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GAME PLAN

Spring 2007

Multiple Concussions - A Future at Risk

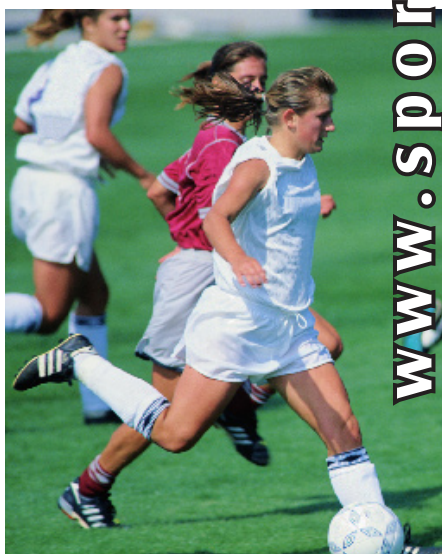
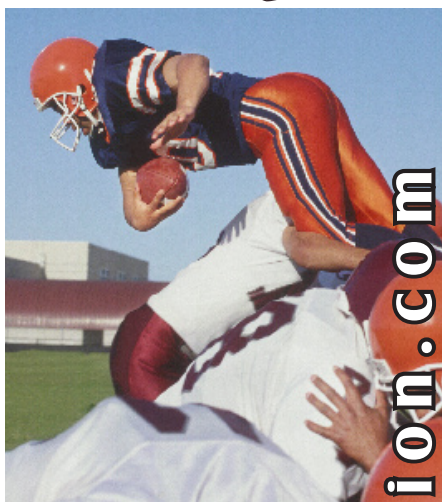
By: Dr. Ron Savage EdD & Tim Manni

A concussion is a traumatic brain injury (TBI). In fact, concussion is the most common type of traumatic brain injury. Unfortunately, concussions that are not evaluated and treated properly can be just as devastating to student athletes and their family as are more serious brain injuries. Concussions can also result in later problems with severe depression and anxiety, substance abuse disorders, difficulty with anger and aggression, and/or suicidal thoughts and attempts. These developing disorders, as a direct result of a concussion or repeated concussions without proper treatment, can spiral a young person's life out of control.

It is important to note that this story focuses on professional athletes who make personal decisions about any risk they are willing to take regarding the future of their career. A student athlete has adults making decisions for them. The information in this article provokes thoughts about how much risk is too much for our student athletes whose brains are still developing and whose careers and futures have yet to be determined.

Over the past few months national and local periodicals, both online and in print, have been uncovering another faction of the silent epidemic that is traumatic brain injury. Last November the tragic death of Andre Waters, former NFL defensive back, has recently brought

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What's Your Question?

Your questions are answered by statewide experts on the Sports Concussion Committee

•Q: When is it safe to return to play?

•A: If an athlete has any physical or cognitive signs or symptoms of a concussion the player is not safe to return to play. The athlete should not return to play until cleared by properly trained health professionals. Often an individualized multi-disciplined team approach including properly trained sports physicians, neuropsychologists, neurologists and certified athletic trainers is used in the diagnosis and treatment of concussion. Treatment should involve physical and mental rest. Once an athlete is asymptomatic with normal physical exams, has returns to baselines on neuropsychological testing if available, a progressive return to play program is implemented to increase the activity level in a step wise process. Because activity often worsens the symptoms of concussion, any time an individual starts to have symptoms reoccur it is important not to continue to advance the individual. An easy rule to live by, "when it doubt, sit them out!"

David B. Gealt, D.O.

Cooper Bone and Joint Institute, Cooper University Hospital

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BRAIN INJURY ASSOCIATION

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(Continued from cover)

to life the devastating connection between sustaining multiple concussions and permanent brain damage. Waters, 44, died from a self-inflicted gunshot wound, the tragic result of clinical depression brought on by the repeated trauma inflicted to his brain.

A January story in *The New York Times* spoke of how former Harvard football player and professional wrestler Chris Nowinski, convinced Waters' family to have samples of his brain tissue examined by a neuropathologist. Multiple concussions had ended Nowinski's career and he feared Waters' death may have been the result of a similar self-punishing career. The condition, in which Nowinski believed Waters' brain was in, could not properly be determined by doing a scan of a living person, it could only be accurately examined closely under a microscope.⁵

Dr. Bennet Omalu of the University of Pittsburgh, a leading expert in forensic pathology who also examined the brains of two former Pittsburgh Steelers who were found to have brain trauma resulting from multiple concussions, examined four pieces of Waters' brain and found devastating results. Dr. Omalu determined from his results that if Mr. Waters had lived for 10-15 more years, "Andre Waters would have been fully incapacitated."⁵ The results showed Waters' brain tissue had degenerated into that of an 85-year-old man and showed that Waters' brain resembled characteristics of the early stages of Alzheimer's disease.³

