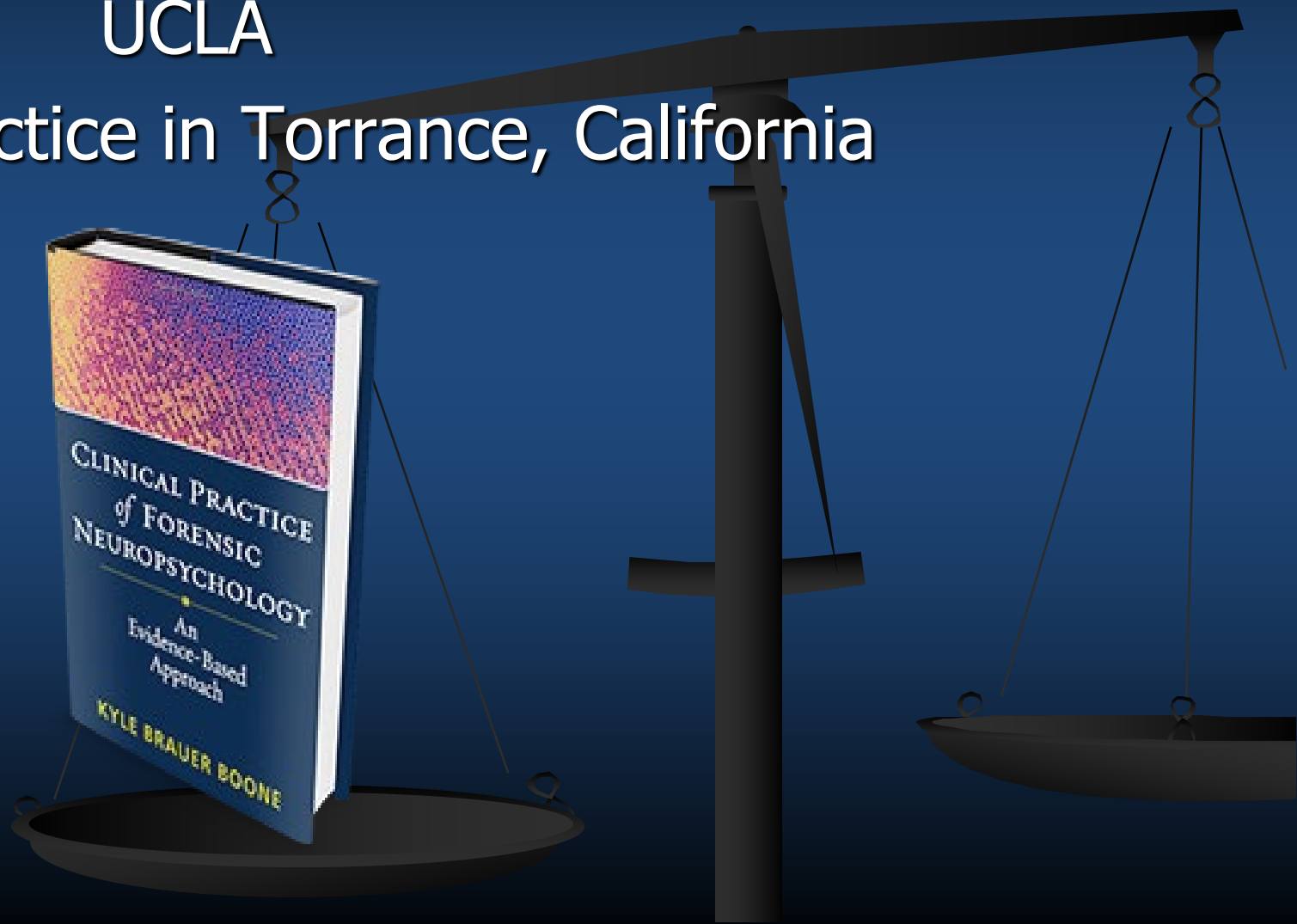



# BRAIN GAMES

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# Why are we seeing more TBI claims?



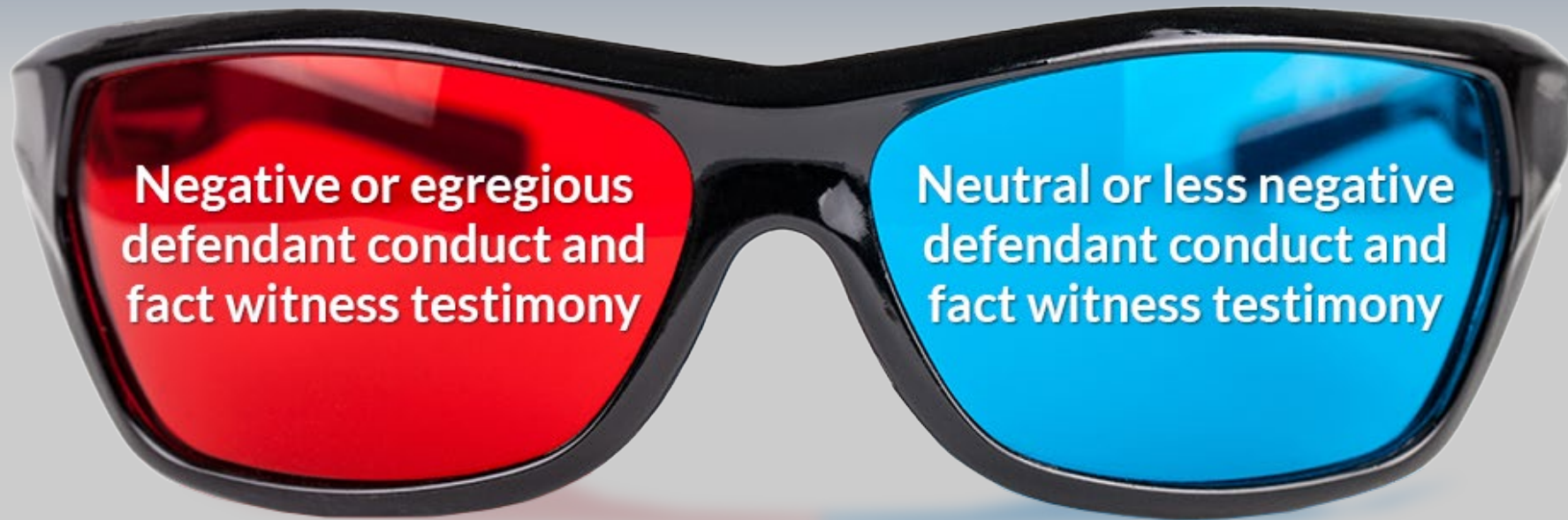
BRAIN SOCIETY  
OF CALIFORNIA



BRAIN INJURY  
ASSOCIATION  
OF AMERICA

# Juror perception

of neuropsychological/neurology data  
through filter of defendant conduct/testimony



