



# Concussions



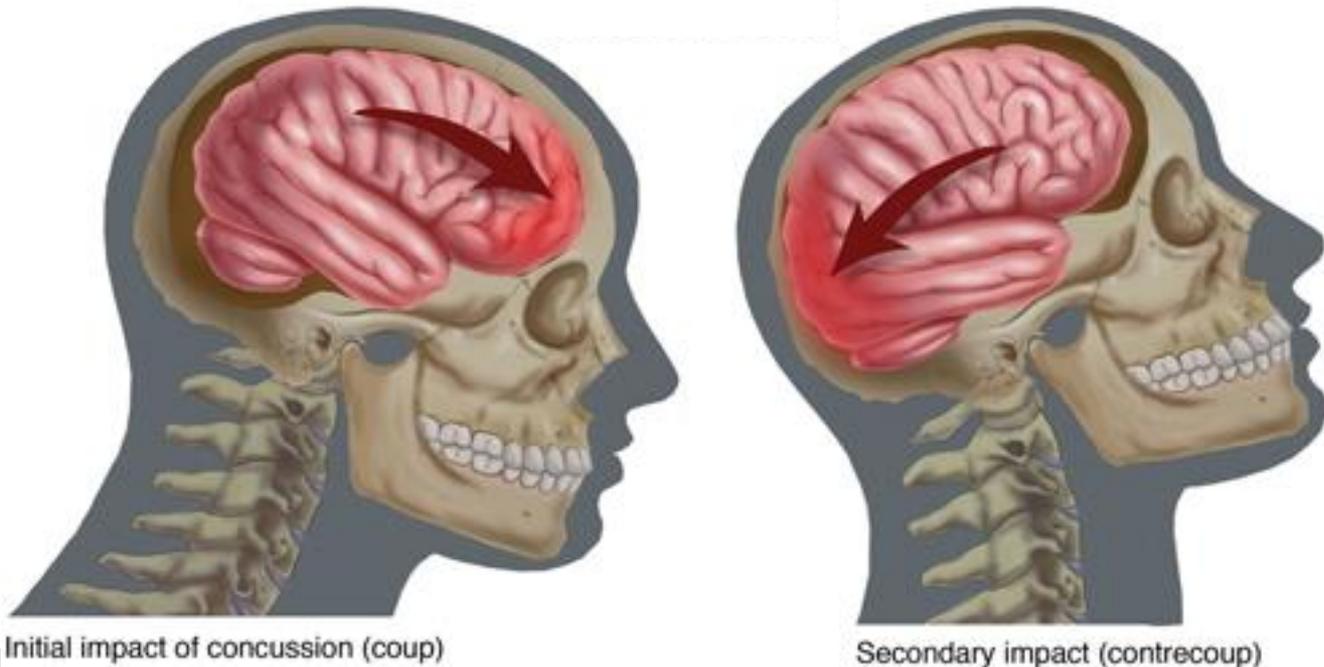
GFR Training

February 26, 2017

# What is a concussion?

A concussion is classified as a mild traumatic brain injury that temporarily interrupts normal brain function.

What happens to your brain when you get hit in the head?



# What kind of forces are associated with concussions?

What is g-force?

g-force = Acceleration due to gravity at Earth's surface

$$1 \text{ g} = 9.8 \text{ m/s}^2 = 9.8 \text{ N/kg}$$

Commercial airplane takeoff: ~ 1.25 g's

Military fighter pilots: ~ 9 g's

Concussions: ~ 95+ g's

This is 95 times the normal gravitational force...

Football Players: ~ 103 g's



# Common Signs & Symptoms

- Headache
- Sensitivity to noise or light
- Nausea/ vomiting  
(early on)
- Feeling tired, having no energy
- Sleeping more or less than usual
- Trouble falling asleep
- Feeling slowed down
- Dazed or “out of it”
- Dizziness, balance problems
- Irritability, sadness or more emotional
- Nervousness or anxious
- Difficulty concentrating or thinking clearly
- Difficulty remembering new information
- Issues with eye tracking

