



PUBLIC HEALTH INTERVENTIONS TO PREVENT AND IMPROVE MANAGEMENT OF SPORTS-RELATED TRAUMATIC BRAIN INJURY

Stephen W. Marshall, PhD
Professor, Department of Epidemiology
Interim Director, Injury Prevention Research Center



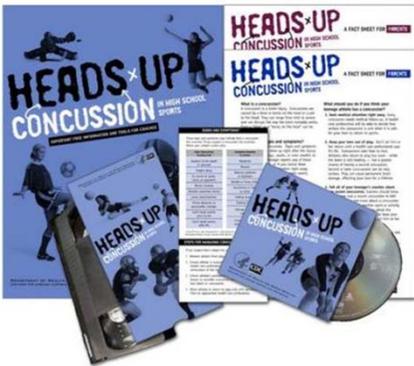
Prevention of Concussion

- What Works?
 - CDC's HeadsUp
 - Public Awareness
 - Laws
 - Trends: MORE is GOOD
 - Bicycle Helmets
- What Doesn't?
 - Headbands
 - Mouthguards
- What's Next?
 - Smart Helmets
 - Under-Reporting
 - Gender

 **UNC**
INJURY PREVENTION
RESEARCH CENTER

“Heads Up: Concussion in High School Sports”

- Video
- Guide for coaches
- Wallet card
- Clipboard sticker
- Posters
- Fact sheets for parents and athletes



 **UNC**
INJURY PREVENTION
RESEARCH CENTER

New Online Trainings for Coaches



Youth Sports Coaches



Football Coaches



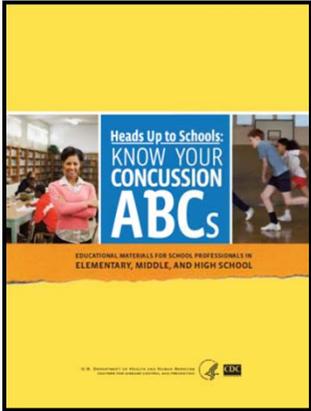
High School Coaches



Concussion in Schools (K-12)

“Heads Up to Schools: Know Your Concussion ABCs”

- Fact sheets for school nurses, teachers, parents
- Symptom checklist
- Magnet
- Poster
- Laminated card



CONCUSSION

A Must Read for NFL Players
Let's Take Brain Injuries Out of Play

CONCUSSION FACTS

- Concussion is a brain injury that alters the way your brain functions.
- Concussion can occur from a blow to the head/body:
 - Following helmet to helmet contact, or
 - contact with the ground, object, or another player.
- Most concussions occur without being knocked unconscious.
- Severity of injury depends on many factors and is not known until symptoms resolve and brain function is back to normal.
- All concussions are not created equally. Each player is different, each injury is different, and all injuries should be evaluated by your team medical staff.

WHY SHOULD I REPORT MY SYMPTOMS?

- Your brain is the most vital organ in your body.
- Practicing or playing while still experiencing symptoms can prolong the time it takes to recover and return to play.
- Unlike other injuries, there may be significant consequences to “playing through” a concussion.
- Repetitive brain injury, when not managed promptly and properly, may cause permanent damage to your brain.

CONCUSSION SYMPTOMS

Different symptoms can occur and may not show up for several hours. Common symptoms include:

- Confusion
- Dizziness
- Headache
- Nausea
- Anxious/difficulty remembering
- Sensitivity to noise
- Balance problems
- Double/fuzzy vision
- Irritability
- Slowed reaction time
- Difficulty concentrating
- Feeling more emotional
- Feeling sluggish, foggy, or groggy
- Sleep disturbance
- Loss of consciousness

Symptoms may worsen with physical or mental exertion (e.g., lifting, computer use, reading).

NFL

- Poster for all NFL locker rooms
- Fact sheet for all NFL players

www.nfl.com/videos
“Concussion safety”
Launched July 3, 2010

What Should I Do if I Think I've Had a Concussion?

