

# LEARNING OBJECTIVES

- Examine what are the socio-cultural factors related to concussion
- Identify at least 3 unintended consequences of state concussion laws
- Discuss why an update to current concussion policies is needed and in the best interest of students



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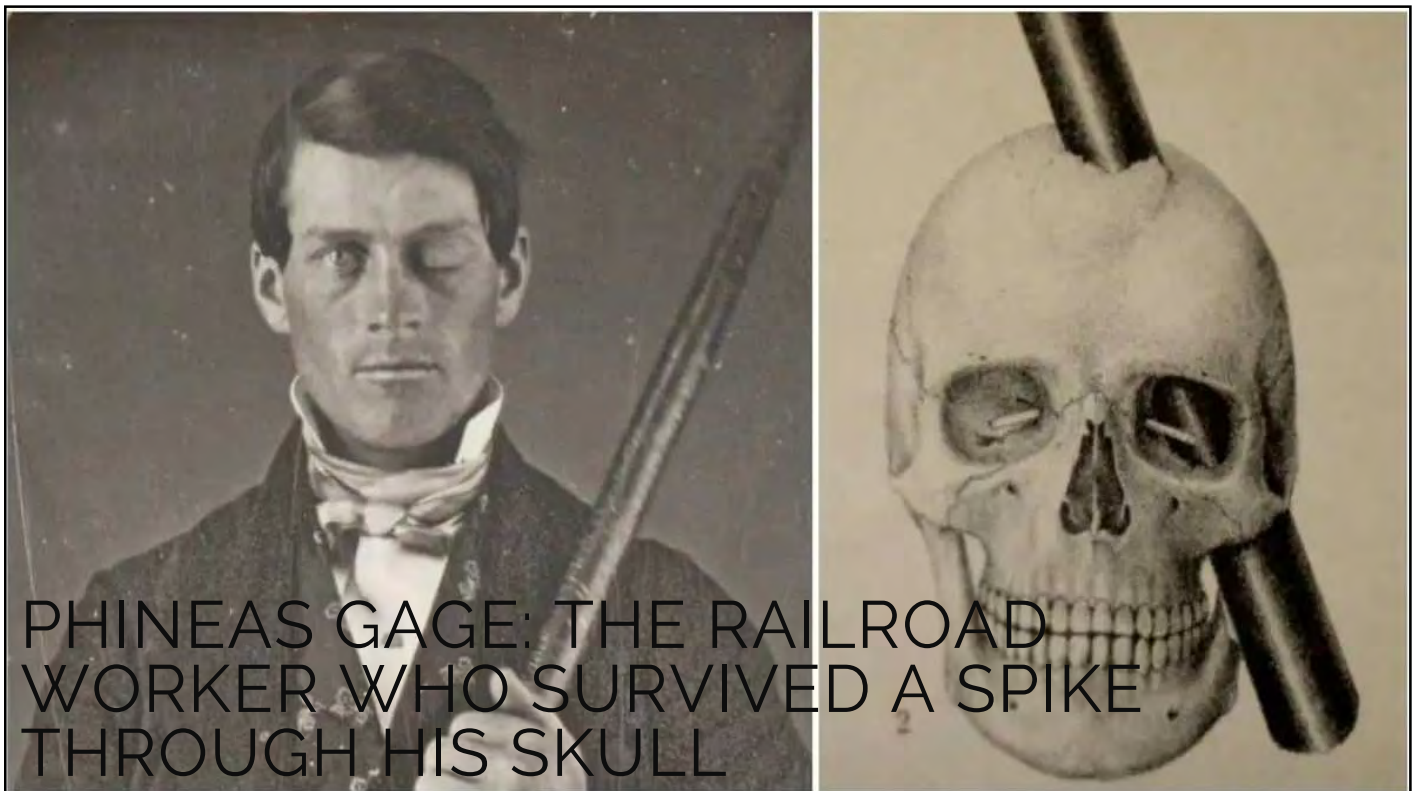


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PHINEAS GAGE: THE RAILROAD WORKER WHO SURVIVED A SPIKE THROUGH HIS SKULL

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# WHY NEUROPSYCHOLOGY?



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# HISTORICAL CONTEXT



## Wilhelm Wundt

- He distinguished psychology as a science from philosophy, was the first person to ever call himself a psychologist.
- Consider father of modern day psychology and experimental psychology

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# VOLKERPSYCHOLOGIE

Volk:

- A community of people whose shared language and historical traditions shape the mental processes of its members and provide essential resources for the process of their development
- The diversity of *Volk* is to be valued, and each should be evaluated in its own terms

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## HISTORICAL CONTEXT



### Volkerpsychologie

He argued that Volkerpsychologie could not be studied using laboratory methods of trained introspection that focus on the contents of consciousness because the higher psychological functions extend beyond individual human consciousness

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# HISTORICAL CONTEXT



## Volkerpsychologie

Wundt believed that the two enterprises, physiological psychology and Volkerpsychologie, must supplement each other: only through a synthesis of their respective insights could a full psychology be achieved.

