CONCUSSION IN YOUTH ATHLETES

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JULY 21, 2013
OBJECTIVES

• Discuss the definition of a concussion

• Recognize the symptoms of a concussion and its potential consequences

• Develop an action plan if you suspect a concussion
NFL donates $30 million to National Institutes of Health

National Football League
Published: Sept. 5, 2012 at 09:07 a.m.  Updated: May 22, 2013 at 02:11 p.m.  102 Likes | 25 Comments

NATIONAL FOOTBALL LEAGUE GRANTS
$30 MILLION IN UNRESTRICTED FUNDING TO THE
FOUNDATION FOR THE NATIONAL INSTITUTES OF HEALTH
FOR MEDICAL RESEARCH

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HMS partners with NFL Players Association

$100M grant funds 10-year initiative aimed at full range of health risks
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Doctors: Junior Seau's brain had CTE

By Mark Fainaru-Wada, Jim Avila and Steve Fainaru
ESPN.com

Updated: January 11, 2013, 6:32 PM ET

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I'm a big football fan, but I have to tell you if I had a son, I'd have to think long and hard before I let him play football. And I think that those of us who love the sport are going to have to wrestle with the fact that it will probably change gradually to try to reduce some of the violence. In some cases, that may make it a little bit less exciting, but it will be a whole lot better for the players, and those of us who are fans maybe won't have to examine our consciences quite as much.
NFL

College

High School

Grade School & Junior High
CONCUSSION CAN OCCUR IN....

Any Sport
1. An athlete who is suspected of sustaining a concussion or head injury in an athletic activity shall be immediately removed from the activity for the remainder of the day, and shall not be permitted to return to the activity until he or she is evaluated by a licensed health care provider, trained in the management of concussions, acting within the scope of his or her practice. The athlete shall not be permitted to return to the activity until he or she receives written clearance to return to the activity from that licensed health care provider.
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2. On a yearly basis, a concussion and head injury information sheet shall be signed and returned by the athlete and the athlete’s parent or guardian before the athlete’s initiating practice or competition.
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POP QUIZ

Monday, July 22, 13
POP QUIZ

• A concussion is a brain injury

• Concussions cannot be caused be a blow to the body
POP QUIZ

• A concussion is a brain injury
  • TRUE

• Concussions cannot be caused by a blow to the body
POP QUIZ

• A concussion is a brain injury
  • TRUE

• Concussions cannot be caused be a blow to the body
  • FALSE
POP QUIZ
POP QUIZ

• Sitting out 1 week is enough time to recover from a concussion

• Concussions can happen even if someone hasn’t been knocked out or had a loss of consciousness
• Sitting out 1 week is enough time to recover from a concussion
  • FALSE

• Concussions can happen even if someone hasn’t been knocked out or had a loss of consciousness
POP QUIZ

• Sitting out 1 week is enough time to recover from a concussion
  • FALSE

• Concussions can happen even if someone hasn’t been knocked out or had a loss of consciousness
  • TRUE
• Complex pathophysiologic process affecting the brain, induced by traumatic biomechanical forces secondary to direct or indirect forces to the head

• Caused by a jolt to the head or body that disrupts the function of the brain
CDC DEFINITION

- Typically associated with normal structural neuroimaging findings (i.e. CT, MRI)

- Results in a constellation of physical, cognitive, emotional or sleep-related symptoms that may or may not involve a loss of consciousness (LOC)

- Duration is highly variable and may last from several minutes to days, weeks, months, or longer in some cases
• Hit to head or body
• Damage to brain cells
• Results in chemical changes
• Brain is more vulnerable to injury
Incidence of Sports-Related Concussion among Youth Football Players Aged 8-12 Years

• 468 youth males (8-12 yrs old)
• Incidence rate
  • 0.24 per 1000 athletic exposures during practice
  • 6.16 per 1000 athletic exposures in games
• Participation in games associated with an increase in risk of concussion compared to practice
• 11-12 year old 2.5 x more likely to have concussion than 8-10 year olds
CONSEQUENCES

• Affects everyone differently

• Brain needs **TIME** to recover
  - 80-90% recover by 7-10 days

• Younger athletes take longer than professional

• Physical and cognitive rest

• Repeat concussion can slow and worsen recovery

• 2nd impact syndrome
When In Doubt,
When In Doubt, SIT THEM OUT
WHAT TO WATCH OUT FOR?

