Understanding the Standard of Care for Managing Sport-Related Concussions

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Lecture #2 Saturday 1/5/13
65th Annual EATA Meeting & Clinical Symposium
Buffalo, NY
Learning

“All of life should be a learning experience, not just for the trivial reasons but because by continuing the learning process, we are challenging our brain and therefore building brain circuitry”

Arnold Scheibel (Professor of Neurobiology and Psychiatry and former Director of the Brain Research Institute, UCLA Medical Center)
Concussion

- **Definition** - a clinical syndrome characterized by immediate and transient post-traumatic impairment of neural functions, such as alteration of consciousness, disturbance of vision, equilibrium, etc... due to brain stem (connects cerebral hemispheres with the spinal cord) involvement.

Analogous to ice cubes in a glass of water!
Anquan Bolden Concussion Fall 2008
Typical Sport-Related Concussion in Soccer

Watch Here!
Look up... Look down... Look at my thumb. Gee, you're...

Quit messing around, Doc! Does he have a concussion or not?

© Original Artist
Medical Personnel and Coaches have historically mis-assessed concussions

- There is much variation in the knowledge of health care providers managing concussed athletes. Need to make sure the person clearing for return to sport is current with knowledge!
  - Physicians (MD/DO)
  - Physician assistants
  - Nurse practitioners
  - Chiropractors
  - Athletic trainers
  - School nurses

- New and emerging research and technologies will lead to a continuing evolution of care
Sports-Related Concussion in the United States

CDC now estimates that 1.6 to 3.8 million sports-related mTBIs occur each year

(Langlois, et al., J Head Trauma Rehab. 2006, (5)375-378)

– In Delaware, teens and young adults (ages 15-24) accounted for 17% of all hospitalizations as a result of traumatic brain injuries (including SRC) during the reporting period of 2003-2007.

– Only 8% to 19% of sports-related injuries result in LOC.*

Extent of the Problem

• Professional athletes get a great deal of attention - but just tip of iceberg!
  – 1600 NFL players

• Much more common in US high school than any other level - due to large number of participants
  – HS Sports Participants
    • Football - 1.14 million
    • Boys Soccer - 384,000
    • Girls Soccer - 345,000
    • Boys Basketball - 545,000
    • Girls Basketball - 444,000
Extent of the Problem

- 19.3% of all FB injuries in 2009!!
- Over 100,000 concussions nationally in HS athletes yearly based on CDC estimates,
- Over 1,000 concussions in HS athletes in Delaware each year
Not Just a Football (or a “guy”) Problem

Injury rate per 100,000 player games in high school athletes

- Football 47
- Girls soccer 36
- Boys soccer 22
- Girls basketball 21
- Wrestling 18
- Boys basketball 7
- Softball 7

- Data from HS RIO
  » JAT, 2007
What has happened to make this such a big deal?

- Increasing awareness and incidence
  - Number of high profile athletes over the past 10 years
  - Bigger and faster kids, increased opportunities
  - Increased litigation from misdiagnosis, treatment, and removal from sport
What has happened to make this such a big deal?

• High profile cases
  – Second Impact Syndrome
    • Death or devastating brain damage when having a second injury when not healed from the first
  – Long-term effects
    • Possible long-term effects - dementia, depression, CTE
Problems for Athletes-
Post-Concussion Syndrome

• 85-90% of concussed young athletes will recover within 1 to 2 weeks
• The remainder may have symptoms lasting from weeks to months interfering with school and daily life
• Subtle deficits may persist a lifetime
News Journal Media Coverage

December 25
Concussion diagnosis, management put to the test

By Noel Gallagher
ngallagher@pressherald.com@mainetoday.com
Staff Writer

A neurocognitive exam may enable Maine schools to better determine when an injured athlete may resume competition.

By Josh O'Keefe
joseph.okeefe@mainetoday.com
Staff Writer

Student athletes return too soon after concussions
By Lisa Kocian
| Globe Staff December 28, 2012

December 15
Op-Ed Columnist
Should Kids Play Football?
By Joe Nocera
Published: December 14, 2012

Concussion Liability Costs May Rise, and Not Just for N.F.L.
By Kenneth Belson
Published: December 10, 2012

Why the NFL Sucks at Testing for Concussions
•
By Sean Conboy
12.28.12 • 6:30 AM
Federal Regulations on the Horizon?

http://www.nflevolution.com/medical-research

Update
A quick read on the news of the day...
USA TODAY - FRIDAY, SEPTEMBER 24, 2010 - 11C

Law would offer rules for handling concussions

WASHINGTON — Sports concussions are the subject of a proposed federal law that would require a higher level of involvement by parents, teachers, coaches and young athletes in handling the injuries. Rep. George Miller, D-Calif., is pushing for what’s being called the Protecting Student Athletes from Concussions Act, which has received support from the NFL and National Athletic Trainers Association.

A hearing was held Thursday on the bill, which would establish minimum standards of concussion safety and management in secondary schools across the country. The Government Accountability Office cited a report that an estimated 400,000 concussions affected high school athletics from 2005 to 2008, with many of those injuries going unnoticed and untreated.

Gerry Gioia, chief of pediatric neuropsychology at the National Medical Center in Rockville, Md., told the lawmakers that the repercussions from traumatic brain injuries go far beyond the playing field. “There are huge negative effects on academic performance as a consequence of concussions,” he said. “Ninety percent of students who suffered concussions report worsening of symptoms when performing school tasks. They also report continuing headaches and sleep problems.”

Gioia also said less than half of U.S. schools were prepared to diagnose concussions and one-third provided no academic assistance to students with brain injuries.

“That’s because those injuries don’t meet criteria for special education,” he said. “We need to implement and train for a range of academic supports.”

— Sal Rihaal
Recent Editorials in ATSHC

Making Progress to Defeat the “Silent Epidemic” Upon Us

Sport-Related Concussion Legislation: Stand Up and Be Heard!

http://www.healio.com/journals/atshc
Even the Kids are Involved Too!

http://www.kidsconcussion.com/index.html
So What’s The Big Deal for ME?

