

# Concussions in Higher Education

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# Types of Brain Injuries

- Traumatic Brain Injury (TBI)- describes head injuries from external causes.
  - This includes open head injuries (i.e. gunshot wounds) and closed head injuries (wounds without visible signs).
- Acquired Brain Injury –describes head injuries from internal causes.
  - This includes injuries from anoxia, stroke and neurological diseases like encephalitis.

# Concussion Definition

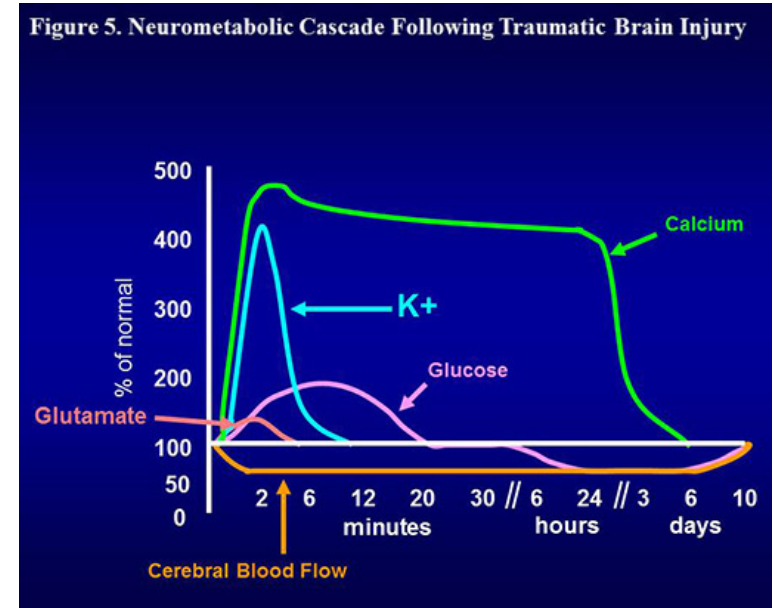
- A TBI can be caused by a blow, jolt, or bump to the head, neck, or body, which disrupts the normal function of the brain.
- A TBI can range in severity from “mild,” which is a brief change in mental cognition or consciousness, to “severe”, which can be memory loss after the injury or a prolonged period of unconsciousness.
- The most common form of TBI are mild and are known as concussions.

# Four Requirements to Define a Concussion

1. A concussion can occur from a blunt force trauma to the body, neck, face or head.
2. A concussion is an impairment in neurological function that is usually short lived, but some symptoms could last longer.
3. Not all concussions cause structural damage that can be seen on neuroimaging techniques, yet concussions usually result in neurological disruption.
4. An individual does not have to lose consciousness to sustain a concussion.

# Concussion Pathophysiology

- The initial impact causes neurometabolic changes within the brain.
- The force of the impact triggers a chemical cascade within the brain.
- Why 7 to 10 days are necessary for recovery.
- Second Impact Syndrome



# Post-Concussive Syndrome (PCS)

- Prolonged symptomology although, the accepted time frame for recovery is not yet scientifically established.
- PCS is influenced by factors such as age, sex, and history of prior concussions.
- Symptoms include: migraine headaches, depression, mood disturbance, chronic pain, vestibular dysfunction, visual dysfunction, speech impairment or some combination of symptoms.
- Approximately 10% of individuals have persistent signs and symptoms of concussion beyond 2 weeks.

# Initial Days of Injury

- “Shut Down” is cognitive rest.
- The “cornerstone” of concussion management.
- Shut Down includes:
  - No electronics, minimal visual and audio stimulation, no driving
- The more cognitive activity one engages in, the longer the potential recovery period.
- Concussions are snowflakes.