**All plaintiff neuro data believed.  
High damages awarded.**

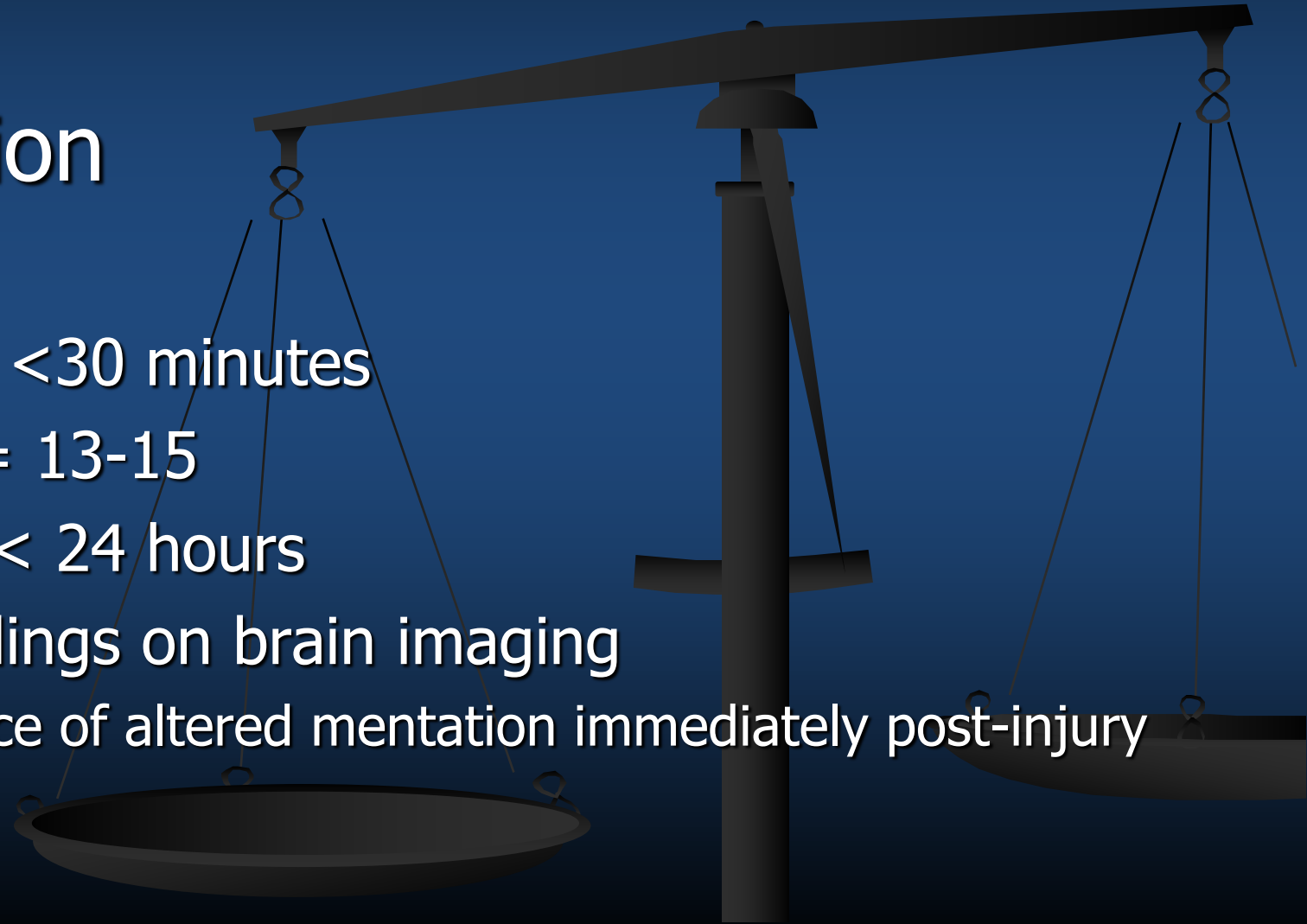
**Leads to defense verdict.  
More reasonable damages.**

# What is a Mild Traumatic Brain Injury (mTBI)?

= Concussion

## ■ Diagnostic Criteria?

- Loss of Consciousness <30 minutes
- Glasgow Coma Scale = 13-15
- Anterograde Amnesia < 24 hours
- No trauma-related findings on brain imaging
  - Has to be some evidence of altered mentation immediately post-injury



# Truths or Myths?



- **1)** Diagnosis of Mild Traumatic Brain Injury is based on patient self-report of symptoms days/week/months/years post-injury?
  - **No**
- **2)** People do not recover cognitive function after mTBI?
  - **Not true**
- **3)** Ok, a subset do not recover cognitive function after mTBI?
  - **No**



# Truths or Myths?



- 4) Isn't there a "miserable minority" (up to 15% of mTBI patients) who do not recover their cognitive function?
  - No
    - DSM-5-Text Revision (DSM-5-TR; 2022)
      - "Neurocognitive impairments associated with mild TBI typically resolve within days to weeks after the injury, with **complete resolution within 3-12 months post-injury**...."
      - Six "**meta-analyses**" show no longterm residuals from concussion
        - Binder et al. (1997), Schretlen & Shapiro (2003), Belanger et al. (2005), Belanger & Vanderploeg (2005), Frencham et al. (2005), Rohling et al. (2011)