# Emergency Signs & Symptoms

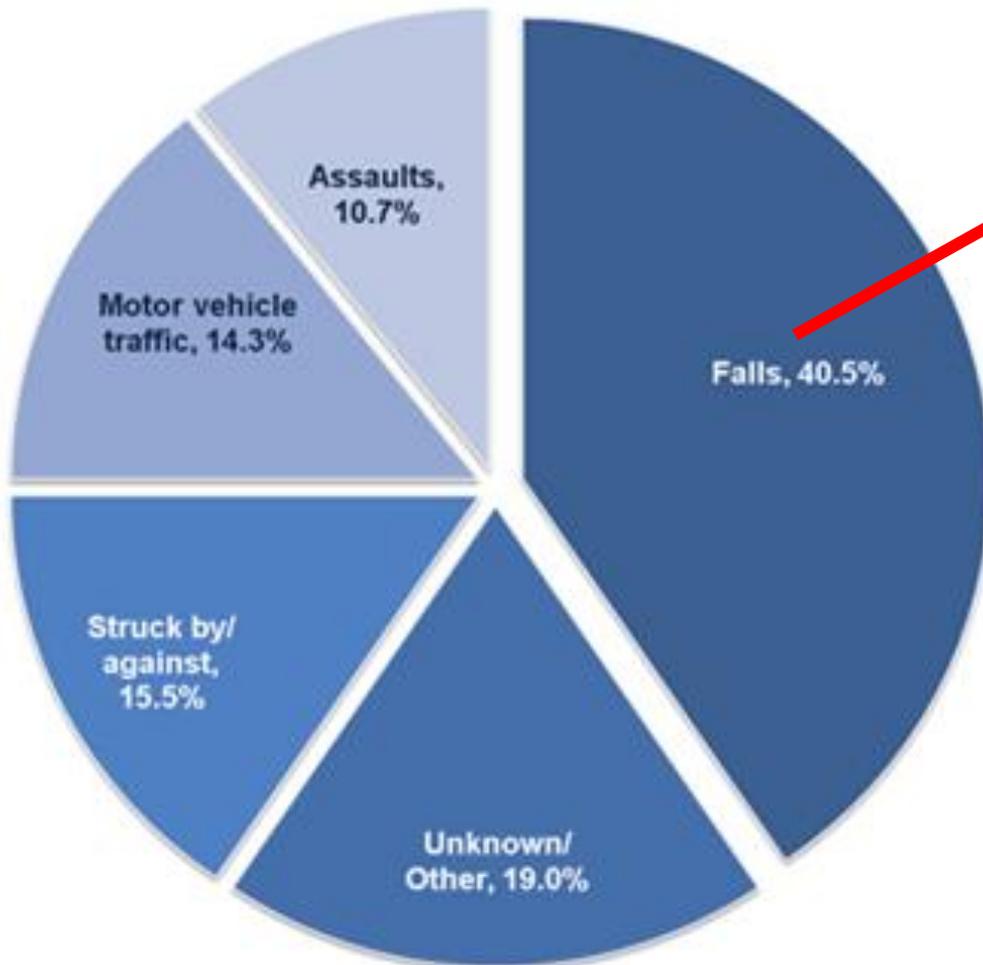
- Sudden, severe headaches
- Repeated vomiting
- Cannot be awoken
- Different sized pupils
- Convulsions or seizures
- Slurred speech
- Becoming more and more confused, restless or agitated
- Hyperventilation at 20+ bpm
- **Cushing's Triad**  
Increased blood pressure, irregular breathing, bradycardia
- Flexion or extension
- Weakness, numbness or decreased coordination

***What might these things indicate?***

# Important!

- Most concussion patients do not lose consciousness and their signs & symptoms may subside quickly on their own
- It is also not uncommon for signs & symptoms to appear hours or even days after the initial injury
- Successive concussions are often more serious than the first one
  - Second Impact Syndrome (SIS) - **OFTEN FATAL**

# Leading Causes?



## Prime Example:

College students who fall out of bed, with beds that are bunked or raised as high as they will go, and smash their head on their bedside table... Like me...

# Videos

- Fencing Response
  - Flexion and Extension



- Hockey



# Assessment



## What do you need to know?

- Check for AMS
- Mechanism of Injury (MOI)
  - DETAILS!!!! GET AS MUCH INFORMATION AS POSSIBLE
    - What exactly were they doing? How did they hit their head? What did they hit their head on? What part of their head did they hit? LOC? Any possibility of spinal injury? Were they wearing any protective equipment?
- What is their baseline status and when were they last seen at it (if they are no longer at it)
- Vitals – Ask if they know what they are normally

# Assessment (Continued)



- SAMPLE: Have they ever had a concussion before? If so, when was the most recent one? How many? How does their current condition feel with relation to that of their most recent concussion?
- OPQRSTI
- Check CMS in all four extremities:
  - Circulatory (pulse): Rate, Rhythm, and Quality
  - Motor: Test grip strength, have them flex and extend arms/wrists, spread fingers apart, push down & pull up against your hands with their feet
  - Sensation: Test for touch and have the patient locate the source of the touch

# Treatment



- Manage any injuries that compromise the airway
- Spinal immobilization if injury to spine is suspected
- Control any bleeding
- Oxygen administration to perfuse the brain
- Ice pack
- Call Med Control if necessary
  - Mike Carey did this for a Quidditch concussion patient

Questions?



# References

- ◆ <http://www.emsworld.com/article/10611569/concussion-management>
- ◆ <http://www.cdc.gov/traumaticbraininjury/symptoms.html>
- ◆ [http://www.braininjuries.org/traumatic\\_brain\\_injury.html](http://www.braininjuries.org/traumatic_brain_injury.html)
- ◆ <https://www.sciencedaily.com/releases/2010/06/100624092526.htm>