REPORT IT. Never ignore symptoms even if they appear mild. Look out for your teammates. Tell your Athletic Trainer or Team Physician if you think you or a teammate may have a concussion.

GET CHECKED OUT. Your team medical staff has your health and well being as its first priority. They will manage your concussion according to NFL/NFLPA Guidelines which include being fully asymptomatic, both at rest and after exertion, and having a normal neurologic examination, normal neuropsychological testing, and clearance to play by both the team medical staff and the independent neurologic consultant.

TAKE CARE OF YOUR BRAIN. According to CDC, “traumatic brain injury can cause a wide range of short- or long-term changes affecting thinking, sensation, language, or emotions.” These changes may lead to problems with memory and communication, personality changes, as well as depression and the early onset of dementia. Concussions and conditions resulting from repeated brain injury can change your life and your family's life forever.

Work smart. Use your head, don't lead with it. Help make our game safer. Other athletes are watching...









For more information about concussions and the topic of overall brain health, go to www.cdc.gov/Concussion



UNC INJURY PREVENTION RESEARCH CENTER

COMMENTS (8)

J.H. Rose holding memorial service

By Brock Letchworth
The Daily Reflector

Tuesday, September 23, 2008

Memorial service and funeral plans are under way for remembering the J.H. Rose football player who died following a game last weekend.

Jaquan Waller, 16, suffered a mild concussion at a practice on Sept. 17. Then, after being tackled in that Sept. 19 game, he suffered severe swelling of the brain. He died the next day. The medical examiner in the case determined that Waller had died as a result of "second impact syndrome," a rare condition prompted by two minor head injuries that happen within a short time span. An expert from UNC-Chapel Hill's Department of Exercise and Sport Science told The N&O that a player should never go into a football game three days after a concussion.

The death of Waller is being investigated by Pitt County schools, and officials are thus not discussing it in detail. But it is known that a teaching assistant who is not a licensed athletic trainer was the one who evaluated Waller's condition after his injury at the practice.

About half the state's 460 high schools have access to a licensed trainer, but they are not required to have one. Others use people certified in first aid and CPR who have taken injury prevention and management courses. Certified trainers, however, must have four-year degrees in sports medicine or athletic training, certification from a national organization, protocols approved by a physician and continuing education.

Source: Daily Reflector, Sept 23, 2008 and News & Observer, Oct 02, 2008

AB Newswire Home • Account • Search

Like 9 Tweet 19 Share 16

Tuesday, June 21, 2011

Is North Carolina's New Concussion Law Best in the Country?

By Michael Popke — AB Managing Editor

The Gfeller-Waller Concussion Act — named after two football players who died after suffering concussions in 2009 — was signed into law by North Carolina Gov. Bev Perdue late last week. Every member of the state's House and Senate endorsed the law, which head-injuries expert Kevin Guskiewicz calls the best in the country.

"It has such a strong educational component," Guskiewicz, a University of North Carolina professor and director of the Matthew Gfeller Sport-Related Traumatic Brain Injury Research Center, told the Raleigh News & Observer. "I suspect we will hear from other states wanting to copy it."

The North Carolina High School Athletic Association adopted a concussion policy soon after Jaquan Waller, a junior at Greenville Rose High, and Matthew Gfeller, a sophomore at Winston-Salem Reynolds High, both died in August 2009 while playing football. The state's Gfeller-Waller Act now extends protections into middle school athletics, as well as adds education and emergency planning requirements.

Similar to concussion laws in 20 other states, North Carolina's law requires student-athletes at public high schools and middle schools to be removed from participation if there is a suspicion that the athlete has suffered a concussion. The student-athlete cannot return to participation until cleared by a medical professional — a mandate that might have saved Waller's life. The running back received a concussion in practice on a Wednesday but two days later played in a game in which he was hit hard enough to induce second-impact syndrome. Unlike Waller, Gfeller's injury came from a single blow.