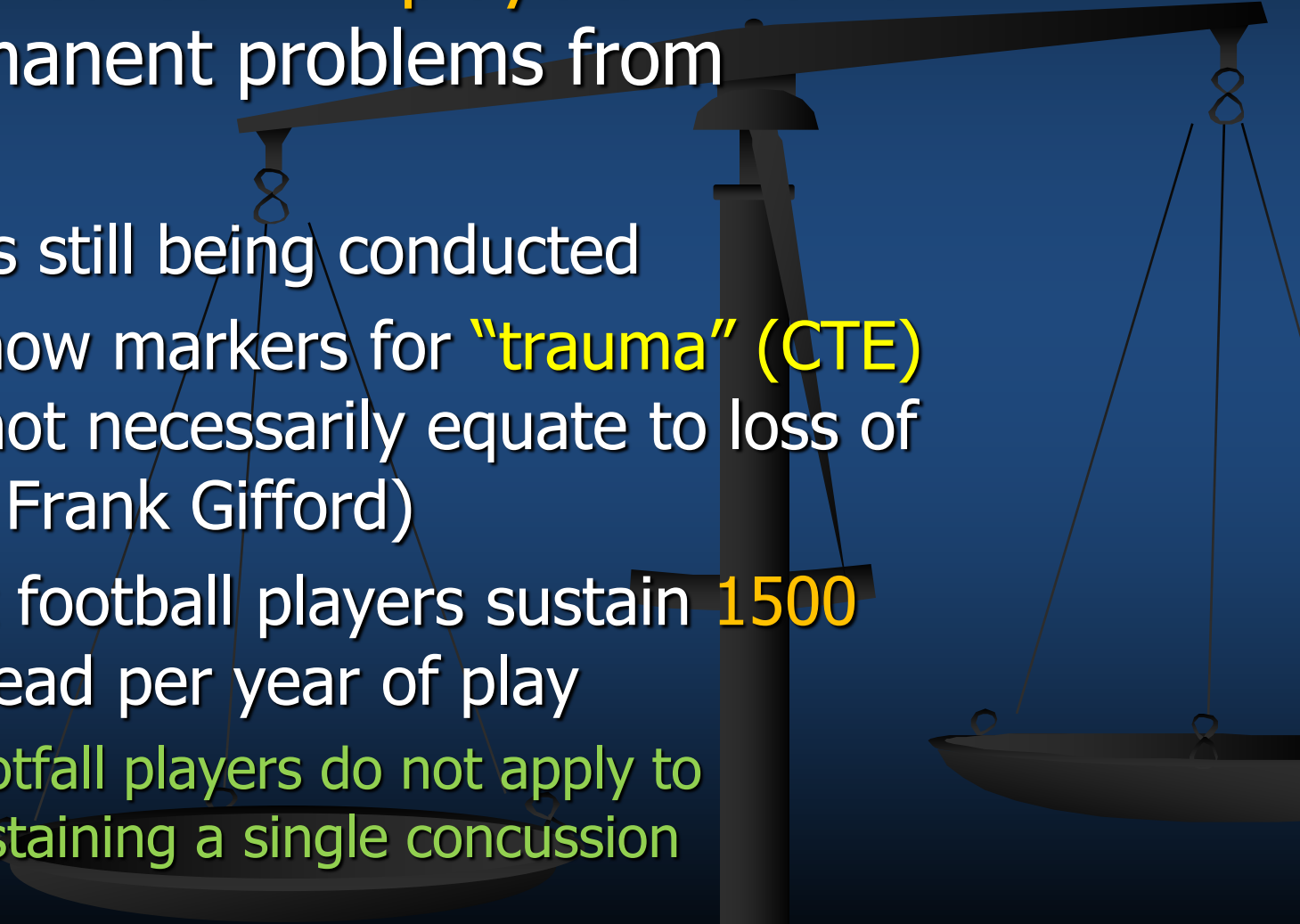


# Truths or Myths?



- **5)** Doesn't having a concussion raise the risk of developing dementia (Alzheimer's disease)
  - **No**
    - Alzheimer's organization website:
      - "There's no evidence that a single mild TBI increases cognitive decline and dementia risk."

# Truths or Myths?

- 6) What about **retired NFL players** – don't they have permanent problems from concussion(s)?
    - The research is still being conducted
    - Their brains show markers for **"trauma" (CTE)** but this does not necessarily equate to loss of function (e.g., Frank Gifford)
    - Estimated that football players sustain **1500** blows to the head per year of play
      - Findings in football players do not apply to individuals sustaining a single concussion
- 

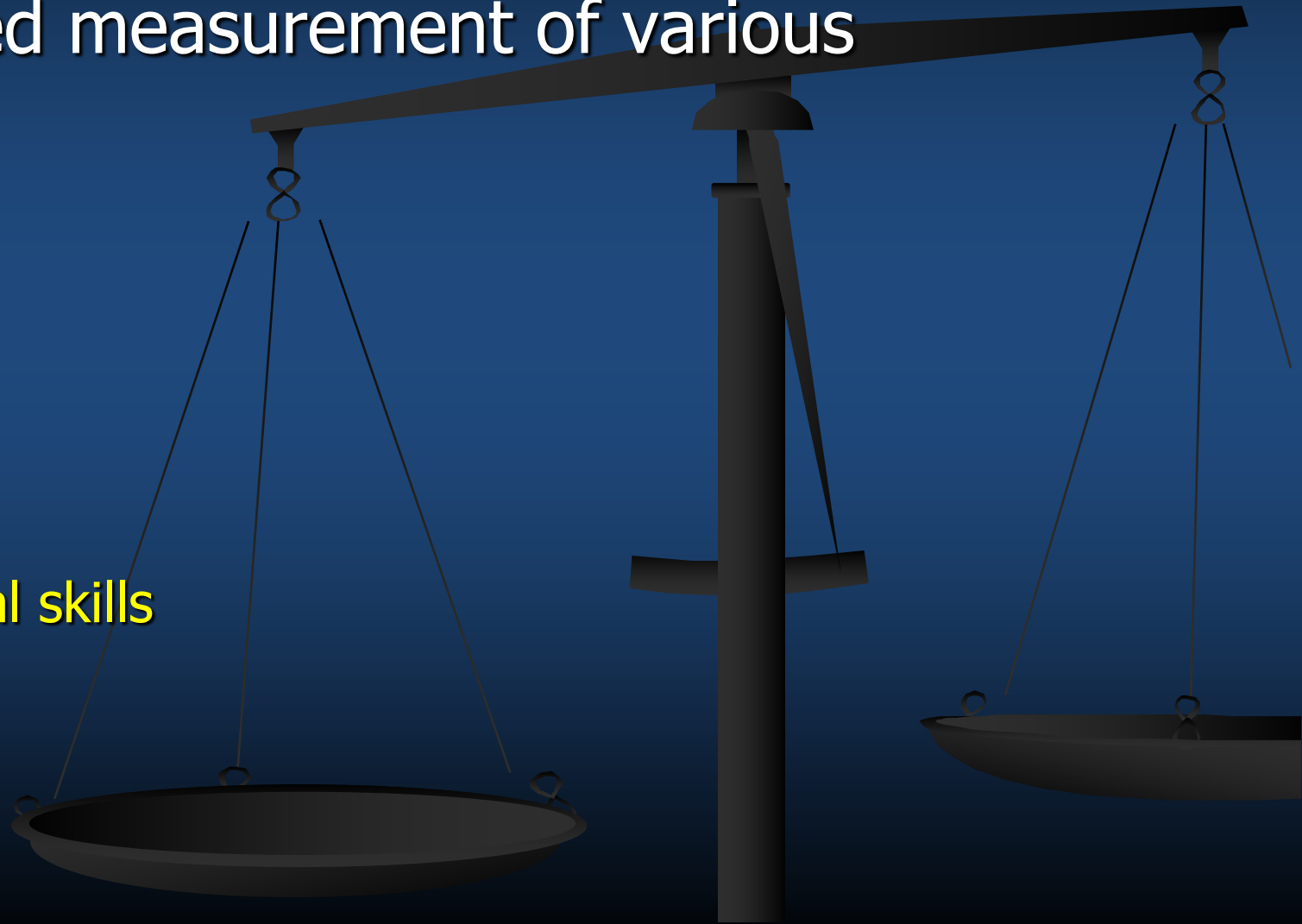


## ■ DSM-5 (2013)

- *Neurocognitive symptoms associated with mild TBI tend to resolve within days or weeks after the injury with complete resolution typical by 3 months. Other symptoms that may potentially co-occur with the neurological symptoms (e.g., **depression, irritability, fatigue, headache, photosensitivity, sleep disturbance**) also tend to resolve in the weeks following mild TBI.”*