• Blow to head or body resulting in rapid movement of the head

• Any concussion signs or symptoms

• Danger signs
<table>
<thead>
<tr>
<th>Signs observed by Staff</th>
<th>Symptoms reported by athlete</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Monday, July 22, 13
SIGNS AND SYMPTOMS

Signs observed by Staff

- Dazed or stunned
- Confused about assignment
- Forgets plays
- Unsure of game, score, opponent
- Moves clumsily
- Answers questions slowly
- Amnesia
- Behavior or personality change
- Loss of consciousness

Symptoms reported by athlete
SIGNS AND SYMPTOMS

**Signs observed by Staff**
- Dazed or stunned
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**Symptoms reported by athlete**
- Headache
- Nausea
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light and sound
- Feeling “foggy”
- Concentration or memory problems
- Changes in sleep
LOSS OF CONSCIOUSNESS

• 4-10% of sports-related concussions result in LOC

• Less focus on traditional grading scales
SYMPTOM CLUSTERS

Cognitive Symptoms
- “Fogginess”
- Difficulty concentrating
- Memory deficits
- Cognitive Fatigue

Somatic Symptoms
- Headaches
- Dizziness
- Nausea
- Light/Sound Sensitivity

Sleep Alterations
- Difficulty falling asleep
- Fragmented sleep
- Too much/too little sleep

Mood Disruption
- Irritability
- Feeling sad
- Anxiety
SIDELINE COGNITIVE EVALUATION

- Brief neuropsychological test batteries of attention and memory
  - Maddocks questions
  - Standardized Assessment of Concussion (SAC)
  - SCAT3
• Which field are we at?
• Which team are we playing today?
• Who is your opponent at present?
• Which half/period is it?
• How far into the half is it?
• Which side scored the last touchdown/goal/point?
• Which team did we play last week?
• Did we win last week?
STANDARDIZED ASSESSMENT OF CONCUSSION (SAC)

- SAC includes measures of functions most sensitive to concussion
  - Orientation (month, date, day of week, year, time)
  - Immediate memory (recall of 5 words in 3 separate trials)
- Neurologic
  - Loss of consciousness (occurrence, duration)
  - Amnesia (either retrograde or anterograde - recollection of events pre and post-injury)
- Sensation
- Coordination
- Strength
- Concentration
- Exertional maneuvers (jumping jacks, sit-ups)
- Delayed recall (5 words)
BRIEF SIDELINE TESTING

- Should not replace comprehensive neuropsychological & medical evaluation
- May not be sensitive to subtle deficits
- May not detect developing symptoms
BASELINE TESTING IS VALUABLE

• Comparative
• Educational
• Should include a detailed history
OSU TBI IDENTIFICATION METHOD

Ohio State University TBI Identification Method—Short Form

(Version 4/11/12: Lifetime; to be used when querying about lifetime history of TBI)

I am going to ask you about injuries to your head or neck that you may have had anytime in your life.

**Interviewer instructions:** Record cause and any details provided spontaneously in the box at the bottom of the page. You do not need to ask further about loss of consciousness or other details during this step.

1. In your lifetime, have you ever been hospitalized or treated in an emergency room following an injury to your head or neck? Think about any childhood injuries you remember or were told about.
   - **Yes:** Record cause in table below
   - **No:**

2. In your lifetime, have you ever injured your head or neck in a car accident or from crashing some other moving vehicle like a bicycle, motorcycle or ATV?
   - **Yes:** Record cause in table below
   - **No:**

3. In your lifetime, have you ever injured your head or neck in a fall or from being hit by something (for example, falling from a bike or horse, rollerblading, falling on ice, being hit by a rock)? Have you ever injured your head or neck playing sports or on the playground?
   - **Yes:** Record cause in table below
   - **No:**

4. In your lifetime, have you ever injured your head or neck in a fight, from being hit by someone, or from being shaken violently? Have you ever been shot in the head?
   - **Yes:** Record cause in table below
   - **No:**

5. In your lifetime, have you ever been nearby when an explosion or a blast occurred? If you served in the military, think about any combat- or training-related incidents.
   - **Yes:** Record cause in table below
   - **No:**

6. If all above are “no” then proceed to question 7. If answered “yes” to any of the questions above, ask the following for each injury. Were you knocked out or did you lose consciousness (LOC)? If yes, how long? If no, were you dazed or did you have a gap in your memory from the injury? How old were you?

<table>
<thead>
<tr>
<th>Cause</th>
<th>LOC</th>
<th>Loss of consciousness (LOC)</th>
<th>Knocked out</th>
<th>Dazed/Mem Gap</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10 min</td>
<td>&lt; 30 min</td>
<td>&gt; 30 min</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 min - 24 hrs</td>
<td>&gt; 24 hrs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*If more injuries with LOC:** How many more? **Longest knocked out?** How many > 30 mins? **Youngest age?**

7. Have you ever lost consciousness from a drug overdose or being choked? __# overdose __# choked


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SO NOW WHAT?
SO NOW WHAT?

Action Plan
SO NOW WHAT?