The Athletic Trainer’s Legal Liability for Football-Related Injuries: *Minimizing the Risk*

NATA News  September 10

Management of Sport-Related Brain Injuries: Preventing Poor Outcomes and Minimizing the Risk for Legal Liabilities
Part I – The Legal Stuff

• Terminology:
  – **Liability** – legal responsibility!
• Clearly defined in the DE State Practice Act

4.0 Athletic Trainers (24 Del.C. § 2602)

4.1 Athletic injuries:
4.1.1 Athletic trainers may treat athletic injuries. Athletic injuries shall be considered musculoskeletal injuries to athletes that occur while currently participating in, or currently training for, scholastic, professional, or sanctioned amateur athletics, where such injury limits the athlete’s ability to participate or train for their sport. Athletic Trainers may also treat musculoskeletal injuries received by athletes that occur while currently participating in recreational activities, where such recreational activities are recognized by the Amateur Athletic Union (see website for list of activities within the AAU). All Athletic injuries must be documented by the Athletic Trainer as interfering with participation in or training for such athletic activities. Nothing prohibits the Athletic Trainer from treating minor sprains, strains, and contusions to athletes currently participating in professional, scholastic, recreational, or sanctioned amateur athletic activities.
Part I – The Legal Stuff

– Terminology:
  • **Standard of Care** - the legal duty to provide health care services consistent with what other health care practitioners of the same training, education, and credentialing would provide under the circumstances
What Does the BOC Have to Say About the “Standard of Care”?

**Standard 1: Direction**
The Athletic Trainer renders service or treatment under the direction of a physician.

**Standard 2: Prevention**
The Athletic Trainer understands and uses preventive measures to ensure the highest quality of care for every patient.

**Standard 3: Immediate Care**
The Athletic Trainer provides standard immediate care procedures used in emergency situations, independent of setting.

**Standard 4: Clinical Evaluation and Diagnosis**
Prior to treatment, the Athletic Trainer assesses the patient’s level of function. The patient’s input is considered an integral part of the initial assessment. The Athletic Trainer follows standardized clinical practice in the area of diagnostic reasoning and medical decision making.

**Standard 5: Treatment, Rehabilitation and Reconditioning**
In development of a treatment program, the Athletic Trainer determines appropriate treatment, rehabilitation and/or reconditioning strategies. Treatment program objectives include long and short-term goals and an appraisal of those which the patient can realistically be expected to achieve from the program. Assessment measures to determine effectiveness of the program are incorporated into the program.

**Standard 6: Program Discontinuation**
The Athletic Trainer, with collaboration of the physician, recommends discontinuation of the athletic training service when the patient has received optimal benefit of the program. The Athletic Trainer, at the time of discontinuation, notes the final assessment of the patient’s status.

**Standard 7: Organization and Administration**
All services are documented in writing by the Athletic Trainer and are part of the patient’s permanent records. The Athletic Trainer accepts responsibility for recording details of the patient’s health status.
Strategies for Avoiding Legal Liability

- Build relationships
- Insist on a written contract
- Obtain informed consent
- Provide physical exams

- **Know the profession and its standards**
- Document hazards
Strategies for Avoiding Legal Liability

- Establish policies
- Document activities
- Maintain confidentiality
- Provide proper instruction
- Supervise your staff

**Participate in CE**
- Recognize your qualifications
- Maintain insurance coverage
No Need to Worry I’m Well-Versed in Treating Sport-Related Concussion!

- With more attention in the media on SRC’s the public has become more educated about the problem (some high-profile athletes involved)

- ATC’s (and others) have become a popular target of lawsuits alleging failures to meet the “standard of care”.

- In cases of unfortunate events the actions (or inactions) of the ATC, coach, physical educator are likely to be second guessed or blamed.
Legal Attacks Typically Involve:

- The evaluation or testing of an athlete (or lack thereof)
- Documentation of the injury
- Communication with the athlete or with a physician about an athlete
- Education of the athlete
Part II - What Exactly is the Standard of Care?
American Medical Society for Sports Medicine position statement: concussion in sport

Kimberly G Harmon, 1 Jonathan A Drezner, 1 Matthew Gammons, 2 Kevin M Guskiewicz, 3 Mark Halstead, 4 Stanley A Herring, 1 Jeffrey S Kutcher, 5 Andrea Pana, 6 Margot Putukian, 7 William O Roberts 8

Endorsed by the National Trainers’ Athletic Association and the American College of Sports Medicine

A newer updated position statement is forthcoming!
NFL Health and Safety

The 2012 NFL Health and Safety Report offers an up-to-date summary of the programs and initiatives in place today to protect and enhance the health and safety of players; a look forward to tomorrow; and an acknowledgement of the many partners who work together with the NFL on these programs.

The goal of this and future reports is simple: provide those who care passionately about the game of football and its players with a comprehensive look at the league’s health and safety efforts, and illuminate where important progress has been made in the past year — and where further improvements can be made.

http://www.nflevolution.com/home
NCAA Sports Medicine Handbook

NCAA® GUIDELINE 2i

Concussion or Mild Traumatic Brain Injury (mTBI) in the Athlete


Athletic Training Research Laboratory
The NCAA Executive Committee adopted (April 2010) the following policy for institutions in all three divisions:

“Institutions shall have a concussion management plan on file such that a student-athlete who exhibits signs, symptoms or behaviors consistent with a concussion shall be removed from practice or competition and evaluated by an athletics healthcare provider with experience in the evaluation and management of concussions. Student-athletes diagnosed with a concussion shall not return to activity for the remainder of that day. Medical clearance shall be determined by the team physician or his or her designee according to the concussion management plan.