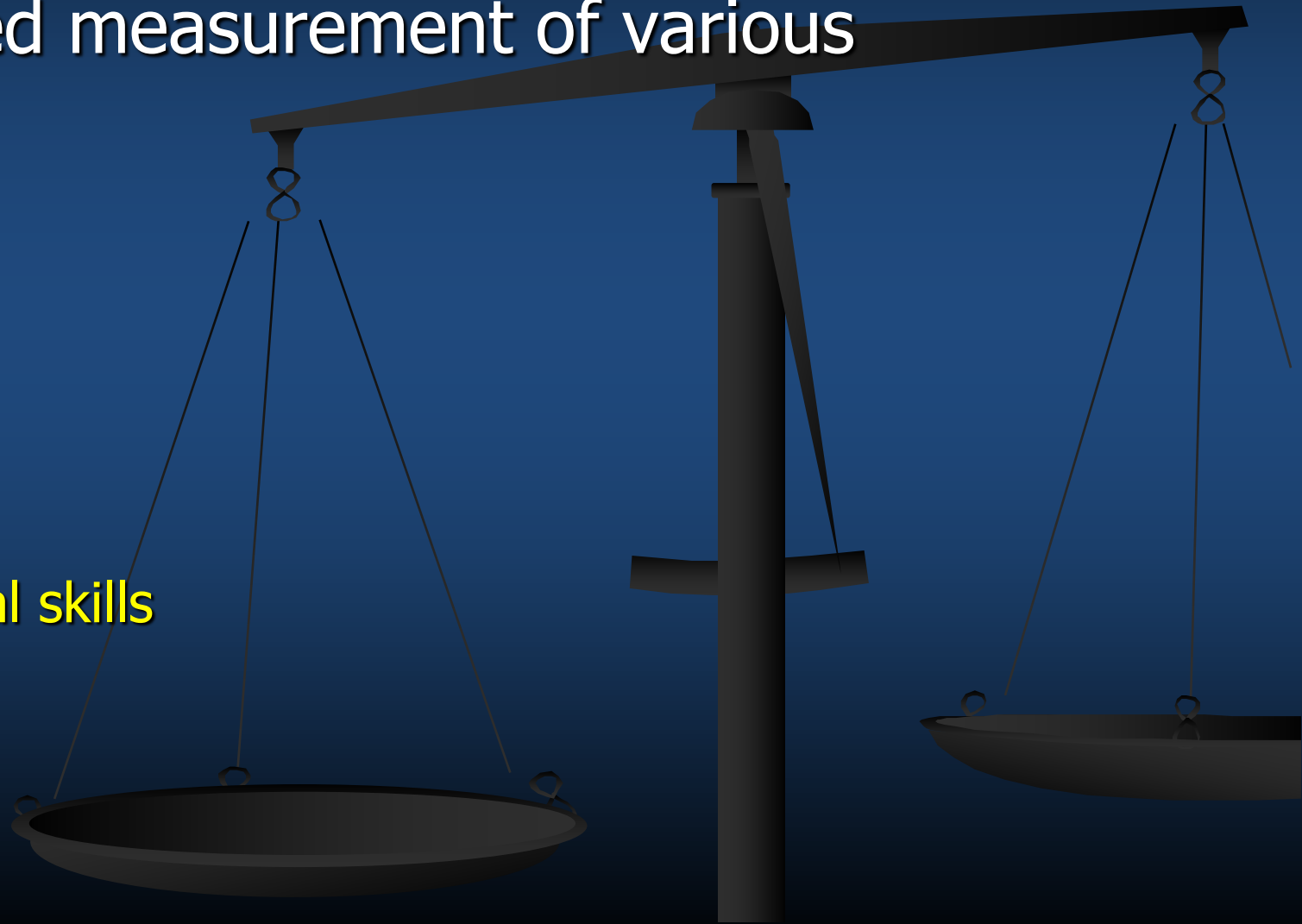
# What is neuropsychological testing?

- Objective, standardized measurement of various neurocognitive skills
  - Overall IQ
  - Attention
  - Processing speed
  - Verbal/language skills
  - Math ability
  - Visual perceptual/spatial skills
  - Learning/memory
  - Problem-solving
  - Motor function



