, the ImPACT test is taken before an athlete steps onto the playing field. Cleveland Clinic experts administer the half-hour test to gather baseline data on the athlete's memory, reaction time and other cognitive functions.

continued on back





If the athlete then sustains a concussion, another ImPACT test is administered days after the concussion. Comparing these results with baseline, physicians can determine the severity of the concussion and design an appropriate treatment plan. If necessary, the athlete undergoes concussion rehabilitation, which may include vestibular, or balance, training. ImPACT testing may be repeated later to help in deciding when the athlete can safely return to play.

Even when the physical, and sometimes emotional, symptoms of a blow to the head have disappeared, the brain may not be healed. Cleveland Clinic Sports Health accepts referrals for evaluation of suspected athletic concussion and post-concussive syndrome as well as for diagnosis and comprehensive management of confirmed cases.

According to **Richard Figler, MD**, primary care sports medicine physician at Cleveland Clinic with an interest in sports concussion and medical problems of athletes, effective management strategies like ImPACT and close monitoring of the athletes' symptoms, can allow athletes to return to competition more quickly and safely.

Education Is Key

Inadequate response to concussion can have serious, even deadly, consequences. Cleveland Clinic Sports Health is reaching out to parents, coaches, athletic trainers and athletes to ensure that they know the symptoms and act appropriately when athletic concussion is suspected.

Let Cleveland Clinic Sports Health keep your head in the game.

THINK YOU OR YOUR ATHLETE MAY HAVE A SPORTS-RELATED CONCUSSION?

Cleveland Clinic Sports Health Concussion Program offers evaluations and management for sports-related concussions from one experienced team.

Same-Day Appointments
866.770.1169 | sports-health.org

PROMISING TECHNOLOGY WILL IMPROVE SAFETY

An intense interdisciplinary research effort, focused in part on improving safety in helmet and equipment design, is underway across Cleveland Clinic.

The Spine Research Laboratory, part of the Neurological Institute, has developed a wireless, MEMS-based Intelligent Mouthguard that measures in-game head impact dynamics in contact sports such as football and boxing. With Bluetooth® technology, data from mouthguard sensors are transmitted to a computer on the sideline to measure head orientation, position, and velocity and acceleration of impact. The data are used to assess real-time and post-competition neurological outcomes and to assist with rapid diagnosis of injury. Ultimately, the information should be useful in equipment design.

On another front, the Spine Research Lab has partnered with Rawlings, well-known manufacturer and retailer of sports equipment and apparel, to test protective headwear and accessories for baseball and football. Rawlings has donated research Promising Technology Will Improve Safety equipment, including a linear impactor for helmet testing and a baseball air cannon. It will be housed at the newly named Rawlings Performance Laboratory at Cleveland Clinic Lutheran Hospital.

In the Lerner Research Institute, another team of researchers is developing a blood test to determine whether the blood-brain barrier has been breached, thus indicating which patients may need further evaluation. This simple test could spare less severely injured patients the radiation exposure from an unnecessary, costly CT scan.