“In addition, student-athletes must sign a statement in which they accept the responsibility for reporting their injuries and illnesses to the institutional medical staff, including signs and symptoms of concussions. During the review and signing process, student-athletes should be presented with educational material on concussions.”
National Federation of State High School Associations


NFHS position statements: http://www.nfhs.org/content.aspx?id=5786

NFHS Learning Center: Concussion in Sports – What You Need to Know
DIAA Concussion Protocol

DIAA Concussion Regulations
DIAA Regulation 1008/1009

3.1.5 Prior to resuming participation, a player who is otherwise properly certified to participate in interscholastic athletics must present to the administrative head of school or designee, a statement from a qualified physician that the player is physically able to participate if one of the following conditions has occurred:

3.1.5.1 The player is physically unable to compete due to illness or injury for five (5) consecutive days on which a practice scrimmage or contest is held;
3.1.5.2 The player was apparently unconscious;
3.1.5.3 The player suffered a concussion.
DIAA Concussion Protocol

1. If an athlete exhibits signs and symptoms consistent with a concussion, they shall be removed from play immediately. [Be aware of the sport specific rule covering possible concussions] A qualified health care professional must then determine whether or not an apparent concussion has occurred. If one of the aforementioned qualified healthcare professionals is not present, the injury must be treated as a concussion and the student not be allowed to return to practice/game until determined otherwise from a qualified healthcare professional. If a potential concussion, loss of consciousness or apparent loss of consciousness has occurred, according to DIAA regulation 3.1.5, “the athlete may only return to practice/game after the administrative head of school or designee receives "written clearance" from a qualified physician. No athlete shall return to practice or play (RTP) on the same day of a concussion. Any athlete with a concussion should be evaluated by their primary care provider or qualified healthcare professional that day.

2. A qualified healthcare professional shall be defined as a MD or DO, or: school nurse, nurse practitioner, physician assistant, or athletic trainer, with collaboration and/or supervision by a MD or DO as required by their professional state laws and regulations. The qualified healthcare professional must be licensed and in good standing with the State of Delaware and must be approved or appointed by the administrative head of school or designee, or the DIAA executive director/assistant executive director.
3. "Written Clearance from a qualified physician” for return to play after a potential concussion shall be a MD/DO only. The preferred method would be to use the form that is attached. [ACE Care Plan]. After medical clearance, return to play should follow a step-wise protocol with provisions for delayed return to play based upon the return of any signs or symptoms.

4. Failure to comply with medical requirements found in DIAA regulation section 3.0 shall result in that individual or school being considered "ineligible" and shall be penalized according to DIAA regulation 2.9- The school has used an ineligible player and thus must forfeit the contest.

Acute Concussion Evaluation (ACE)
Physician/Clinician Office Version

Athletic Training Research Laboratory
Let’s Take a Look at Federal Concussion Legislation
HR6172 “Protecting Student Athletes from Concussion Act of 2010”

• Purpose: To promote minimum State requirements for the prevention and treatment of concussions caused by participation in school sports, and for other purposes.

• “The legislation requires that individual school districts design plans to educate students, parents, and school personnel about concussion safety and how to support students recovering from concussions. Schools also must post information about concussions on school grounds and on school websites, and are encouraged to implement a ‘when in doubt, sit it out’ policy for students suspected of sustaining a concussion during a school-sponsored athletic activity”

NATIONAL ATHLETIC TRAINERS’ ASSOCIATION CHAMPIONS PROPOSED CONCUSSION ACT OF 2010
The Specifics of HR6172

- Education of medical personnel, teachers, coaches, students and parent on concussion and guidelines of concussion treatment
- Posting of information on concussions
- Students shall be immediately removed from activity by coaches, athletic trainers, or other medical personnel and prohibited to return until a written release has been submitted by a health care professional
- Written release should state the student is capable of returning and may require the student to follow a recovery plan.
HR6172 “Protecting Student Athletes from Concussion Act of 2010”

111th Congress, 2009–2010

To promote minimum State requirements for the prevention and treatment of concussions caused by participation in school sports, and for other purposes.


**Status: Died (Referred to Committee)**

See Instead: This bill was re-introduced as H.R. 469 on Jan 26, 2011. See H.R. 469 for current action on this subject.
H.R. 469: Protecting Student Athletes from Concussions Act of 2011

112th Congress, 2011–2012

To promote minimum State requirements for the prevention and treatment of concussions caused by participation in school sports, and for other purposes.

Sponsor: Rep. Timothy Bishop [D-NY1]

Status: Referred to Committee
HR 1347 ConTACT Act of 2010
"Concussion Treatment and Care Tools Act of 2010"

• Directs the Secretary of the Department of Health and Human Services to make grants to states after the issuance of guidelines through the Centers for Disease Control and Prevention (CDC) for the following purposes:
  – Adopt, disseminate, and ensure the implementation of concussion management guidelines—including the proper procedures for clearing students to return to playing after a concussion has been diagnosed; and
  – Fund schools’ adoption of computerized pre-season baseline and post-concussion neurological testing.

http://www.govtrack.us/congress/bills/111/hr1347

Congressman William Pascrell (D-NJ)
HR 1347 ConTACT Act of 2010
"Concussion Treatment and Care Tools Act of 2010"

111th Congress, 2009–2010

To amend title III of the Public Health Service Act to provide for the establishment and implementation of concussion management guidelines with respect to school-aged children, and for other purposes.


Status: Died (Passed House)
Websites With More Information on Federal Legislation

- [http://www.govtrack.us/](http://www.govtrack.us/)
- [http://www.nata.org/government-affairs-advocacy](http://www.nata.org/government-affairs-advocacy)
State Legislators Want a Piece of the Action Too!
State Concussion Legislation

• Most State Legislation follows these main components:
  – Improve education on concussion and increase awareness
  – Immediate removal of any athlete suspected of sustaining a concussion (coach, athletic trainer or other medical personnel)
  – Can not return to activity until properly cleared (individuals capable of clearing athletes differ from state to state)
States with Enacted Legislation Targeting Youth Sports-Related Concussions

Is Your State Impacted?

• Check out - http://www.sportsconcussions.org/ibaseline/state-laws/statelaws.html

• The first state to enact legislation:
  – Washington (effective July 2009)
Washington


Amends the Washington traumatic brain injury strategic partnership advisory council to: require the partnership to develop and submit a report to the legislature every year that makes recommendations for revisions to the statewide plan and makes revisions to the council’s activities, among other things.


Requires each school district’s board of directors to work with the Washington Interscholastic Activities Association to develop guidelines and other information to educate coaches, athletes, and parents or guardians about concussion and head injury, including continuing to play after injury is sustained. A youth athlete suspected of sustaining a concussion or head injury must be removed from play until cleared by a licensed health care provider.