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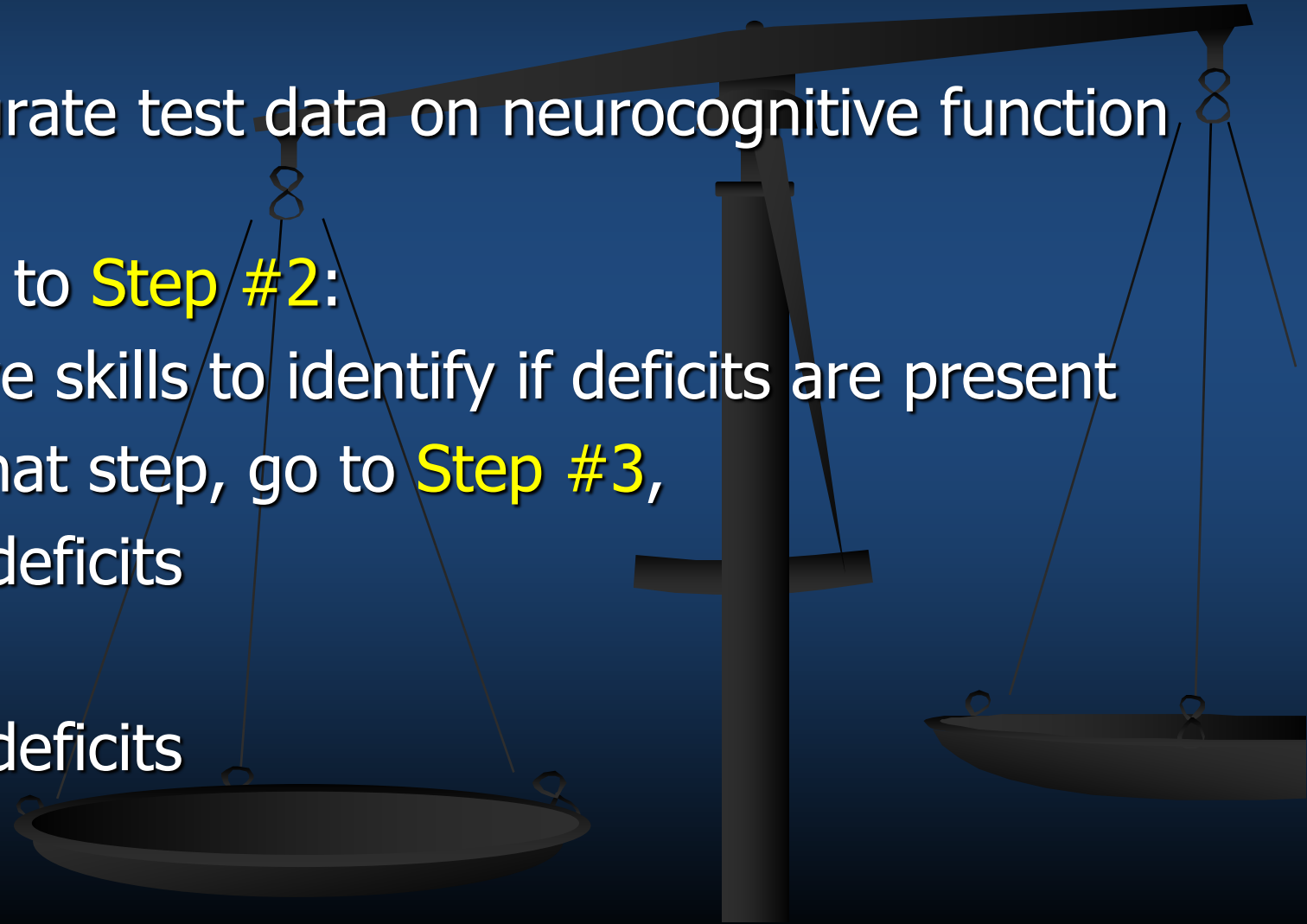
# What is neuropsychological testing?

- Objective, standardized measurement of psychiatric symptoms/conditions
  - Somatoform disorder
  - Depression
  - Anxiety
  - Bipolar
  - Personality disorder
  - Thought disorder/paranoia



# The role of neuropsychological testing in litigation

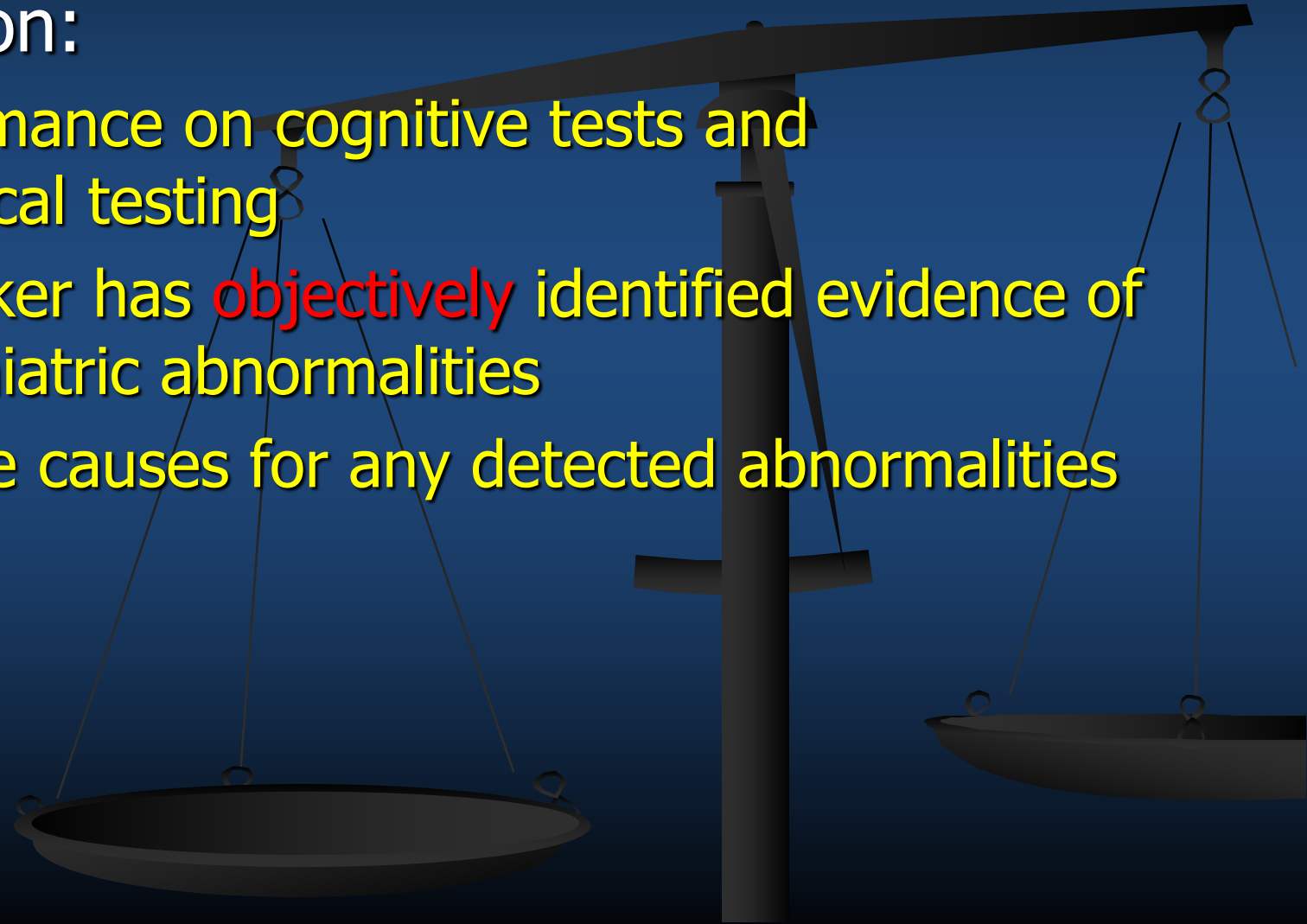
- **Step #1:**
  - determine if valid/accurate test data on neurocognitive function are being obtained
- If that step is passed, go to **Step #2:**
  - Measure neurocognitive skills to identify if deficits are present
- If deficits are found on that step, go to **Step #3,**
  - Determine causes for deficits
- **Step #3,**
  - Determine causes for deficits