Additionally under the new law, public high school and middle school coaches, trainers, athletes and parents will receive information about concussions each year, and schools will be required to formulate emergency action plans. "These are things that we should have

DAILY UPDATES ON THE LATEST NEWS FROM AROUND THE INDUSTRY.

LATEST POSTS

- Fundraising Hoops Coach Accused of Human Trafficking
- Aquatic Center Pool Will Become Pumpkin Patch Tonight
- Study Tracks Head Impacts in Youth Football
- Decision Against IOC Doping Rule a Boon for Athletes
- WVU Police: Beer Sales Playing Role in Better Behavior
- Blog: AI Davis Would Know to Give Up on the UFL
- Judge Rules in Favor of Playoff-Bound Co-Op Football Team
- Unhealthy Workforce Costs U.S. Economy \$153 Billion
- Blog: A Call Injury Points to New Exercise Possibilities
- School Bans Cheerleaders' Breast Cancer Tees

ARCHIVES

- October, 2011
- September, 2011
- August, 2011
- July, 2011
- June, 2011
- May, 2011
- April, 2011
- March, 2011
- February, 2011
- January, 2011
- December, 2010
- November, 2010
- October, 2010
- September, 2010

SIGN UP for E-News

Email Address:

Select your affiliation:

SUBSCRIBE

Advertisement

Athletic Business

EXPO 2011

30 years making you stronger

DEC 1-3

ORLANDO FLORIDA

80+ High-Impact Seminars

Dynamic Trade Show