Creates a workgroup to be chaired by the Developmental Disabilities Council, the Washington Association of Sheriffs, and Police Chiefs to address issues relating to persons with developmental disabilities who are in correctional facilities. This workgroup has to include, among other recommendations, advice on the feasibility of screening and accommodating prisoners with traumatic brain injury. The work group shall develop a simple screening tool for jails to use as part of intake of offenders who may have developmental disabilities, a model policy for the use of the screening tool, a cost-effective way to provide training to the jail staff on the use of the tool, and information on best practices and training for accommodating persons with developmental disabilities during their confinement.
Is Your State Impacted?


Connecticut


Requires student athletic coaches to complete annual training and review regarding concussions and head injuries. To be reissued a coaching permit, coaches are also required to complete refresher courses once every five years. These training and refresher courses must be approved by the State Board of Education. This law also requires a student athlete to be removed from play or other kinds of physical exertion when showing signs of a concussion, and are not permitted to resume participation without written clearance from a licensed medical professional.
Is Your State Impacted?

• Check out -
  http://www.sportsconcussions.org/laws.html

New York (34 page document!)

2011 N.Y. Laws, Chap. 496 (2011 SB 3953)

Enacts the "concussion management and awareness act" and directs the commissioners of education and health to adopt and implement rules and regulations for the treatment and monitoring of students with mild traumatic brain injuries and requires school personnel to receive training in mild traumatic brain injuries. This law also requires an information pamphlet on mild traumatic brain injuries to be distributed to parents of pupils participating in interscholastic sports or who have suffered a mild traumatic brain injury and provides for the establishment of concussion management teams to implement the provisions established in this law.
Will This Legislation Change Things?

- Policy Evaluation of State Youth Sports Concussion/Return to Play Legislation
  - Cloudburst has been awarded a contract with the Centers for Disease Control and Prevention (CDC), National Center for Injury Prevention and Control (NCIPC) to conduct a policy evaluation of the implementation of state youth sports concussion/return to play laws, to report on and develop materials to disseminate key findings. Cloudburst will assess the implementation of youth sports concussion/return to play legislation from two states with existing legislation. Following completion of the evaluation, a report shall be created and a presentation shall be made to NCIPC that clearly demonstrates findings, promising practices, and unintended consequences of the state legislation implementation efforts.

http://www.cloudburstgroup.com/
What Should YOU be Doing with Regard to SRC Assessment and Evaluation?
Hollywood’s Idea of an Appropriate Sport-Related Concussion Assessment

http://www.youtube.com/watch?v=TKAUCulZoow
1) Current mgmt. consists of monitoring physical and cognitive rest as the concussed patient recovers; it would be ideal if there were some way that clinicians could expedite healing!

2) Remains work to be done with implementation of Consensus in Sport (CIS) guidelines (Zurich, 2008)

3) Need to develop strategies to transform consensus into custom – must address the gap in care worldwide!

4) Realization that the most important people involved in initial concussion intervention are those closest to the player --- coaches, referees, parents!

5) SCAT2 is the clinical “gold standard” but has limitations!
Zurich Group (2008) – Abandons the Classification of Concussion!

- Majority of concussions 80-90% resolves in a short 7-10 day period, although recovery time may be longer in children & adolescents!

http://bjsm.bmj.com/cgi/content/full/43/Suppl_1/i76

Consensus Statement on Concussion in Sport: the 3rd International Conference on Concussion in Sport held in Zurich, November 2008
Any athlete suspected of having a concussion should be stopped from playing and assessed by a licensed healthcare provider trained in the evaluation and management of concussions.

Recognition and initial assessment of a concussion should be guided by a symptoms checklist, cognitive evaluation (including orientation, past and immediate memory, new learning and concentration), balance tests and further neurological physical examination.

While standardised sideline tests are a useful framework for examination, the sensitivity, specificity, validity and reliability of these tests among different age groups, cultural groups and settings is largely undefined. Their practical usefulness with or without an individual baseline test is also largely unknown.

Balance disturbance is a specific indicator of a concussion, but not very sensitive. Balance testing on the sideline may be substantially different than baseline tests because of differences in shoe/cleat-type or surface, use of ankle tape or braces, or the presence of other lower extremity injury.

Imaging is reserved for athletes where intracerebral bleeding is suspected.

There is no same day RTP for an athlete diagnosed with a concussion.

Athletes suspected or diagnosed with a concussion should be monitored for deteriorating physical or mental status.
Concussion in Sports: The Sideline Assessment

Steven P. Broglio, PhD, ATC, and Kevin M. Guskiewicz, PhD, ATC

Context: The vast differences between individual athletes makes identifying and evaluating sports-related concussion one of the most complex and perplexing injuries faced by medical personnel.

Evidence Acquisition: This review summarizes the existing literature supporting the use of a multifaceted approach to concussion evaluation on the sideline of the athletic field. Information was drawn from a PubMed search (MEDLINE) for the terms sport concussion for the most recent and relevant literature.

Conclusions: By using a standardized clinical examination that is supported by objective measures of concussion-related symptoms, mental status, and postural control, the medical professional becomes well equipped to make an informed diagnosis.

Keywords: mild traumatic brain injury; symptoms; postural control; neurocognitive status
Cognitive & Physical Evaluation

1. **Symptom score** (from page 1)
   - 22 minus number of symptoms
   - Score: __________ of 22

2. **Physical signs score**
   - Was there loss of consciousness or unresponsiveness? [Y/N] ________
   - If yes, how long? ________ minutes
   - Was there a balance problem/unsteadiness? [Y/N] ________
   - Physical signs score (1 point for each negative response) ________ of 2

3. **Glasgow coma scale (GCS)**
   - **Best eye response (E)**
     - No eye opening ________
     - Eye opening in response to pain ________
     - Eye opening in speech ________
   - **Best verbal response (V)**
     - No verbal response ________
     - Incomprehensible sounds ________
     - Inappropriate words ________
   - **Best motor response (M)**
     - No motor response ________
     - Extension to pain ________
     - Abnormal flexion to pain ________
   - **Glasgow Coma score** (E + V + M) ________ of 15
   - GCS should be recorded for all athletes in case of subsequent deterioration.

