

**C**

**T**

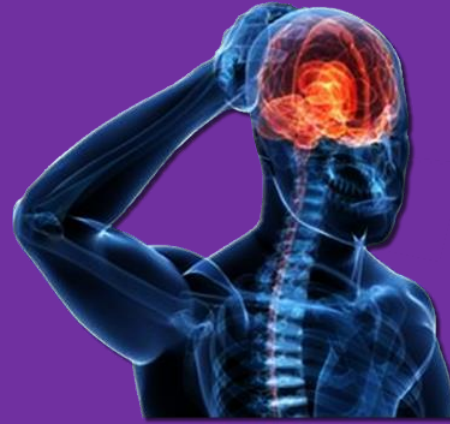
**E**

**CTE**



*Chronic Traumatic  
Encephalopathy*

# CAUSES



Chronic traumatic encephalopathy (CTE) is a brain condition associated with **repeated blows to the head.**

The exact amount of trauma required for the condition to occur is unknown although it is believed that it would take many years to develop it.

Most documented cases have occurred in athletes with mild **repetitive brain trauma** (RBT) over an extended period of time.



Specifically contact sports such as boxing, **American football**, Australian Rules Football, wrestling, **Mixed martial arts**, ice hockey and rugby

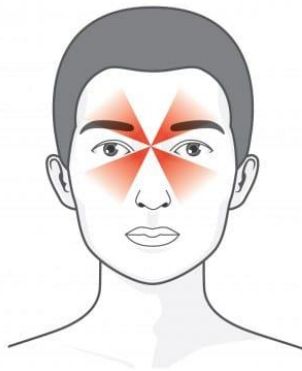
Potential signs of GTE are problems with thinking and memory, personality changes, and behavioral changes including aggression and depression.



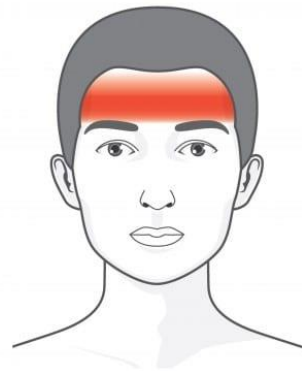


First-stage symptoms  
are confusion, disorientation,  
dizziness, and headaches.

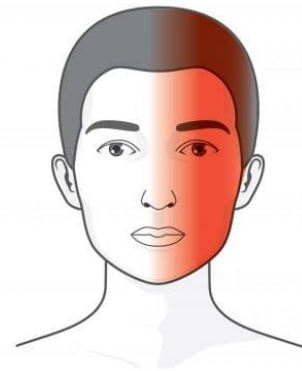
## HEADACHE TYPE



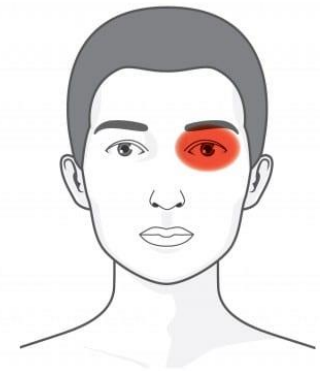
Tension



Tension



Migraine



Cluster

Second-stage symptoms include memory loss, social instability, impulsive behavior, and poor judgment.





