



HEAD INJURIES

RECOGNITION AND PROTOCOL

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OVERVIEW

- Why we talk about it?
- What is a concussion/head injury/mTBI?
- Signs and symptoms
- Return to Learn
- Return to Play
- Questions

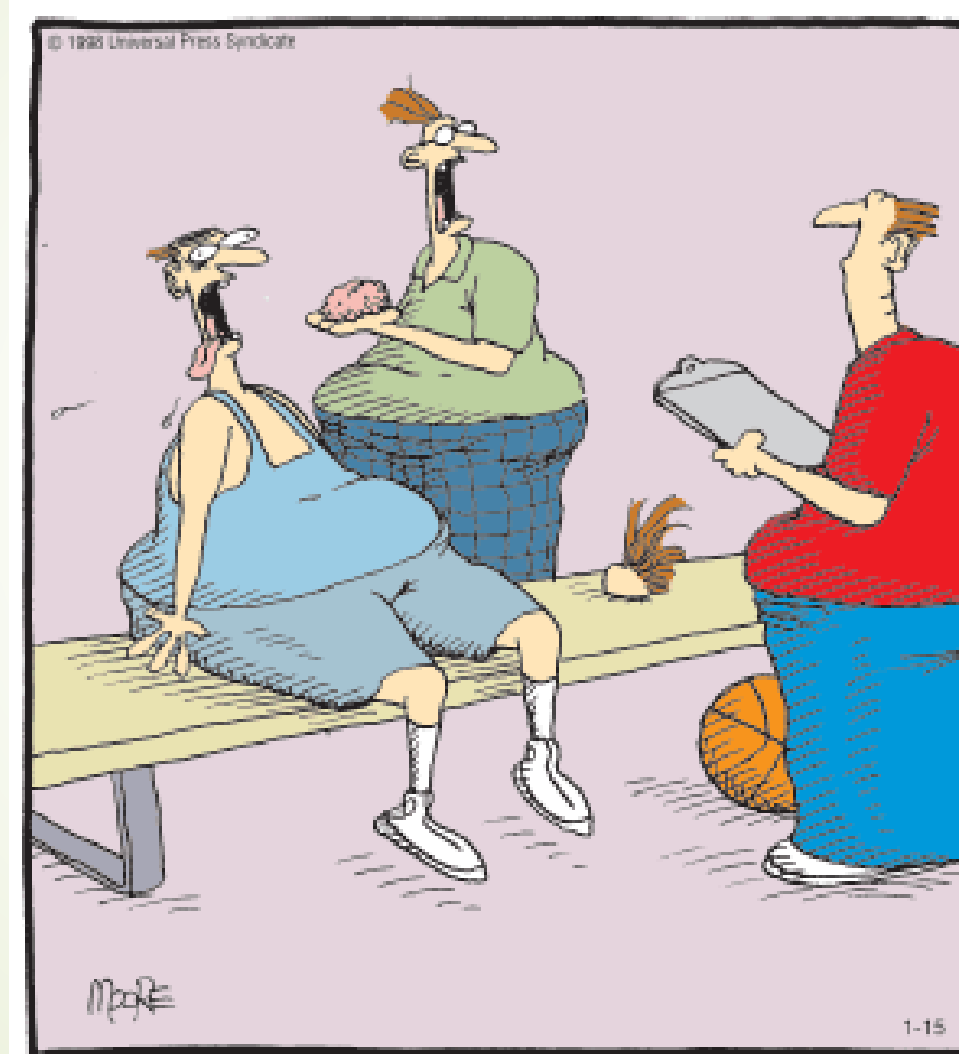


NEBRASKA LEGISLATION

- ▶ LB 260- THE CONCUSSION AWARENESS ACT
 - ▶ JULY 1, 2012
- ▶ RETURN TO LEARN
 - ▶ JULY 18, 2014

Concussions are the only medical condition legislated in all 50 states

What is a Concussion?



"He can go back in the game. It's just a bruise."

WHAT IS A CONCUSSION?

- ▶ **" a complex pathophysiologic process** affecting the brain, induced by traumatic biomechanical forces **secondary to direct or indirect forces to the head**. Mild TBI is caused **by a blow or jolt to the head that disrupts the function of the brain**. This disturbance of brain function is typically associated with normal structural neuroimaging findings (i.e., CT scan, MRI). Mild TBI results in a constellation of physical, cognitive, emotional and/or sleep-related symptoms and may or may not involve a loss of consciousness (LOC).