"It strikes me as pretty reasonable," Dr. Brent Masel, board member for the Brain Injury Association of America, said referring to Omalu's analysis. "When you look at boxers and the problems they've had, it makes sense that you might find this in a football player, based on what we know."³

According to the Center for the Study of Retired Athletes (CSRA), in a 2001 survey of over 2,500 former NFL players, "24% of retired NFL players reported sustaining three or more concussions during their professional playing years," and "retired NFL players who sustained three or more concussions during their professional playing years, had a nearly three-fold risk of being diagnosed with Mild Cognitive Impairment (one precursor to Alzheimer's disease)."² In a new study to be published later this year, the CSRA found a similar relationship between sustaining three or more concussions and clinical depression.⁵

Dr. Omalu discovered postconcussive brain dysfunction as a result of sustaining multiple concussions in two former Pittsburgh Steelers Mike Webster and Terry Long. Webster had sustained brain damage and became homeless before dying in 2002 and

Terry Long killed himself in 2005.¹ Nowinski, now a published author of *Head Games: Football's Concussion Crisis*, wants to alert families and players of all ages about the devastating effects multiple concussions can have, especially if they go untreated or unrecognized, even some 20 years down the line.

Most recently Ted Johnson, 34, won three Super Bowls with the New England Patriots before multiple concussions forced him to retire in 2005. Depression and cognitive impairments have led to Johnson's addiction to amphetamines. "Ted already shows the mild cognitive impairment that is characteristic of early Alzheimer's disease," said Johnson's neurologist Dr. Robert Cantu.⁴ Dr. Cantu said Johnson's depression and cognitive problems "are related to his previous head injuries, as they are all rather classic postconcussion symptoms."⁴

The devastating effects of sustaining multiple concussions are not limited to the hard hitting world of professional sports. Second impact syndrome (S.I.S), the sometimes deadly result of an athlete returning to play and sustaining another brain injury before the first injury has had adequate time to heal, is a problem that can affect every age group in nearly every sport. When an unhealthy athlete is sent back into the game, the risk of sustaining another injury is substantially greater. S.I.S is characterized by brain swelling caused from intracranial pressure, permanent neurological damage and even death. The immediate identification and proper management of concussions can protect athletes from the negative consequences of additional concussions or second impact syndrome.

The Center for Disease Control, in an article by Wes Brown and Jean Langlois in the *Journal of Head Trauma*, estimated the number of concussions in sports is between 1.6 and 3.4 million annually in the US. There are approximately 300,000 with loss of consciousness and 3 million with out loss of consciousness. (Source: *Center for Disease Control*) Keep in mind, hidden in these estimates are our young student athletes.

When in Doubt...

Sit them out!!

1. Associated Press. *Report: Waters' suicide tied to brain damage*. 18 Jan. 2007. FOXSports.com 19 Jan. 2007. <<http://msn.foxsports.com/nfl/story>>.

2. Center For The Study of Retired Athletes. 2001. <<http://www.csra.unc.edu/statistics.htm>>.

3. Farrey, Tom. *Pathologist says Waters' brain tissue had deteriorated*. 18 Jan. 2007. ESPN.com. 30 Jan. 2007. <<http://sports.espn.go.com/espn/print>>.

4. Schwarz, Alan. *Dark Days Follow Hard-Hitting Career in N.F.L.* 2 Feb. 2007. *The New York Times*. 2 Feb. 2007. <<http://www.nytimes.com/2007/02/02/sports/football/02concussions.html>>.

5. Schwarz, Alan. *Expert Ties Ex-Player's Suicide to Brain Damage*. 18 Jan. 2007. *The New York Times*. 18 Jan. 2007. <<http://www.nytimes.com/2007/01/18/sports/football/18waters.html>>.

What's Your Question?

•Q: Who is most vulnerable for a concussion, a child or an adult?

•A: The brain of a child, adolescent and young adult is undergoing significant growth and development, especially when compared to that of 30 year old adult. The younger the brain (after about age ten), the more vulnerable it appears to be to the effects of a concussion during sports activity.

While the younger body, in general, is more resilient and tends to heal more rapidly from most injuries involving the musculoskeletal system, the same does not appear to be true for the brain during concussions. Based on data from neuropsychological testing, such as ImPACT, professional athletes recover from concussions (return to their pre-concussion baseline test levels) faster than college athletes, who in turn recover faster than high school athletes.

Even though the kinetic energy of the collision is related to the size and the speed of the athletes [$KE = 1/2mv^2$] (thus bigger athletes move faster and weigh more and produce much more kinetic energy during their collisions), scientific evidence indicates that the younger brain takes longer to heal from a concussion.