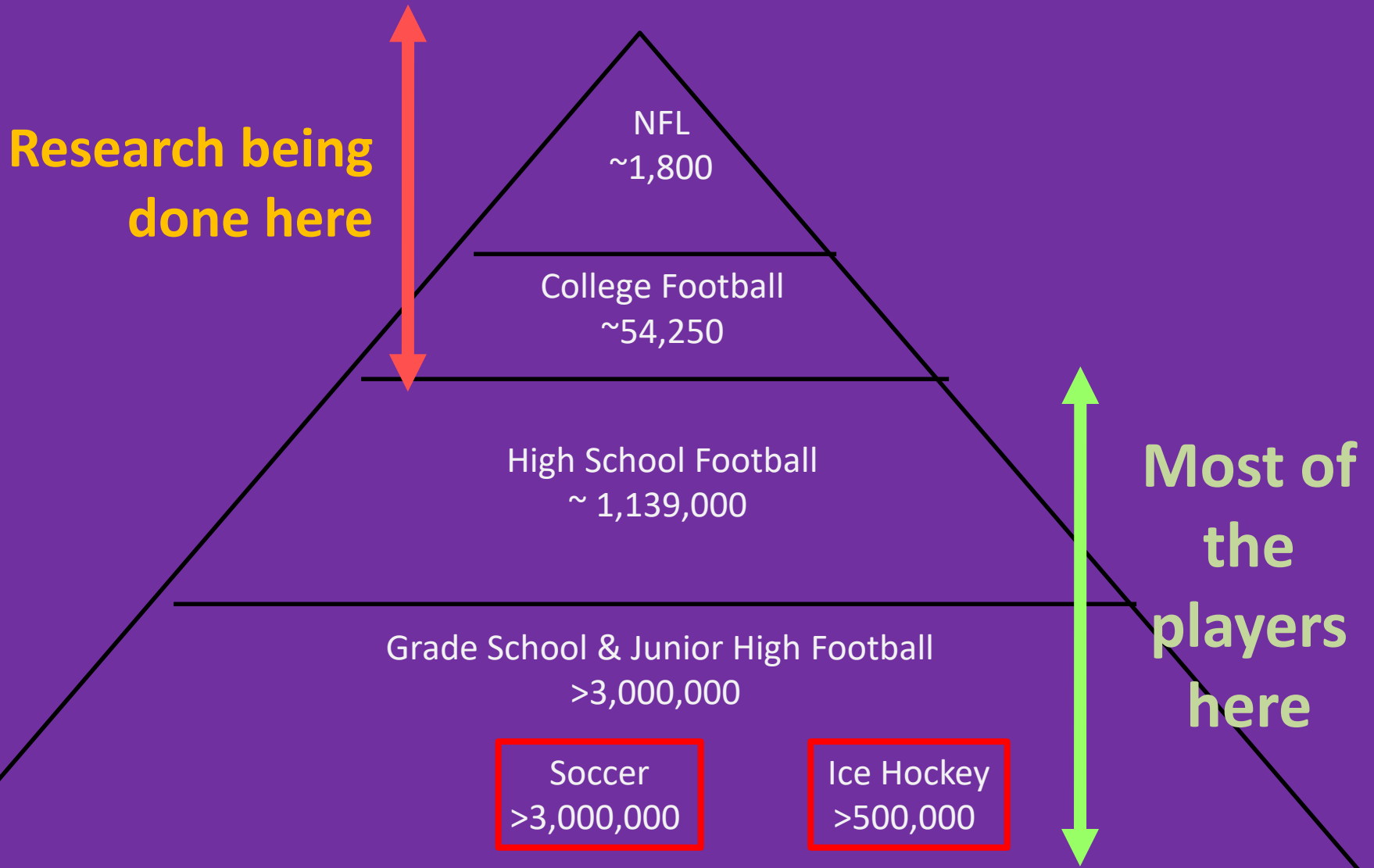
Third and fourth stages include progressive dementia, movement disorders, hypomimia, speech impediments, sensory processing disorder, tremors, vertigo, deafness, depression and suicidality.