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In the case of tides, general laws are known concerning gravity and the action of the sun and moon, from which the local tides in any given locale may be deduced. But the specific laws so derived will be only approximate, since local factors such as wind and the configuration of the ocean bottom will determine the precise outcome in individual cases.

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## ZACHERY LYSTEDT CONCUSSION LAW



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## ZACKERY LYSTEDT CONCUSSION LAW

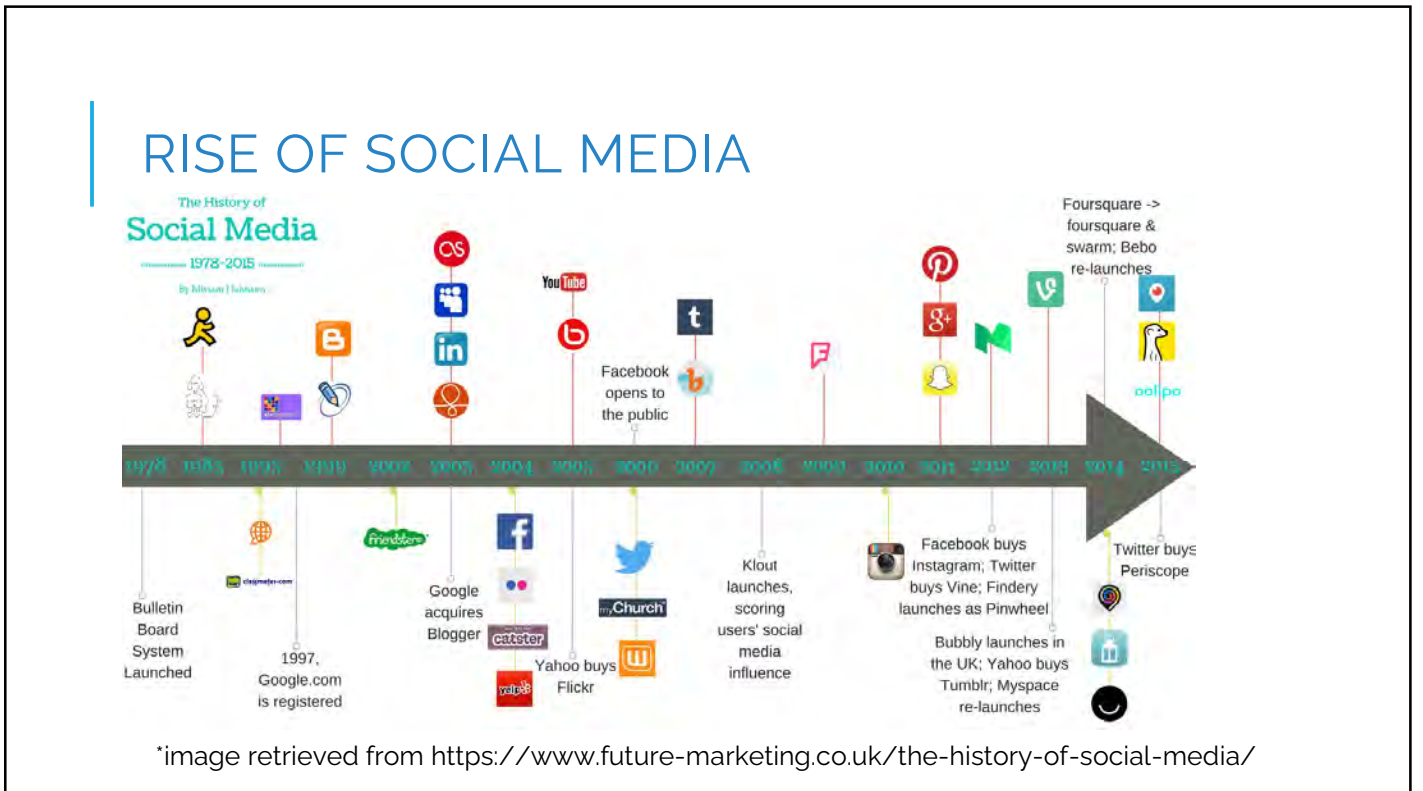
Original Intent: Minimize likelihood of second impact syndrome

- Second impact syndrome- or repetitive head injury syndrome describes a condition in which individual experiences a second head injury before complete recovery from initial head injury.