THE CHEMISTRY OF A CONCUSSION



- K⁺ leaves the cell = increased energy demand
- Ca enters the cell and constricts blood vessels = decreased blood flow
- Return to normal took up to 10 days



FACTS ABOUT CONCUSSIONS

- A concussion is a Mild Traumatic Brain Injury (mTBI)
- Concussion can be caused by a blow and/or torsion to the head or body that causes the brain to move rapidly inside the skull
- Concussions can occur in any sport and *all* concussions are serious
- 10% of all contact sport athletes sustain concussions
- An athlete who sustains a concussion is 4-6 times more likely to sustain a second concussion.
- Effects of concussion are cumulative in athletes who return to play prior to complete recovery
- The best way to prevent problems with concussion is to manage them effectively when they occur



SECOND IMPACT SYNDROME

- ▶ Occurs in athletes with prior concussion following relatively minor second impact
- ▶ Second impact has been shown to occur up to 14 days post-injury
- ▶ Athlete returns to competition before resolution of symptoms
- ▶ Catastrophic increase in intracranial pressure
- ▶ Most often occurs in athletes <21 years old
- ▶ Neuro-chemical processes appear to differ in developing brain



SIGNS AND SYMPTOMS

THIS IS YOUR BRAIN



THIS IS YOUR BRAIN ON CRUTCHES



ATHLETIC TRAINERS, PHYSICIANS, AND COACHES
CANNOT SEE THE BRAIN LIMP!




SIGNS AND SYMPTOMS

- ▶ HEADACHE
- ▶ NAUSEA
- ▶ VOMITING
- ▶ BALANCE PROBLEMS
- ▶ DIZZINESS
- ▶ FATIGUE
- ▶ TROUBLE FALLING ASLEEP
- ▶ SLEEPING MORE/LESS THAN USUAL
- ▶ DROWSINESS
- ▶ SENSITIVITY TO LIGHT
- ▶ SENSITIVITY TO NOISE
- IRRITABILITY
- SADNESS
- NERVOUSNESS
- FEELING MORE EMOTIONAL
- NUMBNESS/TINGLING
- FEELING SLOWED DOWN
- FEELING MENTALLY FOGGY
- DIFFICULTY CONCENTRATING
- DIFFICULTY REMEMBERING
- VISUAL PROBLEMS

IN THE TOOLBOX

- GRADED SYMPTOM CHECKLIST
- BESS TESTING
- SAC TEST
- ImPACT TEST



- 
- NEUROCOGNITIVE COMPUTER BASED TEST
 - Attention Span
 - Sustained Attention
 - Non-verbal Problem Solving
 - Visual Memory & Verbal Memory
 - Working Memory
 - Selective Attention
 - Reaction Time
 - Response Variability






Who gets tested?

- Football
- Volleyball
- Softball
- Cheer
- Dance
- Basketball
- Wrestling
- Diving
- Soccer
- Baseball
- Track & Field
 - Pole Vaulters
 - Throwers
 - Jumpers

Approximately 90% of all student-athletes are tested at EHS.



RECOVERY

- REST!
 - PHYSICALLY
 - COGNITIVELY
 - LIMIT ELECTRONICS
 - Dim brightness on screen
 - MEDICATIONS
- 

RETURN TO LEARN

Athletics are important; academics are life long tools.

IN THE BLEACHERS



BY STEVE MOORE



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RETURN TO LEARN

Athletics are important; academics are life long tools.

- ▶ Staying home may be helpful following injury
- ▶ Reduction in student's class load immediately after injury
- ▶ Progression into academics is made on an individual basis
- ▶ No two concussions, or two students are the same
- ▶ It is better to decrease academic load at the beginning rather than play catch-up later
- ▶ When a child is sent home from school for a concussion the only thing they should be doing is RESTING!! Complete cognitive, & physical rest!



ACADEMIC ACCOMMODATIONS

- Counseling Center
- Vary based on subject
- Examples include:
 - Shortening assignments
 - Reducing projects
 - Allowing notes, open book tests
 - Oral tests
 - Audio books



RETURN TO PLAY

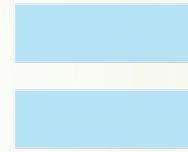
- MUST BE SYMPTOM FREE WITHOUT MEDICATION
- NORMAL TO BASELINE SCORES ON NEUROCOGNITIVE TEST
- FULL RETURN TO CLASSROOM
- PARENT/GUARDIAN SIGNATURE
- 5 DAY PROGRESSION



Return
to
Learn



Return
to
Play



Return
to
Activity

PREVENTION?