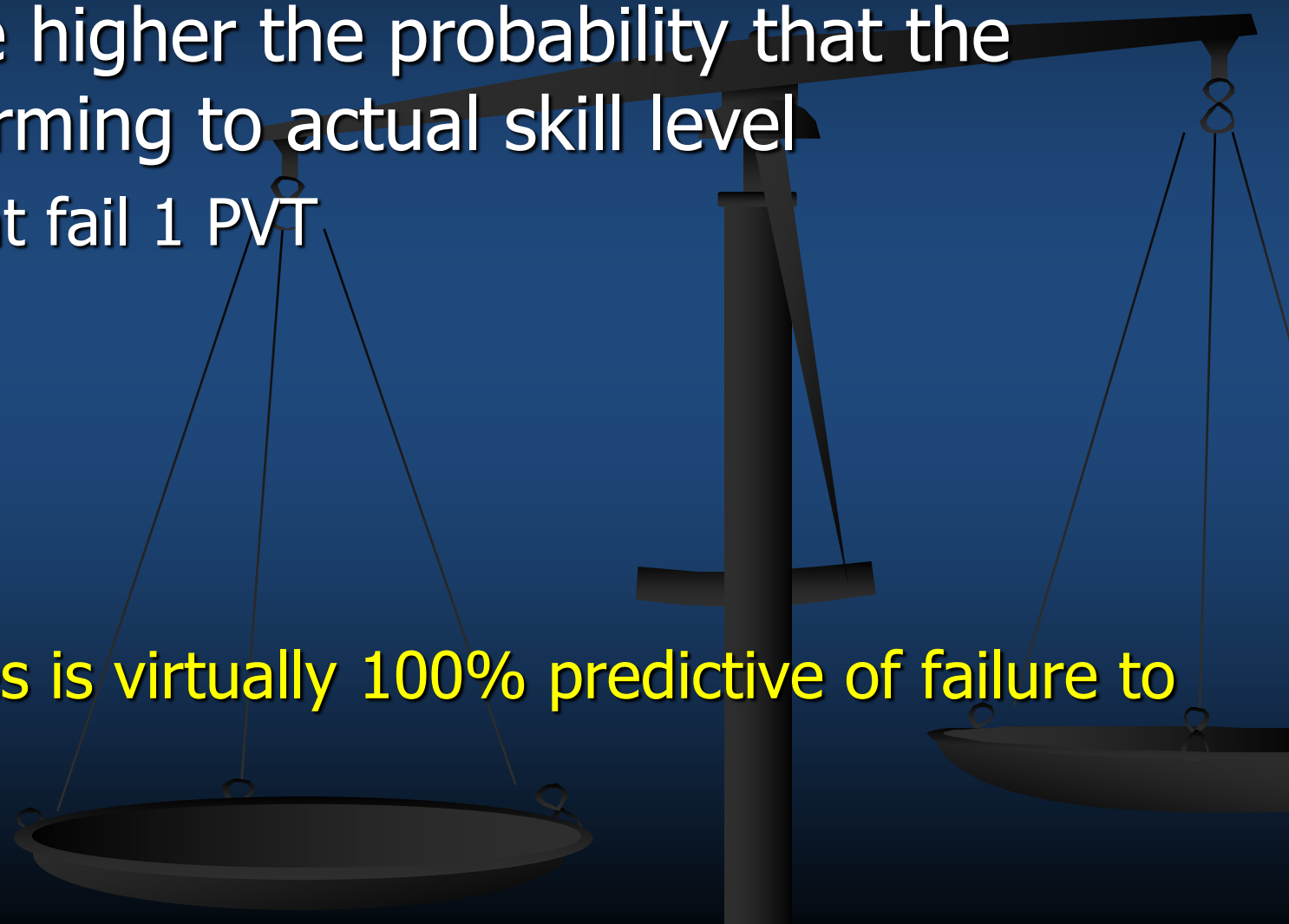
# Neuropsychological testing

- Provides information on:
  - 1) credibility of performance on cognitive tests and personality/psychological testing
  - 2) whether the test taker has **objectively** identified evidence of cognitive and/or psychiatric abnormalities
  - 3) the most reasonable causes for any detected abnormalities

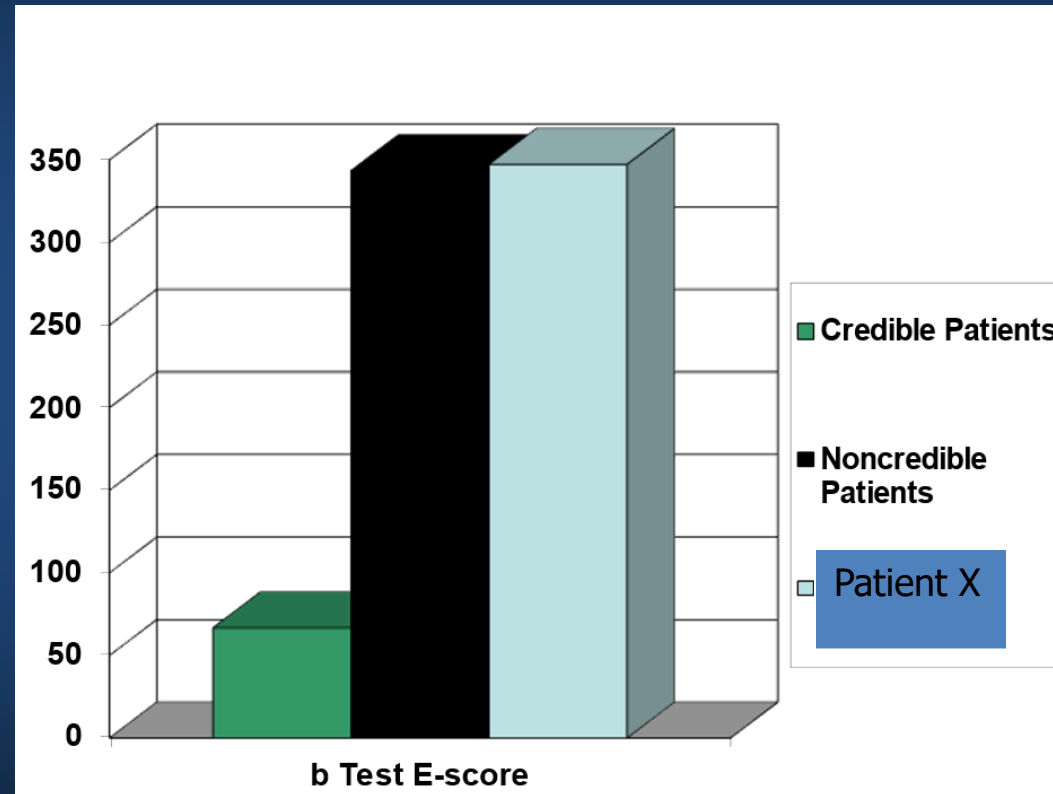


# Step #1: Performance validity tests (PVTs)

- The more failures, the higher the probability that the individual is not performing to actual skill level
  - 41% of credible patient fail 1 PVT
  - 5% fail 2
  - 1.5% fail 3
  - Zero fail 4
    - Victor et al. (2009)
  - Therefore,  $\geq 3$  failures is virtually 100% predictive of failure to perform to true ability