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## RISE OF YOUTH SPORTS

Dawn of the Pay to Play model

- The average youth sports parent spent \$883 on one child's primary sport per season
- For some sports, average annual costs are over \$1,000 – and can balloon well into five figures.
  - soccer (\$1,188 average cost)
  - basketball (\$1,002)
  - baseball (\$714)
  - tackle football (\$581)

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## RISE OF YOUTH SPORTS

- Average costs per sport per child
  - Travel (\$260 per sport, per child)
  - equipment (\$154)
  - private lessons (\$183)
  - registration fees (\$168)
  - camps (\$111)

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## RISE OF NFL REVENUE

- In 2010 NFL clubs pooled and shared two-thirds of over \$8 billion in revenues among 32 franchises.

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## CTE-NFL

Case Reports > Neurosurgery. 2005 Jul;57(1):128-34; discussion 128-34.  
doi: 10.1227/01.neu.0000163407.92769.ed.

### Chronic traumatic encephalopathy in a National Football League player

Bennet I Omalu <sup>1</sup>, Steven T DeKosky, Ryan L Minster, M Ilyas Kamboh, Ronald L Hamilton, Cyril H Wecht

Affiliations + expand

PMID: 15987548 DOI: 10.1227/01.neu.0000163407.92769.ed

#### Abstract

**Objective:** We present the results of the autopsy of a retired professional football player that revealed neuropathological changes consistent with long-term repetitive concussive brain injury. This case draws attention to the need for further studies in the cohort of retired National Football League players to elucidate the neuropathological sequelae of repeated mild traumatic brain injury in professional football.

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## ZACHERY LYSTEDT CONCUSSION LAW

The Sarah Jane Brain Foundation (SJBF) and the American College of Sports worked together to create a joint initiative called The Zachery Lystedt Brain Project to protect student athletes from concussions and other brain injuries during training, practices, and games by enacting similar legislation in every state.

The Zachery Lystedt Brain Project was formally announced in 2010 during the 44th Super Bowl, at the University of Miami Miller School of Medicine, the State Lead Center for acute care in brain injury.

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## ZACHERY LYSTEDT CONCUSSION LAW

In just under 5 years, The Zachery Lystedt Law achieved a milestone of passing in all 50 states. The Lystedt Law grabbed the attention of NFL Commissioner Roger Goodell, who advocated for the Law.

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## NE CONCUSSION AWARENESS ACT

The Concussion Awareness Act became law in Nebraska on July 1, 2012. It requires that all public, private and parochial schools, as well as all organized youth sports sponsored by villages, cities, businesses, or non-profit organizations for children ages 19 and under, make available approved concussion training.

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## NE CONCUSSION AWARENESS ACT

1. Education: All coaches, youth athletes, and their parent or guardian must be provided with education about the risks and symptoms of concussion and how to seek proper medical attention.
2. Removal from Play: Under any reasonable suspicion of concussion, coaches will remove youth athletes from play.
3. Return to Play: Youth athletes will not be allowed to return to play including games, scrimmages, and practices of any kind, until written approval from an appropriate licensed healthcare professional AND the youth's parent or guardian are obtained. Licensed healthcare professional may be a physician, physician's assistant, nurse practitioner, nurse, athletic trainer, neuropsychologist, or any licensed healthcare worker in Nebraska who is specifically trained in pediatric traumatic brain injury

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## NSAA CONCUSSION GUIDELINES/RECOMMENDATIONS

- March 18, 2009 published
  - Second-impact syndrome (SIS)
  - When in doubt sit them out
  - Return to Play (RTP)
  - Complex cases be managed by specific experts
  - Neuropsychological (NP) testing provides objective measurement
- Reviewed in 2012
  - A total of 4 articles cited (2004, 2005, 2006, 2008)
- No where does it mandate a school have a concussion policy

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## POSITIVES

- We actually consider concussion an injury now
- Rule changes have resulted in less concussions
- We are slowly catching up with the rest of sports medicine in seeing fellowship trained specialists for this injury

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## ONLY INJURY WITH A STATE LAW

What would be the aftermath if we had a state law around ACL?