QUESTIONS?



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CONCUSSION MANAGEMENT PLAN: PARENT INFORMATION

The following are potential signs & symptoms of a concussion. It is not a comprehensive list and should not take the place of a proper evaluation by your certified athletic trainers or a licensed physician:

- | | |
|--|--|
| 1. Increased drowsiness/foggy feeling | 9. Convulsions/seizures/Dizziness |
| 2. Vomiting/Nausea | 10. Change in sleep patterns |
| 3. Increased headaches | 11. Slowing of pulse |
| 4. Stiffness of the neck/pain | 12. Weakness of arms or legs |
| 5. Discharge of blood or clear fluid
from nose, ears or mouth | 13. Confusion/difficulty concentrating |
| 6. Decrease in appetite | 14. Amnesia/Memory loss |
| 7. Sensitivity to light/noise | 15. Trouble w/speech or swallowing |
| 8. Difficulty maintaining proper balance | 16. Blurred or double vision |
| | 17. Fatigue or no energy |

Also be aware if your athlete becomes:

1. Unsure of events of game/practice, score, or opponent
2. Can't recall events from before the injury
3. Can't recall events after the injury
4. Shows behavior or personality changes

Further Recommendations

*No Advil, Aleve, Aspirin, etc for headaches, this may mask symptoms or decrease the body's ability to coagulate blood (body's ability to clot) if there is bleeding in the brain. Sometimes signs & symptoms of a concussion do not appear until 8-12 hours after the injury occurs. For this reason, we suggest waking the athlete every 2 hours during the night to monitor their symptoms. Only after 24 hours can Tylenol or acetaminophen be administered.

*If any of the above symptoms worsen follow-up with a licensed physician immediately, remembering to secure a release with a diagnosis. Please remember that post-injury IMPACT testing is available for every athlete. The baseline IMPACT test results, along with the post-injury IMPACT test results, can be sent with your athlete to the physician's office to assist the physician in return-to-play.

*Athlete should refrain from playing video games, texting, watching TV & computer use. The brain needs an opportunity to rest, just like any other injured body part.

*Academic accommodations can be arranged if the physician feels it is medically necessary. This should be included in the release from the physician.

What happens if your athlete continues to play with a concussion or returns too soon?

Athletes with signs/symptoms of a concussion should be removed from play immediately. Continuing to play while experiencing signs or symptoms of a concussion leaves the athlete especially vulnerable to greater injury. There is increased risk of significant brain damage from a concussion for a period of time after that concussion occurs, particularly if the athlete suffers another concussion before completely recovering from the first one. This can lead to prolonged recovery, or even to severe brain swelling ("second impact syndrome") with devastating and even fatal consequences. It is well known that teenage athletes will underreport symptoms of injuries-concussions are no different. We urge parents to be especially vigilant and watchful, as they know their athlete best, and are able to notice changes in the athlete that may result from a concussion.

If you think your athlete has suffered a concussion

If you notice signs or symptoms of a concussion in your athlete, seek medical attention right away from a licensed physician trained in the evaluation and management of concussions, or your hospital's emergency department. Any athlete suspected of suffering a concussion must be removed from the game or practice immediately, and may not return until the athlete is evaluated (and cleared in writing) by a licensed physician. This only includes physicians (MD or DO) and Certified Athletic Trainers (ATC).

Graduated Return to Play Protocol

Return to play protocol following a concussion follows a stepwise process as outlined in the table below (McCrory, 2009).

Rehabilitation Stage	Functional Exercise at Each Stage of Rehabilitation	Objective of Each Stage
1. No activity	Complete physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% MPPHR; no resistance training	Increase HR
3. Sport-specific exercise	Skating drills in ice hockey, running drills in soccer; no head impact activities	Add movement
4. Non-contact training drills	Progression to more complex training drills, eg, passing drills in football and ice hockey; may start progressive resistance training	Exercise, coordination, and cognitive load
5. Full contact practice	Following medical clearance, participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. Return to play	Normal game play	

The EPS Athletic Training staff will continue to monitor research within the field of sports-related concussions, adapting this protocol to current evidence based medical practices. The EPS Athletic Training staff will communicate with all parties involved to coordinate the recovery of the athlete so as to facilitate safe return to participation.