



BRAIN INJURY ASSOCIATION OF NEW JERSEY

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No Brain Injury is
Too Mild to Ignore,
or Too Severe to
Lose Hope

Winter Season Also One with Sports Concussions

By Jill Brooks, Clinical Neuropsychologist, Head to Head Consultants, P.A.

Now that the fall sports season is over, many people might think that we are through with our sports season with the highest concussion risk, but, in fact, we have moved from a season of football, soccer and field hockey players, to a season of indoor lacrosse, basketball, wrestlers and ski racers. Thus, our concerns about protecting the safety of student athletes must remain strong.

The Centers for Disease Control and Prevention (CDC) estimates that up to 25 percent of all head injuries are sports related. In football alone, projections are that 10 percent of all college players and 20 percent of all high school players will sustain a concussion-related injury during the course of the season. Brain injury resulting from concussion is also the most common injury in winter sports, accounting for 46 percent of all injuries. Furthermore, children under 15 are more than twice as likely to sustain a concussion by playing a sport than in a motor vehicle accident.

Recent advances in neuroimaging and the measurement of thinking skills have increased our understanding of concussive brain injury. Even the definition of concussion has been refined, and most recently after the first International Symposium of Concussion in Sports in Vienna (2001) further elucidated the definition of concussion, which is now defined as “a complex pathophysiologic process affecting the brain induced by traumatic biochemical forces.”

Common features that incorporate clinical, pathological and biomechanical injury constructs that may be used in defining the nature of a concussive head injury include:

- 1) Concussion can either be caused by a direct blow to the head, face, neck or elsewhere on the body with an "impulsive force transmitted to the head."
- 2) Concussion typically results in the rapid onset of short-lived impairment of neurologic function that resolves spontaneously.
- 3) Concussion may result in neuropathologic changes, but the acute clinical symptoms largely reflect a functional disturbance rather than structural injury.
- 4) Concussion results in a graded set of clinical syndromes that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follows a sequential course.
- 5) Concussion is typically associated with grossly normal structural and neuroimaging studies.



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This information was gleaned from Concussion in Sports Group and was published in the Clinical Journal of Sports Medicine (2002).

Additional recommendations have been made relating to the importance of structuring a stepwise approach for return to play following a concussion. In fact, any concussed athlete should be removed from competition, examined and observed. A player should never return while symptomatic. An example of stepwise approach for return to play includes:

- no activity and complete rest while symptomatic
- proceeding to light exercise off the field of competition
- moving toward sports specific activity without contact
- on the field practice without contact
- clearance by a physician to practice on the field with contact and
- returning to full competition.

It is recommended that if any symptoms occur at any step in the progression that it is important to drop back to a step without symptoms and progress slowly and systematically again.

The importance of the potential long-term neuropsychological sequelae consequent to mild traumatic brain injury have been well documented, and problems such as Second Impact Syndrome in children and adolescence, although rare, can be fatal.

Post-concussive symptoms can be persistent and refractory to treatment. The importance of knowledgeable professionals working in the area of diagnosis, management and return-to-play guidelines is of the utmost importance. Concussion evaluation and treatment involves a team approach between physicians, athletic trainers, neuropsychologists, the athlete and his/her parents.

Functional imaging techniques and imaging in general are being utilized more and more.

It is important from an educational standpoint that athletes, their parents and school personnel, as well as physicians, be well educated in the signs and symptoms associated with concussion and the management objectives. In managing the concussed athlete, it is important to look at both the acute management as well as return-to-play decision-making. It is not just important to consider returning someone to their sport, but for student athletes, we must remember that we are returning them to the classroom as well, and that post-concussive symptoms can affect the student athlete's ability to work within the academic environment. Thus, contact and communication with the school counselors and the school nurse are of paramount importance.



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Evaluation and treatment of student athletes require a team approach with the idea that prevention and education are the best treatment strategies to prevent concussive injuries. So, as we engage in winter sports moving back into spring sports, we need to think in terms of education, prevention and baseline testing of our athletes. We need to ensure that athletes are tested prior to the beginning of their season, and retested as necessary, should they sustain a concussion. Serial testing over time is state of the art, as is preseason baseline testing.

Pilot programs for brain injury prevention focus on expanding the knowledge base concerning concussion in sports. This provides us with an opportunity to foster change in our youth sports population.

It is important to emphasize expanding outreach in educational programming in youth sports as we begin to offer a wider diversity of sports programs at the high school and collegiate levels. The importance of developing a standardized program to educate coaches, parents, trainers and athletes at all of these levels should be emphasized. The CDC indicates that surveillance is the best method of prevention. We agree, as well, that education should be added as a significant component to prevention.

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