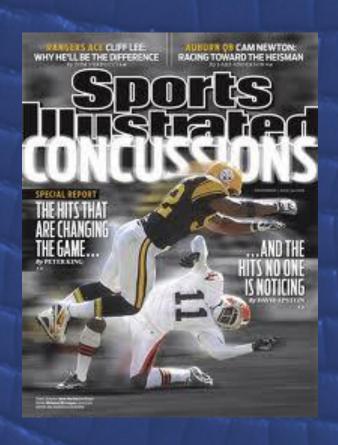
Seth Smith MD, PharmD



Concussion Headlines !!!



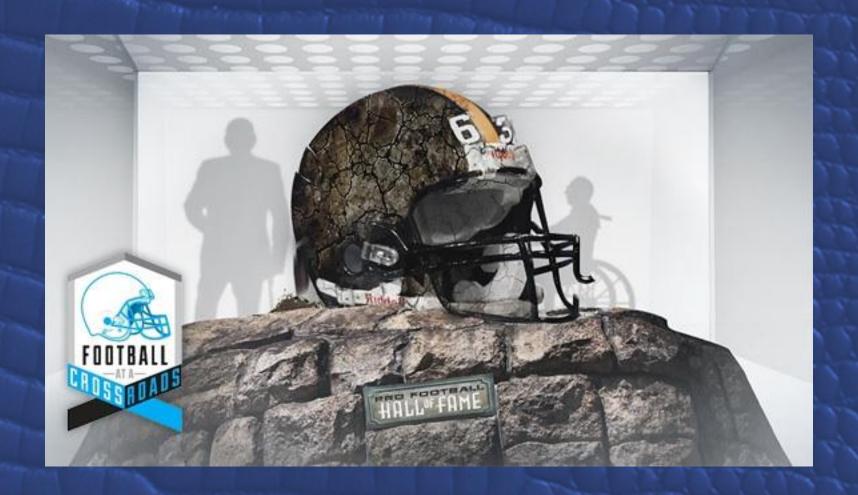


Concussion Headlines!!!

- Concussion rules put kids' health before winning games
 - The Miami Herald8/21/12
- FHSAA's implementation of legislation goes into effect Sunday
 - The Gainesville Sun6/30/12



Concussion Headlines !!!



What Is a Concussion?

- Complex process affecting the brain
 - Caused by direct blow to head/face/ or neck
 - Caused by blow to body directed toward head
- May or may not cause loss of consciousness
- Normal CT scan or MRI of brain
- Not simple or complex but simply "concussion"
- 80-90% resolve in 7 to 10 days

McCrory P, Meeuwisse W, Johnston K et al. Consensus Statement on Concussion in Sport: the 3rd International Conference on Concussion in Sport, Zurich 2008. *Br J Sports Med* 2009; 43: i76-i84.

What Is a Concussion?

- Brain injury
 - Caused by a bump,
 blow, ding or jolt to the
 head that can change
 the way the brain
 normally works
 - Occurs from a fall or blow to body that causes the head to move quickly back and forth



www.cdc.gov/concussion/

Signs and Symptoms of a Concussion

- Difficulty thinking, concentrating, remembering new information
- Feeling "slowed down","in a fog", or tired
- Headache, blurry vision, dizziness, nausea, or vomiting
- Sensitivity to noise or light or balance problems
- Irritable, sad, emotional, nervous, anxious
- Sleeping more or less than normal or trouble falling asleep

www.cdc.gov/concussion/

What Causes a Concussion?

- Temporary decrease in blood flow to certain areas of the brain
- Decreased supply of "energy" to the brain.....We Think



Giza CC, Hovda DA. The Neurometabolic cascade of concussion. *J Athl Train.* 2001; 36 (3) 228-235.

How Common are Sports Concussions?

- 1.6 to 3.8 million sports related concussions occur yearly in the US
- 250,000 visits to ED in 2009 for sports related concussions
- Girls have higher rates of concussion in similar sports
- Football High school boys
- Soccer and basketball High school girls

Department of Health and Human Services (US), Centers for Disease Control and Prevention. Nonfatal Traumatic Brain Injuries Related to Sports and Recreation Activities Among Person Aged <19 Years, 2001-2009. MMWR. 2011; 60 (39); 1337-1342.

- PostconcussionSyndrome
 - Consider if concussion
 symptoms persist for more
 than 1 to 6 weeks
 - Anxiety and mood changes reported by 33% of those with persistent postconcussion syndrome





McAllister TW, Arciniegas D. Evaluation and treatment of postconcussive symptoms. NeuroRehabilitation. 2002; 17 (4); 265-83.

Second Impact Syndrome

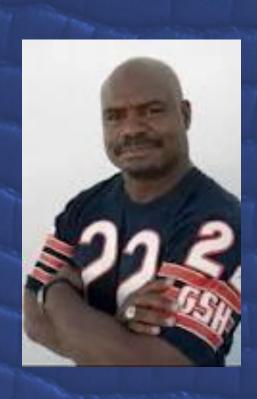
- Occurs when athlete receives a second head injury before symptoms of first have resolved
- Results in brain swelling and possibly death
- Young athletes are most at risk
- Prevention is for concussed athlete to be completely asymptomatic prior to return to activities
- Ongoing debate over exact cause for this syndrome

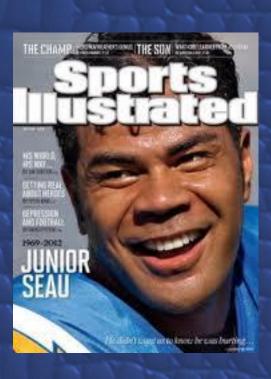
McCrory P. Does second impact syndrome exist? *Clin J Sport Med.* 2001 Jul; 11 (3) 144-9.

Chronic Traumatic Encephalopathy (CTE)

- Degenerative brain disease that occurs years after head trauma
- Behavior changes, depression, poor memory, and speech and movement problems
- Emerge later in life after athlete has retired
- Shown with boxing, football, hockey, soccer
- Still debatable but believed to be related to younger age of onset, magnitude of hits, and number of repetitive concussions

Gavett BE, Stern RA, McKee AC. Chronic traumatic encephalopathy; a potential late effect of sport related concussive and sub-concussive head trauma. *Clin Sports Med* 2011 Jan; 30(1): 179-88, xi





Can We Prevent Sports Concussions?

- Helmets
 - Shown to decrease skull and facial injuries but no definitive data that they decrease concussions
- Mouthguards
 - Reduce risk of dental injuries but no evidence to suggest they decrease concussions
- Proper Technique
 - "Heads Up" or See What You Hit

Mihalik JP, McCaffrey MA, Rivera EM, Pardini JE, Guskiewicz KM, Collins MW, Lovell MR. Effectiveness of mouthguards in reducing neurocognitive deficits following sports-related cerebral concussion. Dent Traumatol. 2007 Feb;23(1):14-20.

Can We Prevent Concussion?

- Jury is Still Out on preventative measures...
- Appropriate management is crucial if concussion is suspected
- Sideline Management Janie