

## **Concussions in Student Athletes**



**By Dr. Michael Sefton**  
**Director of Neuropsychology**  
**Whittier Rehabilitation Hospital**  
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Concussions are serious injuries that occur once every minute throughout the country. As many as 300,000 student athletes sustain concussions annually – an estimated 60,000 in high school alone. And more specifically, 40,000 (69%) of those high school athletes are football players. In addition to football, ice hockey and wrestling have the higher rates of concussion among athletes.

A concussion is an injury that results from a “bump” on the head and it need not result in loss of consciousness. It can disrupt the normal function of the brain and can technically be considered a “closed head injury” because the skull is not pierced by an object.

Because the brain is very complex and trauma to the head is different, every brain injury is different. Athletes may become dazed or confused following a head trauma or they may lose consciousness. And while symptoms of a concussion may appear right away, others might not show up for days or weeks.

In general, there are a broad range of concussion symptoms, including low-grade headaches that won't go away, difficulty concentrating or “feeling foggy,” neck pain, ongoing fatigue or lack of energy, change in sleep patterns, increased sensitivity to sound or light, blurred vision, ringing in the ears and mood changes.

The effects of concussions are significant and can sometimes have a long lasting impact on young athletes. They often result in lingering physical symptoms such as head aches, sleep disturbance, and depression. Thus, it is very important that athletes not return to competition in advance of the alleviation of symptoms.

Because of the variability of concussion symptoms from athlete to athlete, making determinations as to when an athlete can return to competition is difficult. The signs of concussion can be subtle. Early on, problems may be missed by patients, family members and doctors. The injury may make it hard for patients to recognize or admit that they are having problems.

This is why pre-injury testing can offer important data to physicians, coaches, and trainers as to the impact of an athlete's injury during their sport and can help determine athlete's ability to return to play. Neuropsychological testing has been shown as the definitive tool to assess the impact of concussions on cognitive functions such as attention and short-term memory. Furthermore, neuropsychological testing has become a stalwart in both making diagnosis and guiding physicians in making the “return to play” decision for the athlete.

The importance of preseason neurocognitive testing is well documented. It provides a baseline assessment of each athlete's level of functioning including memory, attention, processing speed, reaction time, and more. It serves as his or her unique comparison profile in the event an injury occurs during the season of play.

The NCAA has recommended this testing for all college athletes prior to competition and both NHL and AHL boards of directors have adopted a unified recommendation for concussion testing. It is an inexpensive insurance policy to have the testing data available in the event an athlete becomes injured during play.

ImPACT is a user-friendly computer based testing program specifically designed for the management of sports-related concussions. The ImPACT program evaluates and documents multiple aspects of neurocognitive functioning including memory, brain processing speed, reaction time and post-concussive symptoms. In addition, the ImPACT program provides a user-friendly injury documentation system that facilitates the tracking of the injury from the field through the recovery process.

The instrument has been designed after approximately 10-years of University-based, grant-supported research. ImPACT is implemented effectively across high school, collegiate, and professional levels of sport participation, and as a result, more and more high schools and professional teams are using the ImPACT program to assess athletes prior to the start of their season. Here in Massachusetts, Brookline, Whitman-Hanson, and Westboro offer preseason testing of varsity athletes and many more schools have recently adopted the program.

For two years now, Whittier Rehabilitation Hospital continues to support the Sports Concussion Prevention and Awareness project first initiated last fall by Dr. Michael Sefton, Director of Neuropsychology at Whittier Rehabilitation Hospital. Dr. Sefton uses the ImPACT program to measure neurocognitive functioning before and after injuries. In the fall of 2004, preseason testing of youth hockey players was initiated for the first time in Shrewsbury.

"We evaluated nearly 60 players prior to the start of the hockey season last fall. About 5-8 percent of those were injured during the season and re-evaluated," reported Sefton.

It is recommended that athletes be re-tested within 24-48 hours after becoming injured. This follow-up can be arranged by calling The Outpatient Center at Whittier Rehabilitation Hospital at (508) 871-2077 and asking for a concussion follow-up appointment. Dr. Sefton will make arrangements to have athletes tested as soon as possible after they have sustained a concussion and will provide consultation to parents, coaches and the child's physician in an effort to assure a safe return to play.