

Controversies in Head Injury and Concussion Management

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Concussion is derived from the Latin word **concussus** or **concutere**, which means to shake or be shaken violently.

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Fact....

For every 1 concussion in the NFL, there are 50,000+ at the youth level....

Facts & Statistics

- At least 1.5 million head injuries per year in US
- 20% or 300,000 are sports related
- Majority occur in pediatric age groups
- 20% of football players will sustain a concussion per season
- Concussed athletes are 4-6x more likely to get a 2nd concussion
- “Bell ringers” or mild concussions account for 75% of all concussive injuries
- **Effects of concussions may be cumulative in athletes returning to play PRIOR to recovery**

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Incidence

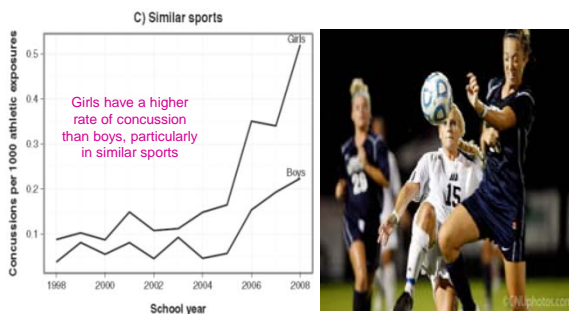
- Increase in annual rates in last decade
 - 8.9% of high school sports injuries
 - 5.8% of collegiate sports injuries
 - NCAA reports no change in incidence over last 8 years
- 1.85 million athlete exposures 2011-12
- Average of 1.9 concussions per 1,000 exposures

Gessel LM, Fields SK, Collins CL, Dick RW, Comstock RD. Concussions among United States high school and collegiate athletes. J Athl Train 2007; 42 (4): 495 - 503 .

Facts continued...

- Concussions occur in all sports at all levels
- **also occur in non-sports activities** and MVAs
- One of the most discussed problems in US sports media coverage today
- Extremely challenging, especially in prolonged recovery.

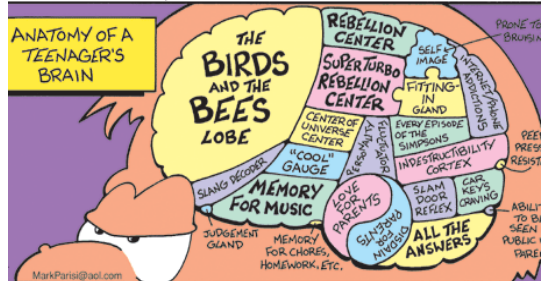
Are females at higher risk?



Lincoln, et al., Am J Sports Med 2011; Giza, Kutcher, et al., Neurol 2013

Why Concussions are different in kids

the mark by Mark Parisi www.offthemark.c



Collegiate Concussion Rates

Football	6.8%	2.54
Men's ice hockey	9.0%	1.47
Women's soccer	8.6%	1.42
Wrestling	4.8%	1.27
Men's soccer	5.8%	1.08
Men's lacrosse	8.6%	1.08
Women's lacrosse	9.8%	0.70
Field hockey	9.4%	0.52
Women's basketball	6.5%	0.50
Gymnastics	2.6%	0.40
Men's basketball	3.6%	0.32
Softball	6.0%	0.25
Baseball	3.3%	0.19

The Good News...

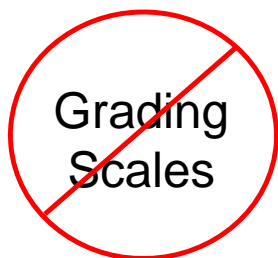
*80-90% of concussions
resolve in 1-2 weeks*

Concussion- 1960's to present

- Over 17 classifications systems have been proposed and used
 - The "Big Three" = Cantu, Colorado and AAN Guidelines
- All controversial
- Majority based on expert opinion
- Currently there have been 4 international consensus conferences on concussion
 - Vienna, Prague, Zurich I & II
 - SCAT 3
 - Child SCAT
 - Pocket CRT



<http://bjsm.bmj.com/content/current> (Zurich II)



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No "classification" system

- EVERYONE deserves individualized management
 - Recovery will vary based on:
 - Prognostic factors (history, comorbidities, etc.)
 - Advice YOU give your athlete
 - Athlete's willingness/ability to follow advice



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A Decade of Change...