It is important for parents, athletes, coaches, athletic trainers and physicians to be aware of these differences in length of time required to heal the brain after a concussion. Don't expect your child to get back on the field from a concussion as quickly as a professional athlete. Make sure there are no symptoms and full restoration of all brain functions prior to returning to play.

Stephen G. Rice, M.D., Ph.D., M.P.H., FAAP, FACSM
Jersey Shore University Medical Center

If you have a question you would like answered, please email Tim Manni at tmanni@bianj.org.

Resources

Borrow a book or video for FREE from the Browse-and-Borrow Library

Call the Brain Injury Association of New Jersey Information and Resources Helpline
(800) 669-4323 or by completing the on line form at www.bianj.org/bookvideorenatlfrom.html

"Getting A-Head of Concussion- Educating the Student-Athlete's Neighborhood"

By: Phil Hossler and Ron Savage

This manual provides an innovative approach to understanding the effect of concussion in school age children and adolescents. The authors identify all the people who may be involved with the student athlete at home and in school.

"Head Games: Football's Concussion Crisis"

By: Christopher Nowinski, 2007

Every parent, coach, athletic trainer and athlete should read this book to understand the full impact of concussion in sports. A former Harvard football player and professional wrestler, his career was ended by multiple concussions that left him struggling to get through the day. His compelling writing style intertwines his personal experience with interview findings from national experts on the treatment of post concussion syndrome.

SPEAKERS BUREAU

Speakers are available to present to all audiences on the issue of concussion in sports. Please contact Joanna Boyd at 732-738-1002 or at jboyd@bianj.org.

CONSENSUS STATEMENT STATEWIDE ENDORSERS

American Academy of Pediatrics, New Jersey Chapter • American College of Emergency Physicians, New Jersey Chapter • Athletic Trainers' Society of New Jersey • Brain Injury Association of America • Brain Injury Association of New Jersey • Medical Society of New Jersey • New Jersey Academy of Family Physicians • New Jersey Advisory Council on Traumatic Brain Injury • New Jersey Association of Health, Physical Education, Recreation and Dance • New Jersey Association of Osteopathic Physicians and Surgeons • New Jersey Education Association • New Jersey Emergency Medical Services for Children Advisory Council • New Jersey Football Coaches Association • New Jersey Hospital Association • New Jersey Neuropsychological Society • New Jersey Principal and Supervisors Association • New Jersey SAFE KIDS • New Jersey School Counselor Association • New Jersey State First Aid Council • New Jersey State Interscholastic Athletic Association • New Jersey State Safety Council • New Jersey State School Nurses Association • New Jersey Trauma Center Council

Concussion in Sports Campaign: Baseline Testing Initiative

The following high schools have been awarded matching funds to implement ImPACT, a concussion computerized baseline testing program to their student athletes in an effort to better measure, monitor and manage concussions:

Bergen County

Don Bosco Prep High School
Glen Rock High School
Lyndhurst High School
Northern Highlands Regional High School
Park Ridge High School
Ridgewood High School
Tenafly High School
Wood-Ridge High School

Burlington County

Cinnaminson High School
Northern Burlington County Regional High School
Pemberton Township High School

Camden County

Cherry Hill West High School
Haddon Township High School
Haddonfield Memorial High School
Triton Regional High School

Cape May County

Ocean City High School

Essex County

Cedar Grove High School
Columbia High School
Nutley High School

Gloucester County

Pitman High School

Mercer County

Hopewell Valley Central High School
Lawrance High School
Notre Dame High School
Robbinsville High School
West Windsor-Plainsboro South High School

Middlesex County

East Brunswick High School
Monroe Township High School
North Brunswick High School
Piscataway High School
West Windsor-Plainsboro North High School

Monmouth County

Manalapan High School
Manasquan High School
Raritan High School
St. Rose High School

Morris County

Butler High School
Chatham High School
Madison High School
Parsippany Hills High School
Pequannock Township High School

Ocean County

Central Regional High School
Manchester Township High School
Pinelands Regional High School

Passaic County

DePaul Catholic High School
West Milford High School

Salem County

Salem High School
Woodstown High School

Somerset County

Bridgewater-Raritan Regional High School
Franklin High School
Hillsborough High School
Immaculata High School
Montgomery High School
Watchung Hills Regional High School

Sussex County

Lenape Valley Regional High School
Newton High School

Union County

Hillside High School
Linden High School

Warren County

Blair Academy High School
Warren Hills High School

ImPACT Training to be held at the New Jersey State Interscholastic Athletic Association (NJSIAA)

ImPACT staff will provide a full day of training for Certified Athletic Trainers and Team Physicians participating in the matching grant program on May 7, 2007 at NJSIAA. If you have not registered please be sure to do so asap. For more information please contact Joanna Boyd at jboyd@bianj.org.

Postage

Brain Injury Association of New Jersey
1090 King George Post Rd., Suite 708
Edison, NJ 08837