4. **Skelton Assessment – Maddocks Score**
   - "I am going to ask you a few questions, please listen carefully and give your best effort.*"
   - Modified Maddocks questions (1 point for each correct answer)
     - At what venue are we at today? ________
     - Which half is it now? ________
     - Who scored last in this match? ________
     - What team did you play last week/game? ________
     - Did your team win the last game? ________
   - **Maddocks score** ________ of 5
   - Maddocks score is validated for sideline diagnosis of concussion only and is not included in SCAT 2 summary score for serial testing.

5. **Cognitive assessment – Standardized Assessment of Concussion (SAC)**
   - **Orientation** (1 point for each correct answer)
     - What month is it? ________
     - What is the date today? ________
     - What is the day of the week? ________
     - What year is it? ________
     - What time is it right now? (within 1 hour) ________
   - Orientation score ________ of ________
   - **Immediate memory**
     - "I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order."
     - Trials 1 & 2:
       - "I am going to repeat the same list again. Repeat back as many words as you can remember in any order, even if you said the word before."
     - Complete all 3 trials regardless of score on trial 1 & 2. Read the words at a rate of one per second. Score 1 pt. for each correct response. Total score is equal sum across all 3 trials. Do not inform the athlete that delayed recall will be tested.
     - **List**
       - Alternatives: ________
     - **Immediate memory score** ________ of ________
     - **Concentration**
       - Digits Backward: "I am going to read you a string of numbers and when I am done, you repeat them back to me backwards, in reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7."
       - If correct, go to next string length. If incorrect, read trial 1. One point possible for each string length. Stop after incorrect on both trials. The digits should be read at the rate of one per second.
     - **Alternate digit list**
       - 4-9-3 ________
       - 2-8-1-4 ________
       - 6-2-9-7-1 ________
       - 7-1-8-4-6-2 ________
   - **Months in reverse order**
     - "Now tell me the months of the year in reverse order. Start with the last month and go backward. So you’ll say December, November... Go ahead."
     - 1 pt. for entire sentence correct
     - **Concentration score** ________ of ________

*Athletic Training Research Laboratory
Athlete Information

Signs to watch for
Problems could arise over the first 24-48 hours. You should not be left alone and must go to a hospital at once if you:
- Have a headache that gets worse
- Are very drowsy or can’t be awakened (woken up)
- Can’t recognize people or places
- Have repeated vomiting
- Behave unusually or seem confused; are very irritable
- Have seizures (arms and legs jerk uncontrollably)
- Have weak or numb arms or legs
- Are unsteady on your feet; have slurred speech

Remember, it is better to be safe. Consult your doctor after a suspected concussion.

Return to play
Athletes should not be returned to play the same day of injury. When returning athletes to play, they should follow a stepwise symptom-limited program, with stages of progression. For example:
1. rest until asymptomatic (physical and mental rest)
2. light aerobic exercise (e.g. stationary cycle)
3. sport-specific exercise
4. non-contact training drills (start light resistance training)
5. full contact training after medical clearance
6. return to competition (game play)

There should be approximately 24 hours (or longer) for each stage and the athlete should return to stage 1 if symptoms recur. Resistance training should only be added in the later stages. Medical clearance should be given before return to play.
## SCAT2 Symptom Evaluation

**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>“Pressure in head”</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 like “in a fog”</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>“Don’t feel right”</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>Drowsiness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Trouble falling asleep (if applicable)</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>Sadness</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)

**Symptom severity score**
(Add all scores in table, maximum possible: 22 x 6 = 132)

Do the symptoms get worse with physical activity?  
Do the symptoms get worse with mental activity?  
Overall rating

If you know the athlete well prior to the injury, how different is the athlete acting compared to his / her usual self? Please circle one response.

- no different
- very different
- unsure
SCAT2 – Physical Sign Score

Physical signs score

Was there loss of consciousness or unresponsiveness?  
If yes, how long?  [ ] minutes
Was there a balance problem/unsteadiness?  

Physical signs score (1 point for each negative response) [ ] of 2
Glasgow Coma Scale (GCS)

### Glasgow coma scale (GCS)

#### Best eye response (E)
- No eye opening: 1
- Eye opening in response to pain: 2
- Eye opening to speech: 3
- Eyes opening spontaneously: 4

#### Best verbal response (V)
- No verbal response: 1
- Incomprehensible sounds: 2
- Inappropriate words: 3
- Confused: 4
- Oriented: 5

#### Best motor response (M)
- No motor response: 1
- Extension to pain: 2
- Abnormal flexion to pain: 3
- Flexion/Withdrawal to pain: 4
- Localizes to pain: 5
- Obey commands: 6

### Glasgow Coma score (E + V + M)

GCS should be recorded for all athletes in case of subsequent deterioration.

GCS of 15
Maddock’s Questions

Sideline Assessment – Maddocks Score

“I am going to ask you a few questions, please listen carefully and give your best effort.”

Modified Maddocks questions (1 point for each correct answer)

- At what venue are we at today?
  - 0 1
- Which half is it now?
  - 0 1
- Who scored last in this match?
  - 0 1
- What team did you play last week/game?
  - 0 1
- Did your team win the last game?
  - 0 1

Maddocks score

Maddocks score is validated for sideline diagnosis of concussion only and is not included in SCAT 2 summary score for serial testing.

Cognitive assessment
Standardized Assessment of Concussion (SAC)

Orientation (1 point for each correct answer)

<table>
<thead>
<tr>
<th>Question</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>What month is it?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>What is the date today?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>What is the day of the week?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>What year is it?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>What time is it right now? (within 1 hour)</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Orientation score: 0 of 5

Immediate memory
“I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order.”

Trials 2 & 3:
“I am going to repeat the same list again. Repeat back as many words as you can remember in any order, even if you said the word before.”

Complete all 3 trials regardless of score on trial 1 & 2. Read the words at a rate of one per second. Score 1 pt. for each correct response. Total score equals sum across all 3 trials. Do not inform the athlete that delayed recall will be tested.