**Action Plan**

1. Remove the athlete from play
2. Ensure that the athlete is evaluated by an appropriate health care professional
   - Do not try to judge severity
   - Record
     - Cause of injury, force of hit, location
     - Any loss of consciousness and for how long
     - Any memory loss, seizures
     - Any history of concussions and how many
WHAT TO DO
WHAT TO DO

Action Plan
WHAT TO DO

Action Plan

3. Inform the athlete's parents or guardians
   - Supply concussion fact sheet
   - Discuss symptoms parents should watch for at home and in school
   - Emphasize physical and cognitive rest

4. Keep the athlete out of play
   - Remove from play on day of injury and until cleared by an appropriate health care professional
• One pupil larger
• Drowsy or cannot arouse
• Worsening headache
• Weakness, numbness, decreased coordination
• Repeated vomiting or nausea
• Slurred speech
• Convulsions or seizures
• Increasing confusion, restlessness, or agitation
• Unusual behavior
• Loss of consciousness
2ND IMPACT SYNDROME

- Rare consequence of head injury
  - Most common in age 18 and under
- Rapid increase in intracranial pressure
- **Death** in 2-5 minutes
  - Mortality rate ~ 50%
  - Morbidity rate ~ 100%
- Unknown incidence
- 35-70 probable cases in US between 1980-2009 (1-3 per year)
SO NOW WHAT?...
SO NOW WHAT?...

Action Plan
SO NOW WHAT?...

**Action Plan**

1. Call 911
2. Take athlete to the Emergency Room
PREPARATION & PREVENTION

HTTP://WWW.CDC.GOV/CONCUSSION/SPORTS/INDEX.HTML
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PREPARATION & PREVENTION

For school professionals

The fact sheet for teachers, counselors, and school professionals can serve as a quick reference guide in the classroom. The magnet can be placed in any number of locations, from a school filing cabinet to the refrigerator in the staff lounge. You can also place the poster in the staff lounge, the cafeteria, or wherever you think it might be most visible. We encourage you to include the laminated card in your first aid kits or take it on field trips.

HTTP://WWW.CDC.GOV/CONCUSSION/SPORTS/INDEX.HTML
KNOW YOUR CONCUSSION ABCs

Assess the situation
Be alert for signs and symptoms
Contact a health care professional
PREPARATION & PREVENTION

• Concussion facts/policy
• Signs and symptoms
• “Toughing it out” - can be dangerous
• Encourage them to practice good sportsmanship
• Helmets are not concussion proof
• Follow the rules for safety and rules of sport
2012 NEW RULES

• No full speed head-on blocking or tackling drills in which the players line up more than 3 yards apart are permitted. However, there should be no intentional head-to-head contact!

• Amount of contact at each practice will be reduced to a maximum of 1/3 of practice time (either 40 minutes total of each practice or 1/3 of total weekly practice time). In this context, “contact” means any drill or scrimmage in which drills; down line vs. down line full-speed drills; and scrimmages.
• Ignore the pressure

• Leave return to play decision to health care professional

• Keep athlete’s health as priority

• Resistance
  • Talk to them about it
  • Be honest about risks of playing too soon
  • Offer support and encouragement
  • Encourage rest
Consensus Statement on Concussion in Sport—the 4th International Conference on Concussion in Sport Held in Zurich, November 2012

- Return to play
- Graduated 6 step plan
- Not meant to be completed in one day, but rather days, weeks, months
# Return to Play

<table>
<thead>
<tr>
<th>Rehabilitation Stage</th>
<th>Functional exercise at each stage of rehabilitation</th>
<th>Objective of each stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No activity</td>
<td>Symptom limited physical and cognitive rest</td>
<td>Recovery</td>
</tr>
<tr>
<td>Light aerobic exercise</td>
<td>Walking, swimming, or stationary cycling keeping intensity &lt;70% of maximum predicted heart rate. No resistance training</td>
<td>Increase heart rate</td>
</tr>
<tr>
<td>Sport-specific exercise</td>
<td>Skating drills in ice hockey, running drills in soccer. No head impact activities.</td>
<td>Add movement</td>
</tr>
<tr>
<td>Non-contact training drills</td>
<td>Progression to more complex training drills (e.g. passing drills in football and ice hockey). May start progressive resistance training.</td>
<td>Exercise, coordination, cognitive load</td>
</tr>
<tr>
<td>Full contact practice</td>
<td>Following medical clearance, participate in normal training activities</td>
<td>Restore confidence, assessment of functional skills by coaching staff</td>
</tr>
<tr>
<td>Return to play</td>
<td>Normal game play</td>
<td></td>
</tr>
</tbody>
</table>

When In Doubt,
SIT THEM OUT
REFERENCES