More media attention...



NFL Concussion Policy

- Enacted 12/09
- Player out for the day if:
 - LOC
 - Amnesia
 - Abnormal neuro exam
 - New or persistent HA
 - Other persistent signs of concussion

NCAA Concussion Policy

- Enacted 4/2010
- Follows NFL's lead
- Requires written concussion management plan
- No same day return
- Student-athlete education and acknowledgement form

MTBI

MTBI or Mild Traumatic Brain Injury is now a disorder term introduced into federal law by the Traumatic Brain Injury Act of 1996 in an attempt to address the high incidence and cost of MTBI. Slow to get into literature but neurology and sports medicine groups are adopting the term.

This is not first time of government intervention. In 1904 there were 19 deaths or paralysis in American Football and Theodore Roosevelt threatened to outlaw football. This led to the formation of the NCAA.

Problem using MTBI is that it implies the injury is mild so most people still tend to use concussion instead.

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The Impact of Concussion

- Athletic
- Academic
- Social



Athletic Considerations

- Reliability of symptom reporting
- Utilization of neuropsychological and other testing
- Timing of return to exercise/sport
- Multiple Concussions
- Disqualification from sports

Academic Concerns

- Missed school work
- Difficulty concentrating, remembering and/or processing
- School/teacher cooperation

Social Concerns

- Isolation
- Re-integration
- Depression/anxiety
- Family dynamics

Newest Dilemmas

- *Sports Legacy Institute calls for ban on hitting in high school football during off-season*
- *Propose limit hitting in-season to once a week*
- *“14 is the soonest any child should be tackling on a football field, heading a soccer ball, or body checking an opponent on an ice hockey rink” –Robert Cantu*

EMS- Considerations at the Scene

- Safety
- PPE
- C-Spine
- ABCs
- The Basics
- History
- Neurologic exam



“On the

- 1.C-Spine
- 2. Assess for brain injury
- 3.Implement EAP
- 4.Removal from field
- 5.Removal from crowd



On Field Evaluation

- 1.Recognition of Injury
- 2.Assessment of Symptoms
- 3.Cognitive and CN/Balance
- 4.Serial Exams
- 5.Any Suspicion “No Go”
- 6.Tools never trump MD



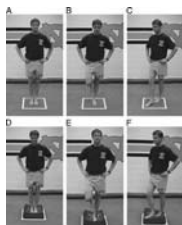
When to Refer to Emergency Dept (SCAT2)

- 1.Worsening Headache
- 2.Drowsiness
- 3.Cannot recognize people or places
- 4.Significant nausea or vomiting
- 5.Confused or Irritable
- 6.Develops Seizure
- 7.Weakness or numbness
- 8.Slurred speech
- 9. Unsteady gait



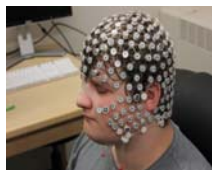
Standardized Assessment of Concussions SAC

- 1.Orientation
- 2. Immediate Recall
- 3.Maddocks Questions
- 4. Balance “BESS”



Remote Notification of Potential Concussion

- 1. Threshold for concussion is unknown
- 2. Varies among individuals
- 3. Wide range of magnitudes
- 4. Not recommended for concussions
- 5. May highlight dangerous behaviours



Consistent sport-related concussion management?

Knowledge of consensus work

- EDP-52%
- FP-49%
- Peds-27%

Never used SCAT/ Cognitive rest

- EDP-86%/57%
- FP -54%/49%
- Peds-78%/36%



ED Approach to Concussion

- Evaluate for TBI and Concussion
- Focused history and physical
- Real Neuro Exam
- Added history questions
- Previous concussions
- Maddocks questions
- Imaging utilization