<table>
<thead>
<tr>
<th>List</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Alternative word list</th>
</tr>
</thead>
<tbody>
<tr>
<td>elbow</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>candle, baby, finger</td>
</tr>
<tr>
<td>apple</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>paper, monkey, penny</td>
</tr>
<tr>
<td>carpet</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>sugar, perfume, blanket</td>
</tr>
<tr>
<td>saddle</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>sandwich, sunset, lemon</td>
</tr>
<tr>
<td>bubble</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>wagon, iron, insect</td>
</tr>
</tbody>
</table>

Total: 0 of 15

Immediate memory score: 0 of 15

Concentration
Digits Backward:
“I am going to read you a string of numbers and when I am done, you repeat them back to me backwards. In reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7.”

If correct, go to next string length. If incorrect, read trial 2. One point possible for each string length. Stop after incorrect on both trials. The digits should be read at the rate of one per second.

<table>
<thead>
<tr>
<th>Alternative digit lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-9-3</td>
</tr>
<tr>
<td>2-8-1-4</td>
</tr>
<tr>
<td>6-2-9-7-1</td>
</tr>
<tr>
<td>7-1-8-4-6-2</td>
</tr>
</tbody>
</table>

Months in Reverse Order:
“Now tell me the months of the year in reverse order. Start with the last month and go backward. So you’ll say December, November ... Go ahead”

1 pt. for entire sequence correct:

Concentration score: 0 of 5
## Balance Error Scoring System (BESS) – Modified for SCAT2

<table>
<thead>
<tr>
<th>Foot Placement</th>
<th>Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Side by side</td>
<td>Stable</td>
</tr>
<tr>
<td>2 Single, non-dominant foot</td>
<td>Stable</td>
</tr>
<tr>
<td>3 Tandem, dominant in front</td>
<td>Stable</td>
</tr>
<tr>
<td>4 Side by side</td>
<td>Foam/Unstable</td>
</tr>
<tr>
<td>5 Single, non-dominant foot</td>
<td>Foam/Unstable</td>
</tr>
<tr>
<td>6 Tandem, dominant in front</td>
<td>Unstable</td>
</tr>
</tbody>
</table>

---

Athletic Training Research Laboratory
Table 1  Foot Positioning

<table>
<thead>
<tr>
<th>Stance–surface</th>
<th>Foot position</th>
</tr>
</thead>
<tbody>
<tr>
<td>double–firm</td>
<td>narrow bilateral stance with medial aspects of feet on midline of platform</td>
</tr>
<tr>
<td>single–firm</td>
<td>standing on nondominant leg</td>
</tr>
<tr>
<td>tandem–firm</td>
<td>standing diagonally across the platform, feet in line, with the heel of</td>
</tr>
<tr>
<td></td>
<td>dominant foot touching toes of nondominant foot</td>
</tr>
<tr>
<td>double–foam</td>
<td>narrow bilateral stance with medial aspects of feet on midline of foam</td>
</tr>
<tr>
<td>single–foam</td>
<td>standing on nondominant leg in the middle of the foam</td>
</tr>
<tr>
<td>tandem–foam</td>
<td>standing diagonally across the middle of the foam, feet in line, with the</td>
</tr>
<tr>
<td></td>
<td>heel of dominant foot touching toes of nondominant foot</td>
</tr>
</tbody>
</table>

Table 2  Balance Error Scoring System

- Lifting hands off iliac crests
- Opening eyes
- Stepping, stumbling, or falling
- Remaining out of the test position for more than 5 s
- Moving hip into more than 30° of flexion or abduction
- Lifting forefoot or heel

Which foot was tested: [ ] Left  [ ] Right
(i.e. which is the non-dominant foot)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Total errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Leg Stance (feet together)</td>
<td>of 10</td>
</tr>
<tr>
<td>Single leg stance (non-dominant foot)</td>
<td>of 10</td>
</tr>
<tr>
<td>Tandem stance (non-dominant foot at back)</td>
<td>of 10</td>
</tr>
</tbody>
</table>

Balance examination score (30 minus total errors) of 30
Coordination examination

Upper limb coordination
Finger-to-nose (FTN) task: “I am going to test your coordination now. Please sit comfortably on the chair with your eyes open and your arm (either right or left) outstretched (shoulder flexed to 90 degrees and elbow and fingers extended). When I give a start signal, I would like you to perform five successive finger to nose repetitions using your index finger to touch the tip of the nose as quickly and as accurately as possible.”

Which arm was tested:  [ ] Left  [ ] Right

Scoring:  5 correct repetitions in < 4 seconds = 1

Note for testers: Athletes fail the test if they do not touch their nose, do not fully extend their elbow or do not perform five repetitions. Failure should be scored as 0.

Coordination score: [ ] of 1
### Cognitive assessment

**Standardized Assessment of Concussion (SAC)**

**Delayed recall**

“Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order.”

Circle each word correctly recalled. Total score equals number of words recalled.

<table>
<thead>
<tr>
<th>List</th>
<th>Alternative word list</th>
</tr>
</thead>
<tbody>
<tr>
<td>elbow</td>
<td>candle</td>
</tr>
<tr>
<td>apple</td>
<td>paper</td>
</tr>
<tr>
<td>carpet</td>
<td>sugar</td>
</tr>
<tr>
<td>saddle</td>
<td>sandwich</td>
</tr>
<tr>
<td>bubble</td>
<td>wagon</td>
</tr>
<tr>
<td></td>
<td>baby</td>
</tr>
<tr>
<td></td>
<td>monkey</td>
</tr>
<tr>
<td></td>
<td>perfume</td>
</tr>
<tr>
<td></td>
<td>sunset</td>
</tr>
<tr>
<td></td>
<td>iron</td>
</tr>
<tr>
<td></td>
<td>finger</td>
</tr>
<tr>
<td></td>
<td>penny</td>
</tr>
<tr>
<td></td>
<td>blanket</td>
</tr>
<tr>
<td></td>
<td>lemon</td>
</tr>
<tr>
<td></td>
<td>insect</td>
</tr>
</tbody>
</table>

