Head Games:
The coach and head injury

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Duke Sports Medicine
No LOC. So OK

Helmets work

Next one > this one

3 strikes and your done

>conc = CTE

A boys injury

Concussions are obvious
<table>
<thead>
<tr>
<th>ICD-9-CM Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initially recommended for use, regardless of survival status</td>
<td></td>
</tr>
<tr>
<td>800.0-801.9</td>
<td>Fracture of vault or base of the skull</td>
</tr>
<tr>
<td>803.0-804.9</td>
<td>Other and unqualified and multiple fractures of the skull</td>
</tr>
<tr>
<td>850</td>
<td>Concussion</td>
</tr>
<tr>
<td>851</td>
<td>Cerebral laceration and contusion</td>
</tr>
<tr>
<td>852</td>
<td>Subarachnoid/ subdural, extradural hemorrhage after injury</td>
</tr>
<tr>
<td>853</td>
<td>Other/ unspecified intracranial hemorrhage after injury</td>
</tr>
<tr>
<td>854</td>
<td>Intracranial injury of other and unspecified nature</td>
</tr>
<tr>
<td>Subsequently recommended for inclusion, regardless of survival status</td>
<td></td>
</tr>
<tr>
<td>950.1-950.3</td>
<td>Injury to the optic chiasm, optic pathways, or visual cortex</td>
</tr>
<tr>
<td>959.01</td>
<td>Head injury, unspecified</td>
</tr>
<tr>
<td>995.55</td>
<td>Shaken Infant Syndrome</td>
</tr>
<tr>
<td>Recommended for inclusion, but only for fatal events identified from death certificates</td>
<td></td>
</tr>
<tr>
<td>873.0-873.9</td>
<td>Other open wound of head</td>
</tr>
<tr>
<td>905.0</td>
<td>Late effect of fracture of skull and face bones</td>
</tr>
<tr>
<td>907.0</td>
<td>Late effect of intracranial injury without mention of skull fracture</td>
</tr>
</tbody>
</table>
Traumatically induced transient disturbance of brain function . . . (aka MTBI, albeit on the low severity end of spectrum) . . . Self limited in duration and resolution.

All concussions are MTBI, but not all MTBI are concussions
<table>
<thead>
<tr>
<th>Physical</th>
<th>Cognitive</th>
<th>Emotional</th>
<th>Sleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>‘foggy’</td>
<td>Irritable</td>
<td>Drowsiness</td>
</tr>
<tr>
<td>Nausea</td>
<td>Slowed down</td>
<td>Sad</td>
<td>Sleep more</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Concentration</td>
<td>More emotional</td>
<td>Sleep less</td>
</tr>
<tr>
<td>Balance</td>
<td>Remembering</td>
<td>nervousness</td>
<td>Difficulty falling asle</td>
</tr>
<tr>
<td>Dizzy</td>
<td>Forgetful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision</td>
<td>Confused</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td>Answers slowly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light/noise sensitive</td>
<td>Repeats Q’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numb/tingling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dazed/stunned</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How many are we likely to see?
concussion

0.30

0.21
Easy to spot, right?
History

Injury mechanism

Physical

Neurological

Blood

Imaging
8-9/10 clear in a week

Symptoms

Balance

Cognitive function

Post concussion syndrome

Medical, not coaching, decision

SIS
From just heading a ball?
But that study?
Can’t you protect the head?
Concussion threshold

Impact 1

Impact 2

Impact 3

Head impact

w/o

w/

Concussion threshold
I know. Strengthen the neck!
What’s with those computerized tests?
Valid. Reliable. Safe.

ImPACT provides computerized neurocognitive assessment tools and services that are used by medical doctors, psychologists, athletic trainers, and other licensed healthcare professionals to assist them in determining an athlete’s ability to return to play after suffering a concussion. Learn about our Best Practices.

“After working with ImPACT this fall, our district has not had any problems with it at all. The implementation went well and our concussion policy has worked well for all involved.”

- Gennaro Manocchio, ATC, Jamestown High School

New Video On Demand Training
TRAIN WHEN IT’S CONVENIENT FOR YOU.

US YOUTH SOCCER WORKSHOP
AT THE NSCAA CONVENTION
Preseason ImPACT Testing

QUIET!
Effects of Concussion on Attention and Executive Function in Adolescents

David Howell¹, Louis Osternig⁰, Paul van Donkelaar², Ulrich Mayr³, and Li-Shan Chou⁴

¹Department of Human Physiology, University of Oregon, Eugene, OR
²School of Health and Exercise Sciences, University of British Columbia, Kelowna, BC, Canada
³Department of Psychology, University of Oregon, Eugene, OR
⁴Massachusetts found that some athletes who have sustained a concussion and have fully recovered may experience cognitive difficulties as they return to their usual activities. It is important for athletes to follow the guidelines for safe and gradual return to play.
What’s the coach’s main task when it comes to a head injury?