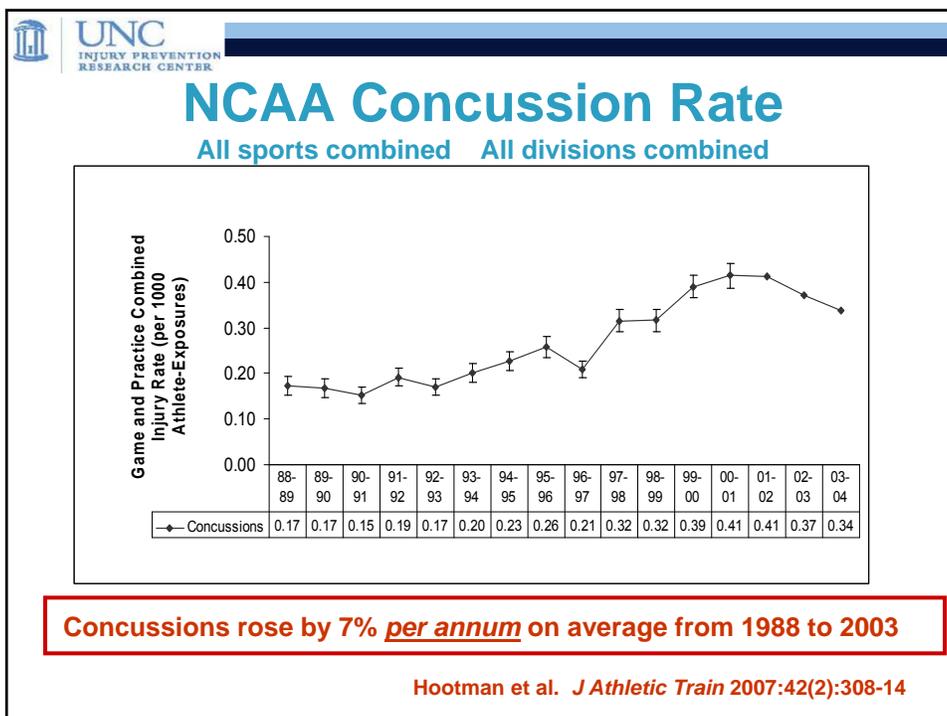
Tours and Golf Outing

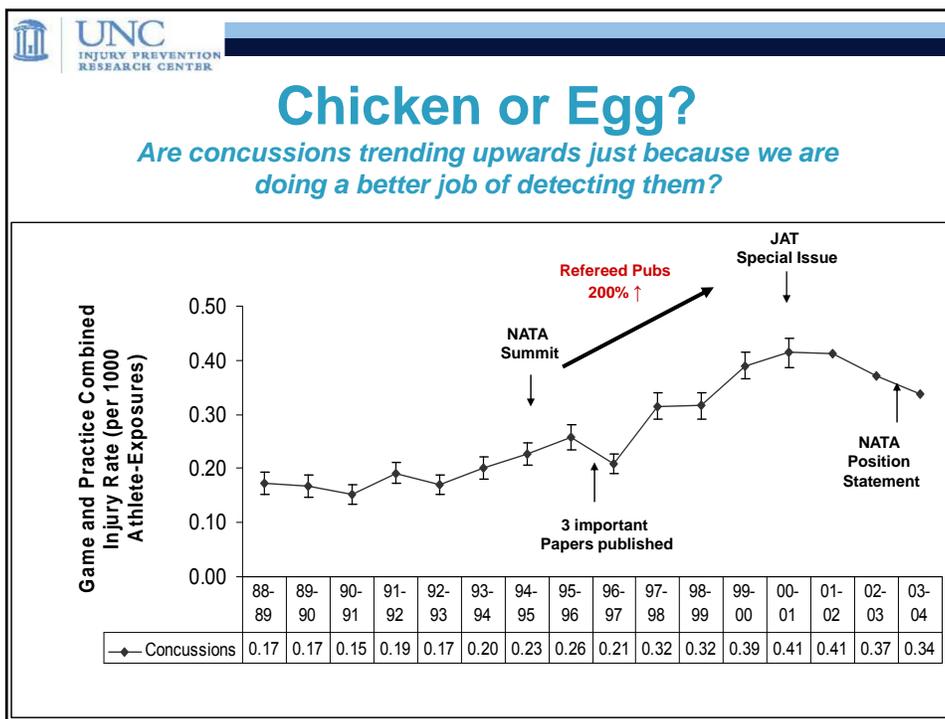
In-Depth Workshops

New College Seminar Track

Networking Industry Party

REGISTER NOW





USA TODAY Your Life | Get Home Delivery | Mobile

Home | News | Travel | Money | Sports | Life

Your Life | Health | Fitness & Food | Family & Parenting | Sex & Relationships | Your Look

WHEN BREAST CANCER IS DETECTED EARLY, THE FIVE YEAR SURVIVAL RATE IS **98%**

Participate in the National Breast Cancer Foundation's **INVITE FRIENDS TO JOIN**

Visit EarlyDetectionChallenge.com, you

Kids' ER concussion visits up 60 percent over decade

Updated 10/07/2011 8:18 AM

Comment 33 | Recommend 98 | Tweet 60

ATLANTA – The number of athletic children going to hospitals with concussions is up 60 percent in the past decade, a finding that is likely due to parents and coaches being more careful about getting head injuries treated, according to a new federal study.



"It's a good increase, if that makes any sense," said **Steven Marshall**, interim director of the University of North Carolina's Injury Prevention and Research Center.

"These injuries were always there. It's not that there are more injuries now. It's just that now people are getting treatment that they weren't getting before," said Marshall, who was not involved in the new research.