Sample graph to show jury as to how plaintiff was performing on PVT

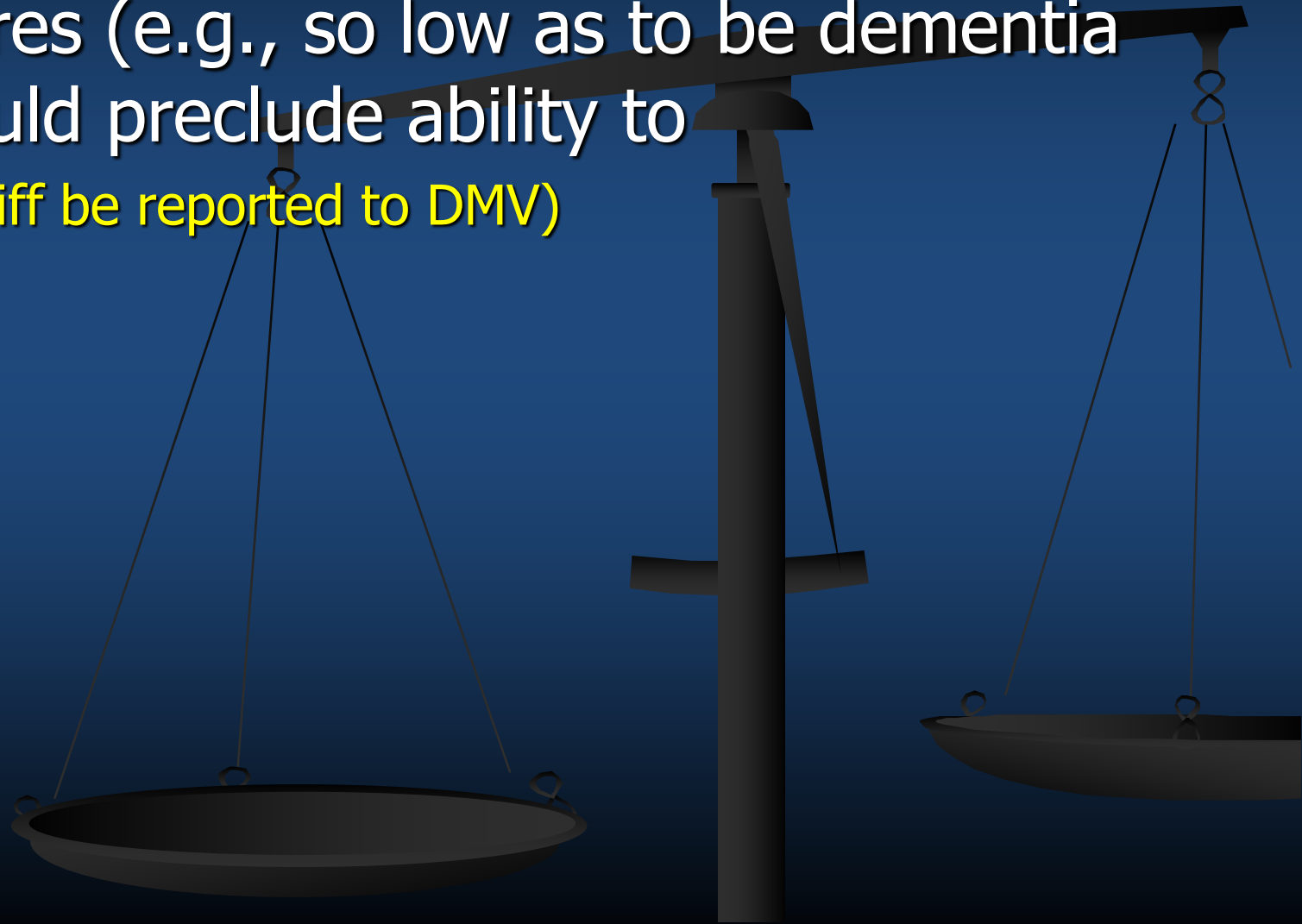


*The higher the score, the more noncredible the performance*



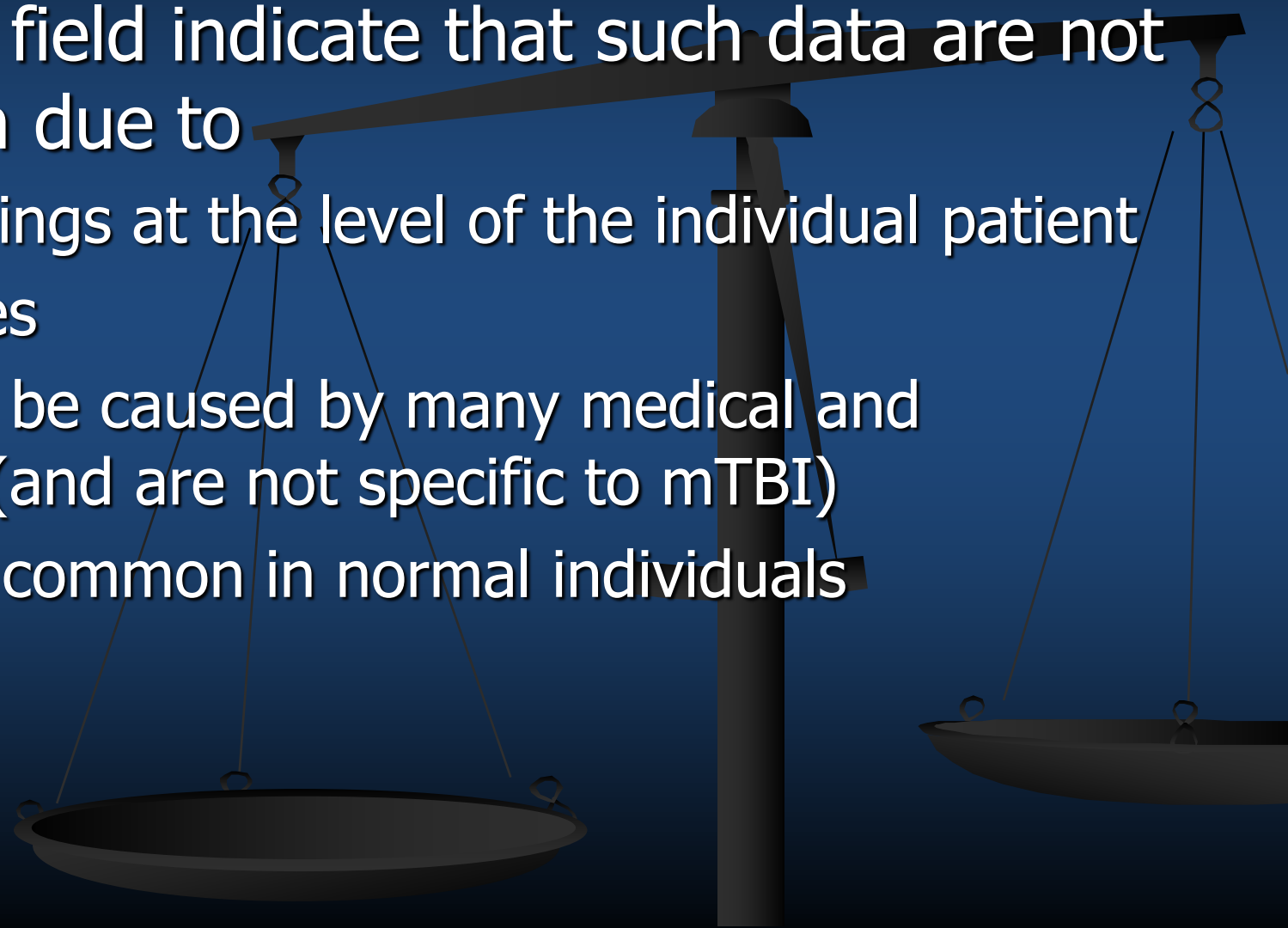
# Noncredible presentation can also be demonstrated to jury by