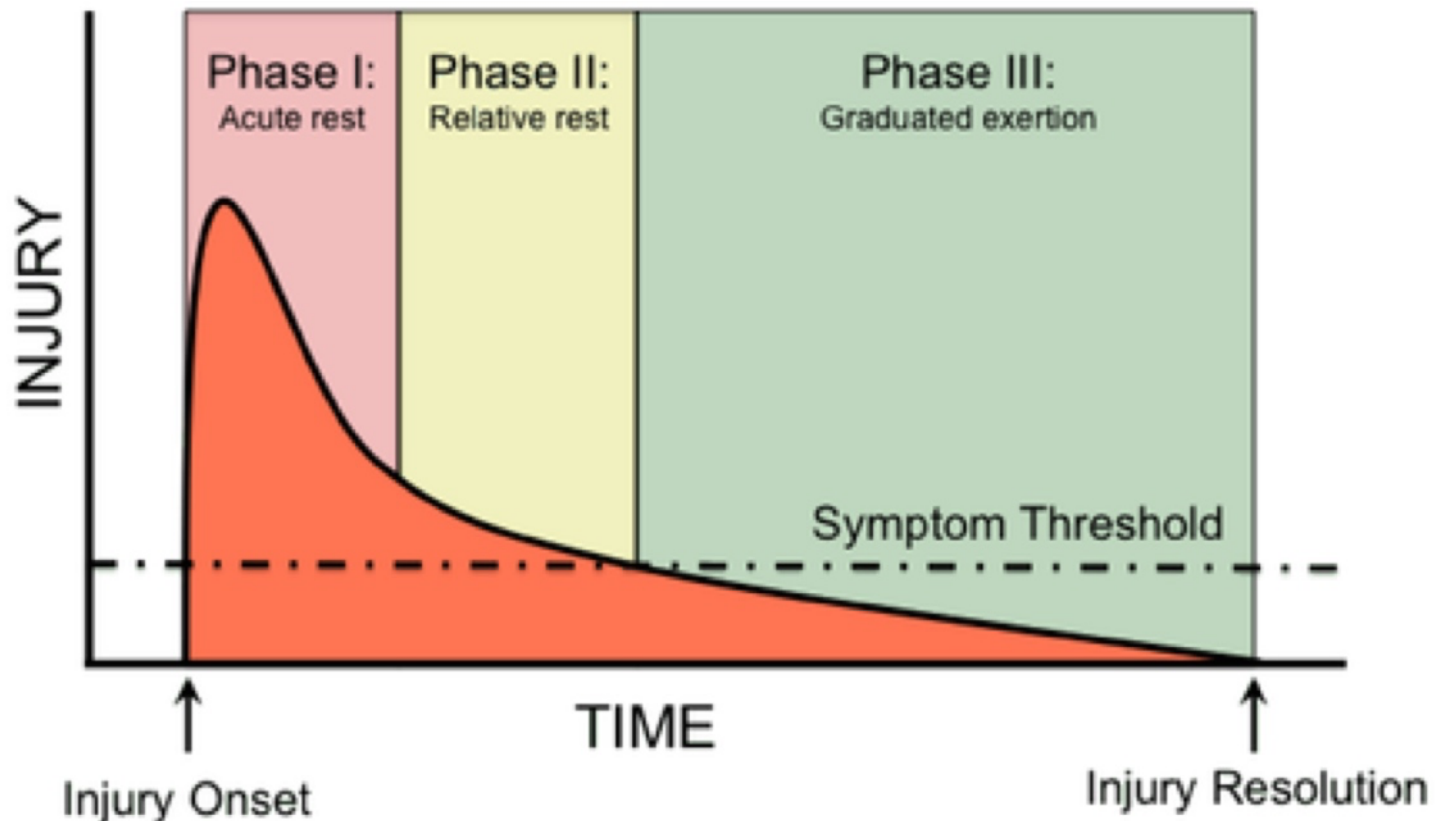


Patients with GTE may be prone to inappropriate or explosive behavior and may display pathological jealousy or paranoia.

# CTE Prevalence



# Three Phases of Concussion Management



# Consequences

- Post Concussive Syndrome (>3months)
  - headache
  - depression
  - prolonged mild neuropsychological effects
  - susceptibility to repeat concussions
- Second Impact Syndrome
  - second brain injury before the brain has a chance to recover
  - brain swelling, permanent damage and possible death

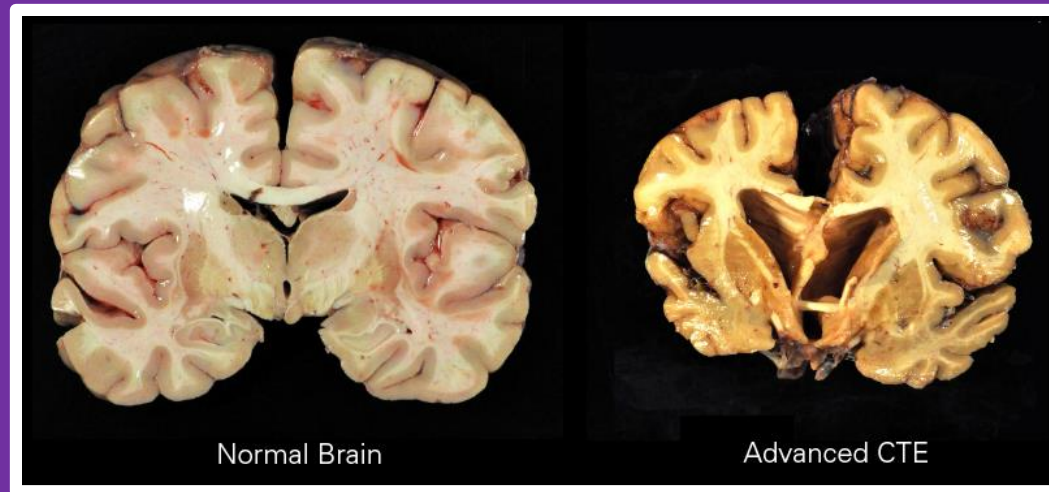
# Children + GTE

- High levels of participation
- Limited medical training of coaches
- No on-site medical care
- Requires age-appropriate evaluation
- Longer recovery



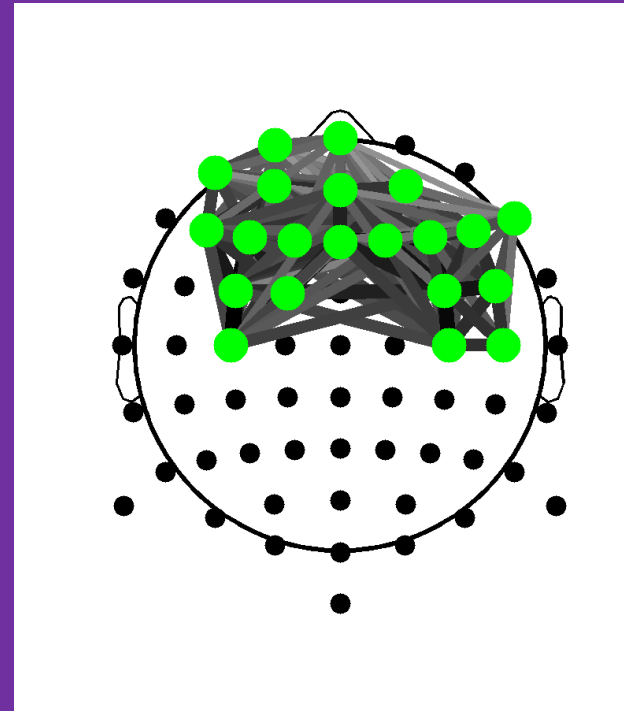


There is currently no way to diagnose CTE .  
It can only be suspected in people who are at  
high risk due to repeated head trauma over  
the course of years during their sports or  
military experiences.



Currently, CTE can only be diagnosed after  
death through brain tissue analysis.

# Brain Network Activation



A new technology that helps to assess brain injuries immediately!