MORE: [Lawmakers: CDC to have student concussion protocol](#)

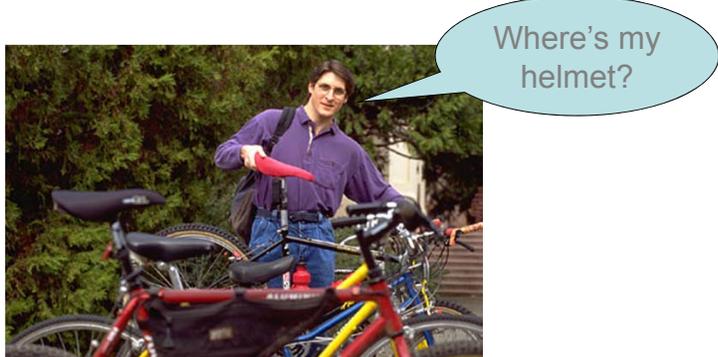
STORY: [Study affirms concussion dangers to young athletes](#)

H. Darr Beiser, USA TODAY

Kevin Guskiewicz, a UNC professor and researcher who has been studying concussions for 18 years, helps Pop Warner League football players adjust their helmets.

 **UNC**
INJURY PREVENTION
RESEARCH CENTER

Concussion Prevention : *Ask Yourself This Question*



Where's my helmet?

 **UNC**
INJURY PREVENTION
RESEARCH CENTER

What Does NOT Prevent Concussion?

- Mouthguards
- Padded Headbands



Knapik et al. *Sports Med.* 2007;37(2):117-144
Marshall et al. *Int J Epidemiol*, 2005: 34:113-118

UNC
INJURY PREVENTION
RESEARCH CENTER

Smart Helmets

- Head Impact Telemetry System (HITS)
- Sensors embedded in the padding of helmet
- Measures and records blows to the head:
 - Impact location
 - Impact duration
 - Linear acceleration
 - Angular acceleration
 - Exact times of impacts

HIT System™
Hardware in the Helmet

Telemetry, Data Acquisition, and Sensor Components

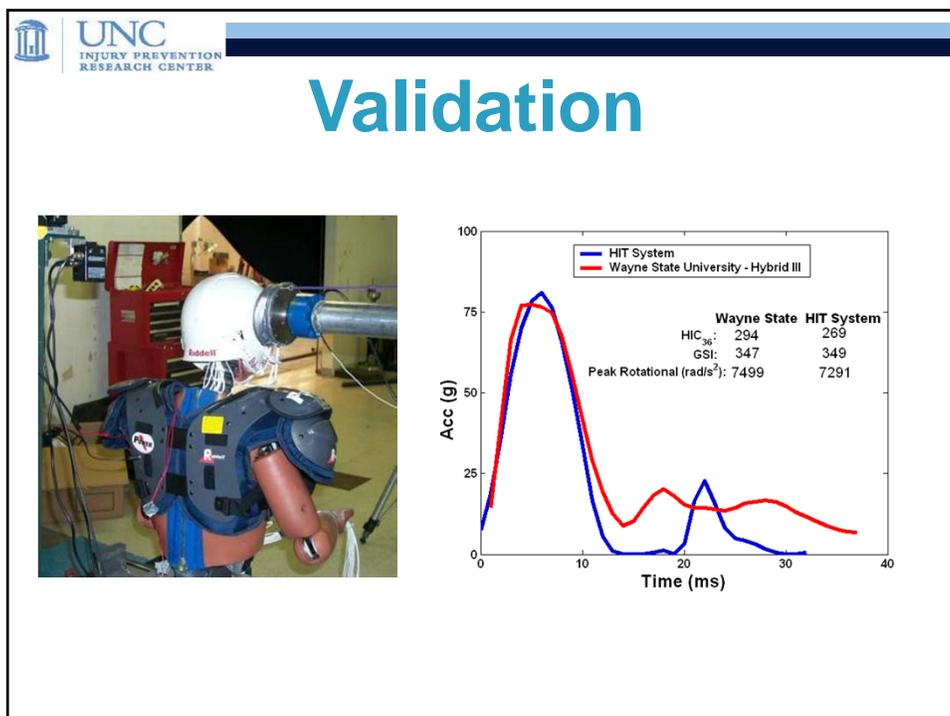
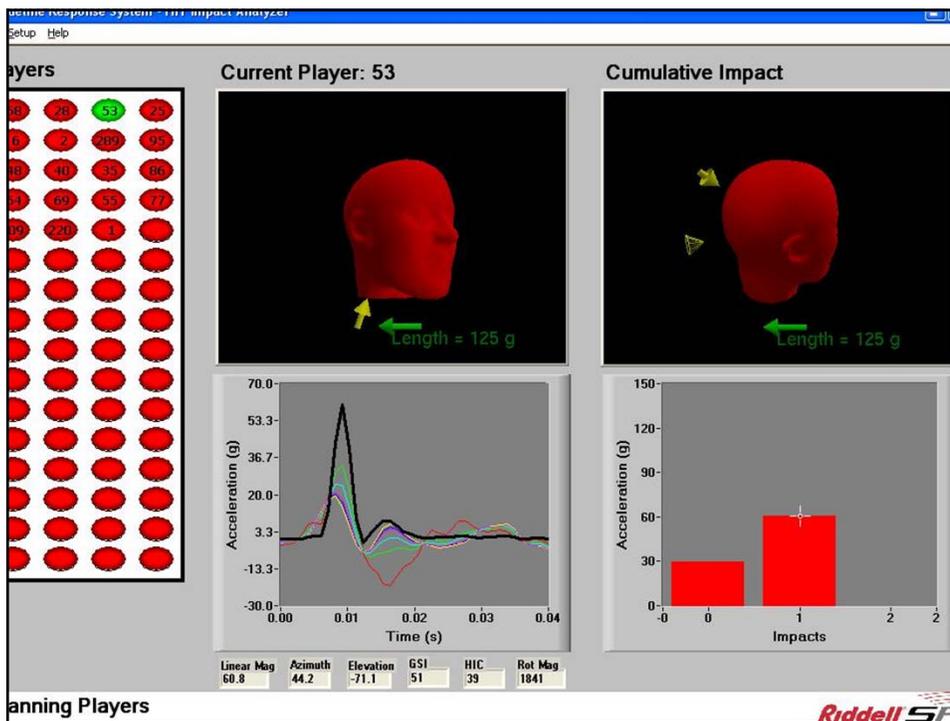
Player Units HIT System™ Equipped