Recognize that it’s happened
**Symptom Evaluation**

**How do you feel?**

You should score yourself on the following symptoms, based on how you feel now.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Pressure in head&quot;</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Neck pain</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nausea or vomiting</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Dizziness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Blurred vision</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Balance problems</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sensitivity to light</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sensitivity to noise</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling slowed down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling &quot;in a fog&quot;</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Don't feel right&quot;</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Difficulty concentrating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Difficulty remembering</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Fatigue or low energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Confusion</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Disorientation</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Trouble with speech and/or writing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>More emotional</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Irritability</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Numbness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nervous or Anxious</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total number of symptoms (maximum possible 22):**

**Symptoms severity score**

(Add all scores in table, maximum possible 22 x 6 = 132)

- Do the symptoms get worse with physical activity?  Y  N
- Do the symptoms get worse with mental activity?  Y  N

**Overall rating**

If you think the athlete well prior to the injury, how different is the athlete acting compared to his/her usual self? Place check one response.

- no different
- very different
- unsure

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**What is the SCAT2?**

This tool represents a standardized method of evaluating injured athletes for concussion and can be used in athletes aged from 10 years and older. It supersedes the original SCAT published in 2005. This tool also enables the calculation of the "Standardized Assessment of Concussion (SAC)" score and the Maddocks questions for sideline concussiassessment.

**Instructions for using the SCAT2**

The SCAT2 is designed for the use of medical and health professionals. Preseason baseline testing with the SCAT2 can be helpful for interpreting post-injury test scores. Words in italics throughout the SCAT2 are the instructions given to the athlete by the tester.

This tool may be freely copied for distribution to individuals, teams, groups and organizations.

**What is a concussion?**

A concussion is a disturbance in brain function caused by a direct or indirect force to the head. It results in a variety of non-specific symptoms (like those listed below) and often does not involve loss of consciousness. Concussion should be suspected in the presence of any one or more of the following:

- Symptoms (such as headache), or
- Physical signs (such as unsteadiness), or
- Impaired brain function (e.g., confusion) or
- Abnormal behavior.

Any athlete with a suspected concussion should be removed from play, medically assessed, monitored for deterioration (i.e., should not be left alone) and should not drive a motor vehicle.
From the office of Robert Cantu, MD

1. one exam/day max. incr time, no lengthy homework

2. Only walking allowed. No lifting or anything that risks a fall

3. Avoid unnecessary mental activity. Nothing that provokes symptoms.

4. Avoid anything that provokes symptoms

5. No physical education

“no head trauma is good head trauma”
No activity

Light aerobic

Sport-specific

Non-contact training

Full contact training

Symptom-free
NP normal
From the office of Robert Cantu, MD

1. **NEVER** play w/ symptoms

2. Best treatment: physical & cognitive rest

3. Properly managed, the player will get better

4. If not, risk of longer recovery, post concussion syndrome

“no head trauma is good head trauma”
AL, AK, AZ, CA, CO, CT, DC, ID, IL, IN, IA, KS, LA, MD, MA, MN, MS, NE, NV, NJ, NM, NC, ND, OK, OR, RI, SD, TX, UT, VT, VA, WA, WY
Concussion in sport

Summary and agreement statement of the first International Conference on Concussion in Sport, Vienna 2001

M Aubry, R Cantu, J Dvorak, T Graf-Baumann, K Johnston (Chair), J Kelly, M Lovell, P McCrory, W Meeuwisse, P Schamasch (the Concussion in Sport Group)

Recommendations for the improvement of safety in sport

Consensus Statement on Concussion in Sport.

International Conference on Concussion in Sport in Zurich, November 2008

Paul McCrory, MBBS, PhD†; Willem Meeuwisse, MD, PhD‡; Jiri Dvorak, MD§; Mark Aubry, MD‖; Robert Cantu, MD\#.

*University of Melbourne, Parkville, Australia; †University of Southern California School of Medicine, Los Angeles, California, USA; ‡University of Utrecht, Utrecht, The Netherlands; §FIFA Medical Clinic, Zurich, Switzerland; ‖International Ice Hockey Federation (IIHF), Lausanne, Switzerland; \#International Rugby Board, Cardiff, Wales.

Consensus Statement on Concussion in Sport.

4th International Consensus Conference on Concussion in Sport

We are pleased to announce the 4th International Consensus Conference on Concussion in Sport. The meeting will adhere to a NIH consensus format with an open public session on 1-2 November 2012, hosted by FIFA at the Home of FIFA in Zurich.
Activity

Committee on Sports-Related Concussions in Youth

Type: Consensus Study
Topics: Children, Youth and Families, Education, Public Health
Boards: Board on Children, Youth, and Families

Activity Description

An IOM committee will conduct a study on sports-related concussions in youth, from elementary school through young adulthood, including military personnel and their dependents. The committee will review the available literature on concussions, in the context of developmental neurobiology, in terms of their causes, relationships to hits to the head or body during sports, and the effectiveness of protective devices and equipment. The committee will also review concussion risk factors, screening and diagnosis, treatment and management, and long-term consequences.

Dates and agendas for future open sessions of the committee will be posted on this web page. Please click the “Sign Up Now” button on the right hand side of this page to sign up for the project list serv. You may email us at YouthSportsConcussions@nas.edu if you have any questions.

Funding for the study was provided to the CDC Foundation by the National Football League.
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The coach and head injury

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FIFA Medical Assessment and Research Centre
Duke Center for Learning Health Care
Duke University Sports Medicine