**Delayed recall score**

[Image: SCAT2 Cognitive Assessment]
### SCAT2 Overall Scoring

<table>
<thead>
<tr>
<th>Test Domain</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom score</td>
<td>22</td>
</tr>
<tr>
<td>Physical signs score</td>
<td>2</td>
</tr>
<tr>
<td>Glasgow Coma score (E + V + M)</td>
<td>15</td>
</tr>
<tr>
<td>Balance examination score</td>
<td>30</td>
</tr>
<tr>
<td>Coordination score</td>
<td>1</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>70</td>
</tr>
<tr>
<td>Orientation score</td>
<td>5</td>
</tr>
<tr>
<td>Immediate memory score</td>
<td>5</td>
</tr>
<tr>
<td>Concentration score</td>
<td>15</td>
</tr>
<tr>
<td>Delayed recall score</td>
<td>5</td>
</tr>
<tr>
<td><strong>SAC subtotal</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>SCAT2 total</strong></td>
<td>100</td>
</tr>
<tr>
<td><strong>Maddocks Score</strong></td>
<td>5</td>
</tr>
</tbody>
</table>

Definitive normative data for a SCAT2 "cut-off" score is not available at this time and will be developed in prospective studies. Embedded within the SCAT2 is the SAC score that can be utilized separately in concussion management. The scoring system also takes on particular clinical significance during serial assessment where it can be used to document either a decline or an improvement in neurological functioning.

[http://www.youtube.com/watch?v=V_Qj70hHhWE](http://www.youtube.com/watch?v=V_Qj70hHhWE)
NFL Sideline Concussion Assessment Tool

- Adopted from the SCAT2
- Consists of both a baseline and post-concussion template.
- Available for download at:
NFL Sideline Concussion Assessment Tool

| NFL Sideline Concussion Assessment Tool: Completed by healthcare professional. Athlete completes symptoms at bottom.  
| Athlete ________ Position ________ Team ________ Evaluator ________ ATC / MD / DO 
| Evaluation date ____ time ____ am / pm Injury date ____ time ____ am / pm during □ Game □ Practice □ Other ________ 
| Mechanism of injury □ head to head □ elbow to head □ knee to head □ ground to head □ blow to body 
| □ other mechanism _______________________________ □ unknown mechanism 
| Penalty called □ Yes □ No Other circumstances ____________________________________________________________ |

This concussion assessment tool contains an assessment of orientation, memory, concentration, balance & symptoms. This tool is intended to be used in conjunction with your clinical judgment. If ANY significant abnormality is found, a conservative, "safety first" approach should be adopted. An athlete suspected of sustaining a concussion is a "No Go" and does not return to play in the same game or practice.

ANY OF THE FOLLOWING ARE OBVIOUS SIGNS OF DISQUALIFICATION (i.e. "No Go"):
1) LOC or unresponsiveness? (for any period of time) If so, how long? _______________ □ Y N 
2) Confusion? (any disorientation or inability to respond appropriately to questions) □ Y N 
3) Amnesia (retrograde / anterograde)? If so, how long? _______________ □ Y N 
4) New and/or persistent symptoms: see checklist? (e.g. headache, nausea, dizziness) □ Y N 
5) Abnormal neurological finding? (any motor, sensory, cranial nerve, balance issues, seizures) or □ Y N 
6) Progressive, persistent or worsening symptoms? If so, consider cervical spine and/or a more serious brain injury (See box below) □ Y N 

Other _______________________________ Total Physical Signs Score: (total above □ Yes scores) of 6 = ______

Neurological Screen for Cervical Spine and/or More Serious Brain Trauma

| Deteriorating mental status? | Y N |
| Any reported neck pain, cervical spine tenderness or decreased range of motion? | Y N |
| Pupil reaction abnormal or pupils unequal? | Y N |
| Extra-ocular movements abnormal and/or cause double vision? (difficulty tracking and/or reading) | Y N |
| Asymmetry or abnormalities on screening motor or sensory exam? | Y N |
### NFL Sideline Concussion Assessment Tool

**ORIENTATION / SAC**
- What month is it? 0 1
- What is the date today? 0 1
- What is the day of the week? 0 1
- What year is it? 0 1
- What time is it right now? (within an hour) 0 1

**ORIENTATION / Maddock’s Questions**
- Where are we? 0 1
- What quarter is it right now? 0 1
- Who scored last in the practice / game? 0 1
- Who did we play last game? 0 1
- Did we win the last game? 0 1

**SAC / Word Recall:** Read list of 5 words 1 per second, ask athlete to repeat list, in any order. (Use of specific lists below optional). For Trial 2 & 3, read the same list of words again and have athlete repeat them back, in any order. One point for each word remembered. You must conduct all 3 trials regardless of their success on trial 1. **Do not tell athlete that delayed recall will be tested.**

<table>
<thead>
<tr>
<th>List 1</th>
<th>Immediate Recall Trials</th>
<th>Alternative Lists</th>
<th>Delayed recall (perform at end of all sideline testing, at least &gt; 5 minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>elbow</td>
<td>___________ ___________ ___________</td>
<td>candle  baby</td>
<td>_________</td>
</tr>
<tr>
<td>apple</td>
<td>___________ ___________ ___________</td>
<td>paper  monkey</td>
<td>_________</td>
</tr>
<tr>
<td>carpet</td>
<td>___________ ___________ ___________</td>
<td>sugar  perfume</td>
<td>_________</td>
</tr>
<tr>
<td>saddle</td>
<td>___________ ___________ ___________</td>
<td>sandwich sunset</td>
<td>_________</td>
</tr>
<tr>
<td>bubble</td>
<td>___________ ___________ ___________</td>
<td>wagon  iron</td>
<td>_________</td>
</tr>
</tbody>
</table>

*Total of all three immediate word recalls: out of 15 = ____*

*Total delayed recall: out of 5 = ____*

**Overall Rating:** If you know the athlete well p/t the injury, how different is the athlete acting compared to his usual self?