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## UNINTENDED CONSEQUENCES

1. Policies trump science
2. False sense of expertise
3. An update is too much work, so no need to review
4. Concussion Protocol is viewed as a death sentence by athletes

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## 1. POLICIES TRUMP SCIENCE

Current State of Affairs- Policies

- Most policies require you to be symptom free before you can begin to return to play (RTP).
- Return to learn (RTL) cleared/more important than return to play (RTP)
- Must be symptom free before you can progress to the next stage

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## CONCUSSION= NETWORK DISRUPTION

- Neurometabolic (Giza & Hovda, 2014; Gardner, Iverson, & Stanwell, 2014)
- Axonal (Grossner, Mayer, & Hillary, 2019; Kontos & Collins, 2018)
- Cerebrovascular (Shenton et al., 2012)
- Autonomic (Leddy et al. 2016)
- Ocular motor (Mucha et al., 2014)
- Vestibular (Mucha et al. 2014)



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## ~~1. POLICIES TRUMP SCIENCE~~

### Current State of Affairs- Science

- 2000-2015 there were more articles published on concussion than between 1950-200. Additionally, every year since 2016 there are more articles published than the previous 15 years combined.
- Baseline testing is no longer needed
- Symptom reporting is not as reliable as we thought
- Cognitive testing is not as reliable as we thought
- The most objective measure we have, the vestibular ocular motor screening (VOMS), is severely underutilized

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## ~~1. POLICIES TRUMP SCIENCE~~

Current State of Affairs- Science

- Early exercise = faster recovery
- Light symptom provocation = fast recovery
- Frequent exercise = faster recovery
- The longer a recovery takes the more likely:
  - Health care costs will triple
  - Sleep disturbance will occur
  - Mood disturbance will occur

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## 2. FALSE SENSE OF EXPERTISE

Disclaimer:

- I value all who work with athletes and brain injuries, but if my kid has a potential ACL tear I'm going to the person that sees ACLs all day everyday.
- There are levels of specialization with this injury just like every other injury.
- Accept these truths so we can do what is best for the athlete and collaborate.

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## 2. FALSE SENSE OF EXPERTISE

- Weekend workshops or offering concussion as a line of service is viewed as specialty.
- There are only 2 two-year fellowships in concussion, and only one in a pediatric concussion in a sports medicine setting, there are maybe 25-30 specialists in the country with this type of training
- It is a relentless pursuit to keep up with concussion research and to consistently being publishing in it, but the grind is worth it
- Concussion in the eyes of the expert is like bird watching

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## 3. AN UPDATE IS TOO MUCH WORK, SO NO NEED TO REVIEW

Disclaimer: an incredible amount of effort was put into setting up laws and policies, this is not meant to belittle or minimize those efforts

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### 3. AN UPDATE IS TOO MUCH WORK, SO NO NEED TO REVIEW



\*image <https://www.cellularsales.com/blog/a-mostly-quick-history-of-smartphones/>

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### 3. AN UPDATE IS TOO MUCH WORK, SO NO NEED TO REVIEW



\*image <https://adage.com/creativity/work/progressive-dr-ricks-methods/2303191>

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### **3. AN UPDATE IS TOO MUCH WORK, SO NO NEED TO REVIEW**

Research process:

1. Data is often collected based on a hypothesis to validate best practices often from those with clinical expertise.
2. The collection of data often takes years. The writing of data and it eventually being published can often take several more.
3. That means that even if an article is from the year a guideline or policy was established and/or updated; it is likely several years behind what those who see concussion all day/every day are doing.

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### **4. CONCUSSION PROTOCOL IS VIEWED AS A DEATH SENTENCE BY ATHLETES**

Lessons learned covering sidelines for Omaha North:

1. Concussion protocol was viewed as a death sentence
2. Took collaboration along with openness from coaching staff, AD, and ATC to change the narrative
3. By end of season player themselves, coaches, and/or teammates were having me immediately evaluate players

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## WHY AN UPDATE IS NEEDED

- Conservatively, there has been a minimum of over 2K articles on concussion since the original policy was made
- If the intent was to minimize second impact syndrome (SIS), current purgatories of protocols do not encourage honest reporting
- Sports participation is at an all-time low in HS, misinformation about concussion is a contributing factor
- Sports participation is the best form of emotional regulation available. As such, spending more days than necessary away from sport is a problem.

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## 5. BONUS!: LESSONS FROM LATEST CONSENSUS STATEMENT

Sociocultural considerations of Consensus Statement:

1. "the need for greater geographical and demographic diversity and inclusion among the expert panel and authors has been identified by the Scientific Committee,"
2. "thus, this Statement provides recommendations that can be adapted for different sport, clinical and cultural environments and is not meant to be used as a prescriptive guideline "
3. "We also recognize that the science of concussion continues to evolve, and the Amsterdam Statement reflects the state of the evidence at the time of the Consensus Conference and will need to be updated as new scientific information emerges"

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## CONTACT INFO:

**Website:** [cazeinstitute.com](http://cazeinstitute.com)

**Email:** [todd.caze@cazeinstitute.com](mailto:todd.caze@cazeinstitute.com)

**Cell:** 480-296-8847

**Scheduling:** 402-235-8086

**Social Media:** LinkedIn, Facebook, IG,  
Twitter, Tik Tok, Youtube, Vimeo



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