# Effects of Brain Injuries

- Life altering!
- The condition can improve, but may produce permanent disabilities.
- Damage to the brain can disrupt pathways that are necessary for recovery.
- Executive functioning can be greatly impaired especially if there is frontal lobe damage.
  - Daily planning and long-term planning
  - Time management skills
  - Self monitoring (i.e. money)



# Treatment

- There is no set treatment plan to follow for concussions.
- Pain management (i.e. medications)
- Biofeedback
- Vestibular Therapy
- Hypnosis
- Chiropractic
- Acupuncture
- Naturopathic



# Cognitive Impairments

- Impaired memory or retrieval of information\*
- Impaired comprehension
- Slow thought processing
- Impulsive decision making
- Reduced attention span
- Geographic or temporal disorientation
- Difficulty following a schedule or sequence

# Physical and Sensory Impairments

- Chronic pain
- Slurred speech and other speech impairments
- Hormonal changes
- Fatigue or decreased stamina
- Blindness or visual impairments
- Hearing loss
- Impaired motor skills (delayed reaction times, tremors, etc.)
- Seizures
- Cranial-facial injuries

# \*Psychosocial Impairments\*

- Depression
- Loneliness
- Isolation
- Loss of self-esteem and confidence
- Decrease in liability (inability to control emotions)
- A sense of disconnection from peers
- Inability to manage stress
- Embarrassment from forgetting important information (assignments, dates, schedules, etc.)

# How it Impacts the Learning Process

- There can be erratic academic performances.
- They can experience extreme difficulty processing and remembering complex information.
- Previously learned material may be forgotten (i.e. math skills; historical facts)
- Those who had good study habits prior to the injury may have a better transition post injury.
- Keep their personal interest in mind when choosing classes or a major.

# Suggestions for Instructors

- Students with a brain injury have different needs than students with a learning disability or other types of disabilities.
- May need some extra support while transitioning back into the classroom.
- Encourage students to be their own advocates and be understanding that it can be difficult talking about the experience at first.
- Don't minimize the injury.
- Be patient!

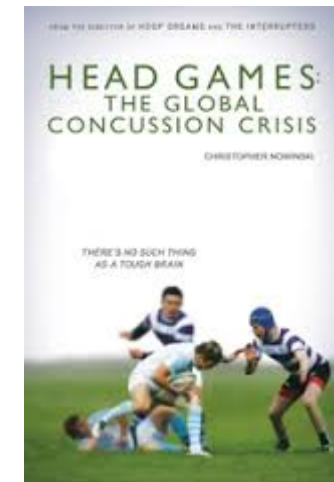
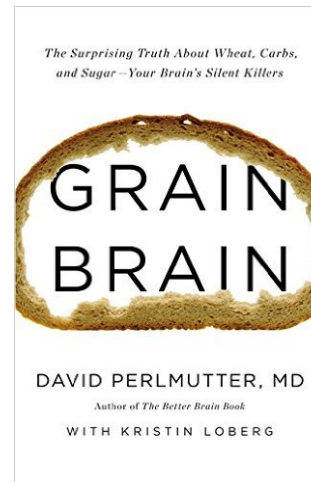
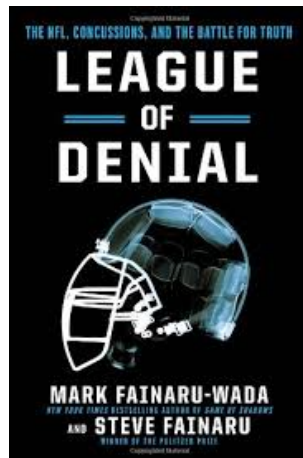
# Types of Accommodations for Brain Injuries

- Livescribe pen
- Audio/Visual Aids
- PowerPoints prior to class
- Text to speech programming
- Index cards to prompt memory
- Extended time on quizzes and exams
- Advanced notice for oral presentations
  - Note cards/sheet for presentations



# Resources

- <http://www.connecticutchildrens.org/our-care/elite-sports-medicine/programs-services/concussion-management/>
- <http://www.biact.org/>
- <https://www.cdc.gov/traumaticbraininjury/index.html>
- <https://www.cdc.gov/headsup/index.html>
- <http://www.massgeneral.org/children/services/treatmentprograms.aspx?id=1689&display=doctors>
- <http://www.ncaa.org/health-and-safety/medical-conditions/ssi-task-force-explores-issues-challenges-around-concussions>





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