- □ No different
- □ Very different
- □ Unsure
NFL Sideline Concussion Assessment Tool

**SAC / Concentration:** Read string of numbers, ask athlete to repeat backwards. (Use of specific numbers below optional). If correct go to the next string length. If incorrect, read second string (same length) 1 point for each string length correct. Stop after incorrect on both trials. Read digits at rate of 1 digit/sec

<table>
<thead>
<tr>
<th>Digits Backward</th>
<th>Alternative digit lists</th>
<th>SAC / Concentration cont. Months in reverse order</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-9-3</td>
<td>0 1</td>
<td>Dec - Nov - Oct - Sept - Aug - Jul - Jun - May - Apr - Mar - Feb - Jan</td>
</tr>
<tr>
<td>3-8-1-4</td>
<td>0 1</td>
<td>6-2-9</td>
</tr>
<tr>
<td>6-2-9-7-1</td>
<td>0 1</td>
<td>1-5-2-8-6</td>
</tr>
<tr>
<td>7-1-8-4-6-2</td>
<td>0 1</td>
<td>5-3-9-1-4-8</td>
</tr>
</tbody>
</table>

1 point for each sequence correct of 4 = ______

Total of SAC Concentration of 5 = ______

**Modified BESS:** This is calculated by adding 1 error point for each error during the three 20-sec tests. The maximum total # of errors for any single condition is 10. The higher the score, the worse is the player's balance.

Balance testing – types of errors
1. Hands lifted off iliac crest
2. Opening eyes
3. Step, stumble, or fall
4. Moving hip into > 30 degrees abduction
5. Lifting forefoot or heel
6. Remaining out of test position > 5 sec

**SCORING**

All Physical Signs Score: (total # □ Yes) = ___ of 6
Maddock’s score: = ___ of 5
All SAC scores: (summed orange boxes) = ___ of 30
Balance Score: (summed BESS Errors) = ___
Symptom Score: (# symptoms reported) = ___ of 24

ALL SCORES SHOULD BE COMPARED WITH BASELINE VALUES FOR THE INDIVIDUAL ATHLETE

**Unsure**

Scores and symptoms of concussion may be delayed, and therefore it may be prudent to remove an athlete from play, not leave them alone, and serially monitor them over a period of time. WHEN IN DOUBT, TAKE A "TIME OUT"
NFL Sideline Concussion Assessment Tool

The following symptom checklist should be completed by the athlete

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Score Options</th>
<th>Score Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache / head pressure</td>
<td>0 1 2 3 4 5 6</td>
<td>Feeling slowed down</td>
</tr>
<tr>
<td>Nausea / vomiting</td>
<td>0 1 2 3 4 5 6</td>
<td>Sensitivity to noise</td>
</tr>
<tr>
<td>Neck pain</td>
<td>0 1 2 3 4 5 6</td>
<td>Sensitivity to light</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>0 1 2 3 4 5 6</td>
<td>Visual problems/ blurred vision</td>
</tr>
<tr>
<td>Balance problems</td>
<td>0 1 2 3 4 5 6</td>
<td>Sleeping more than usual</td>
</tr>
<tr>
<td>Dizziness</td>
<td>0 1 2 3 4 5 6</td>
<td>Sleeping less than usual</td>
</tr>
<tr>
<td>Fatigue / low energy</td>
<td>0 1 2 3 4 5 6</td>
<td>Trouble falling asleep</td>
</tr>
<tr>
<td>Confusion</td>
<td>0 1 2 3 4 5 6</td>
<td>Sadness</td>
</tr>
<tr>
<td>&quot;Don't feel right&quot;</td>
<td>0 1 2 3 4 5 6</td>
<td>Nervous or anxious</td>
</tr>
<tr>
<td>Feeling &quot;in a fog&quot;</td>
<td>0 1 2 3 4 5 6</td>
<td>Feeling more emotional</td>
</tr>
<tr>
<td>Difficulty remembering</td>
<td>0 1 2 3 4 5 6</td>
<td>Irritability</td>
</tr>
<tr>
<td>Difficulty concentrating</td>
<td>0 1 2 3 4 5 6</td>
<td>Numbness or tingling</td>
</tr>
</tbody>
</table>

Do symptoms worsen with physical activity? Y N
Do symptoms worsen with mental activity? Y N

Total # symptoms = _____ of 24
Symptom Severity (max 24 X max 6) = _____ of 144
What About Educational Programming

CONCUSSION
A fact sheet for student-athletes

http://www.ncaa.org/concussions
What About Educational Programming

Concussion in Sports - What You Need To Know

CDC: Heads Up: Concussion in High School Sports

http://www.cdc.gov/concussion/HeadsUp/youth.html
ThinkFirst-SportSmart
Concussion Education and Awareness Program

http://parachutecanada.org/
DE CARES (Concussion Assessment Registry and Educational System): A Proposal to Examine Sport-Related Concussions in DE Youth
Why is this of Interest to US?

• The State of Delaware is a microcosm of the country and lends itself to the study of the SRC dilemma
• Models developed as a result of this “proof of concept” research will be useful for both the State of Delaware and other states as they develop strategies to treat injured athletes and educate the public about SRC
• Pilot data will be used to apply for federal program funding
• Changes in policy governing when student-athletes can return to competition following SRC can be implemented as a result of such research
INTER-INSTITUTIONAL RESEARCH TEAM

• **Thomas W. Kaminski**, PhD, ATC, FNATA, FACSM (Chair)
  – *University of Delaware*

• **Bradley Bley**, DO
  – *Delaware Orthopedic Associates*

• **Kenneth Rogers**, PhD, ATC
  – *Nemours/AI duPont Hospital for Children*

• **Joseph Tracy**, PhD
  – *Thomas Jefferson University*
A YouTube Video Worth Checking Out (Simplifies Sport-Related Concussion)

Concussions 101, a Primer for Kids and Parents - Dr. Mike Evans

http://www.youtube.com/watch?v=zCCD52Pty4A
Summary Information for the Practicing Athletic Trainer

- Stay current by reading and staying abreast of the ever-changing medical recommendations with regard to sport-related concussions — “Don’t be the one”!
- Keep in mind that SRC’s are not just a football thing!
- Keep up to date on policies governing the setting you practice in (youth, interscholastic, intercollegiate, professional, etc…)
- Stay current on SRC legislation that may impact your state’s athletic training practice act!
  - Don’t rely on federal gov’t to act --- they are letting the states handle it!
- The Standard of Care for managing SRC is most likely to be derived from governing board policies, position statements from medical groups, and legislative acts
- Don’t forget the EDUCATIONAL component of SRC management!
You Must Have Some Questions???
Today’s lecture can be viewed at the following URL address:

http://www.udel.edu/HNES/AT/Site/lectures.html
Thank You