- Showing that test scores (e.g., so low as to be dementia level), if accurate, would preclude ability to
  - drive (requiring that plaintiff be reported to DMV)
  - live independently
  - parent
  - work
  - manage finances
  - manage medications
  - testify



# Role of “advanced” MRI (DTI, fMRI) in mTBI cases

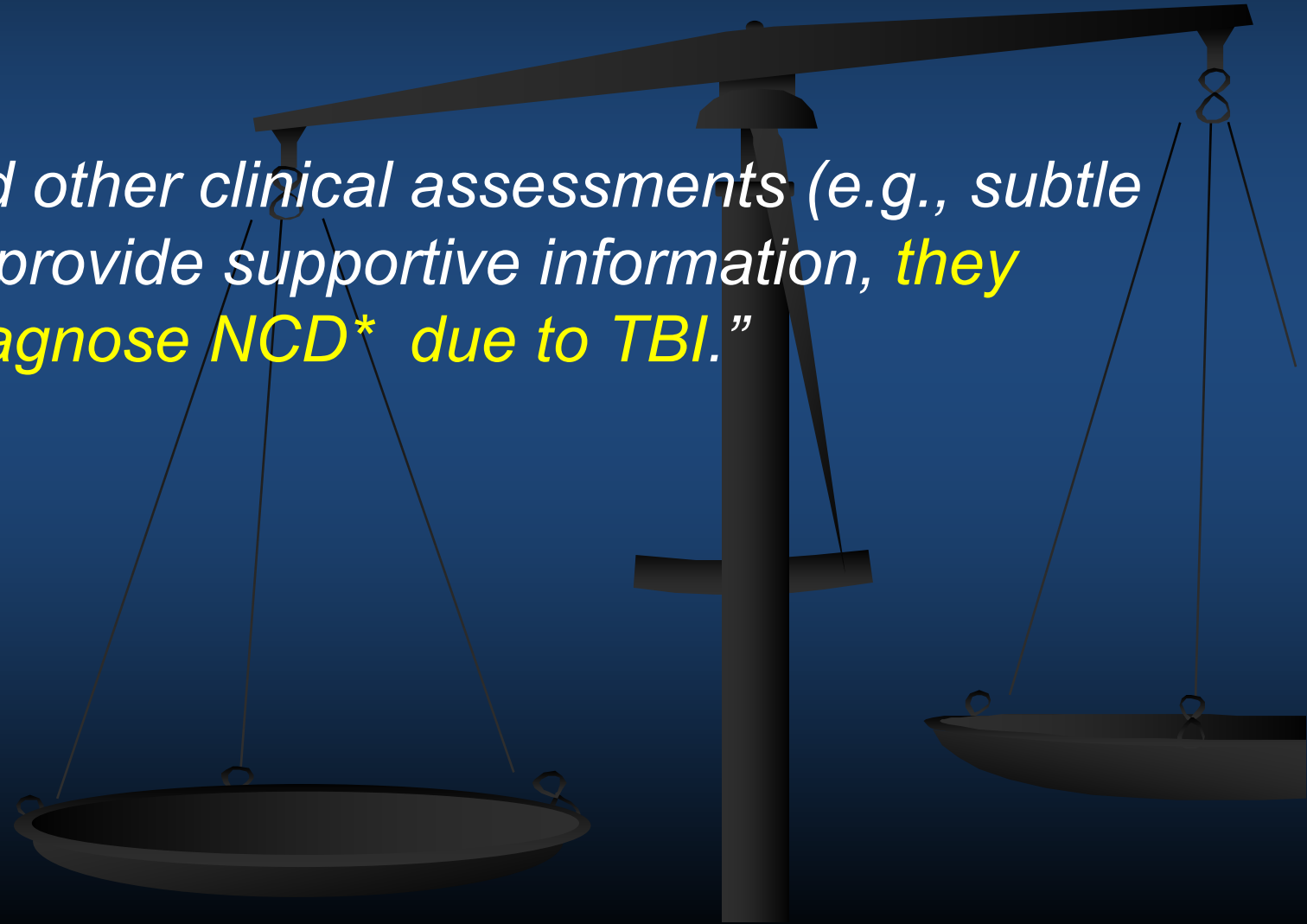
- Position papers in the field indicate that such data are not to be used in litigation due to
  - unreliability of the findings at the level of the individual patient
  - High false positive rates
  - Abnormal findings can be caused by many medical and psychiatric conditions (and are not specific to mTBI)
  - Abnormal findings are common in normal individuals



- DMS-5-TR (2022)

- *“While **neuroimaging** and other clinical assessments (e.g., subtle neurological signs) may provide supportive information, **they cannot independently diagnose NCD\* due to TBI.**”*

- \*neurocognitive dysfunction



# Information needed by neuropsychologist

- Information on **baseline function**
  - Academic records (e.g., ADHD)
  - Employment records (performance evaluations)
  - Pre-accident medical and psychiatric records