Simbex

UNC
INJURY PREVENTION
RESEARCH CENTER







Under Reporting of Concussion

D1 Collegiate Sport Canada

- Unreported/unrecognized concussions
 - Boys: 3.0 in past 12 months
 - Girls: 2.1 in past 12 months
- Number of reported concussions
 - Boys: 0.36 in past 12 months
 - Girls: 0.44 in past 12 months
- Most concussions are unreported/unrecognized

Bloom et al. *European J Sport Science*, 2008; 8(5): 295-303



Reporting is Context-Driven

New Zealand high school rugby

- Pct concussed athletes who did not report the concussion n=209, self-reported for past 12 months
 - Girls: 42%
 - Boys: 54%
- Were there “others on your team” who were concussed and did not report the concussion n=418
 - Girls Game: 26% Practice: 23%
 - Boys Game: 44% Practice: 13%

Sullivan JS. University of Otago.



Gender & Concussion

- Studies reporting a higher incidence of concussion in females than in males
 - Powell & Barber-Foss, 1999
 - Farace & Alves, 2000
 - Covassin, Swanik, & Sachs, 2003
 - Schick & Meeuwisse, 2003
 - Gessel, Fields, Collins, Dick, & Comstock, 2007
 - Hootman, Dick, & Agel, 2007



Do Girls Suffer More Concussions Than Boys?

- Perhaps girls are just more honest about reporting symptoms
- Sports medicine doesn't "get" health promotion





Prevention of Concussion

- What Works?
 - CDC's HeadsUp
 - Public Awareness
 - Laws
 - Trends: MORE is GOOD
 - Bicycle Helmets
- What Doesn't?
 - Headbands
 - Mouthguards
- What's Next?
 - Smart Helmets
 - Under-Reporting
 - Gender