



CANADIAN CONCUSSION CENTRE

Research | Diagnosis | Solutions

Concussion Mythology and Non-Evidence- Based Therapies

CARMELA TARTAGLIA, MD

UNIVERSITY HEALTH NETWORK MEMORY CLINIC



Tanz Centre for Research
in Neurodegenerative Diseases
UNIVERSITY OF TORONTO



OBJECTIVES

- Myths & Fact in Concussion
 - As relates to Diagnosis
 - As relates to Treatments
 - As relates to Long-term consequences

CONCUSSION – MYTH & FACTS

MYTH

- You have to lose consciousness to have a concussion

FACT

- Most concussions do not result in a loss of consciousness (<10%)
- Brief loss of consciousness can occur in concussion (usually <5min)
- Some people cannot remember events (amnesia) prior to, or following the injury, for a period of time (usually < 4 hrs) = post-traumatic amnesia
- Some people feel dazed or confused

CONCUSSION – MYTH & FACTS

MYTH

- Direct relationship between presence and duration of loss of consciousness and concussion severity

FACT

- A brief loss of consciousness does not necessarily correlate with concussion severity
- People have no loss of consciousness and can still have concussion and prolonged symptoms

CONCUSSION – MYTH & FACTS

MYTH

- Concussions only result from a direct blow to the head

FACT

- A concussion can be sustained by a sudden, violent movement of the head caused by an external force to the body
- Whiplash injury can also cause concussion

CONCUSSION – MYTH & FACTS

MYTH

- A concussion is not a brain injury

FACT

- Concussion is a mild traumatic brain injury
- Signs and symptoms of concussion are the result of an alteration in the brain

CONCUSSION – MYTH & FACTS

MYTH

- Sports-related concussion impacts cannot be compared to motor vehicle accident impacts (or other causes of concussion)

FACT

- Sports-related concussion studies indicate that concussions across multiple mechanisms of injury are comparable

CONCUSSION – MYTH & FACTS

MYTH

- All concussions are the same

FACT

- Many variables influence outcome (sex/gender; number of previous concussions, age, other medical/psychological problems, stressors) after concussion so it's to be expected that there is variability in outcome i.e., symptoms after concussion, length of recovery
- There are certain patterns we see
- Most people get better

CONCUSSION – MYTH & FACTS

MYTH

- Injury to brain occurs only at the initial impact of the concussion

FACT

- Concussion is an evolving process with many changes that occur in the brain and evolve over hours, days, weeks and months after impact
- Important to protect oneself against another concussion while healing from the concussion

CONCUSSION – MYTH & FACTS

MYTH

- A SPECT scan can diagnose concussion
- An EEG can diagnose concussion
- A blood test can diagnose concussion

FACT

- Currently (Apr. 26, 2022), there are no established diagnostic tests for concussion
- A diagnosis of concussion is a clinical diagnosis
- MRI (CT) can be used to rule out a more significant brain injury
- Lots of research in this area but nothing established as a clinical test
- FDA/Health Canada approval that something is safe does NOT mean it works

CONCUSSION – MYTH & FACTS

MYTH

- Male and Female (athletes/employees/ motor vehicle accident) have the same chance of sustaining a concussion

FACT

- Females have higher risk of suffering a concussion
 - Sports
 - Motor vehicle accidents
- Cause:
 - Hormones
 - Neck muscles
 - Women more likely to report

CONCUSSION – MYTH & FACTS

MYTH

- Athletes will acknowledge when they have a concussion

FACT

- Athletes want to play so need to be educated on the consequences of playing with concussion
 - At risk of second impact symptoms
 - At risk of prolonged symptoms

CONCUSSION – MYTH & FACTS

MYTH

- A player that gets “Dinged/Bell rung/Seeing stars” hasn’t suffered a concussion

FACT

- Dinged/Bell rung/Seeing stars = Concussion
 - At risk of second impact symptoms
 - At risk of prolonged symptoms
- Any stunned confusional state is considered a concussion even if symptoms may only seem to last for a very short time
- Symptoms of concussion can become apparent only later (excited/adrenaline rush) - delayed onset of symptoms more common in athletes < 18 yrs so essential that a player who has any confusional symptoms be removed from play and reassessed w/n a few hours

CONCUSSION – MYTH & FACTS

MYTH

- Helmets & equipment will prevent concussion

FACT

- Helmets do not protect against concussion
- Helmets protect against more serious injury (moderate-severe TBI)
- No devices to protect against concussion
- FDA/Health Canada approvals for safety DO NOT EQUAL EFFICACY

CONCUSSION – MYTH & FACTS

MYTH

- Signs & symptoms of concussion are always apparent immediately after injury

FACT

- Symptoms can appear up to 7 days – usually before
 - Shock
 - Pain from other injuries

CONCUSSION – MYTH & FACTS

MYTH

- Male and Female recover at same rate

FACT

- Females are more prone to persisting symptoms of concussion (slower recovery)
 - Some evidence that relates to hormones (pre-menarche/post-menarche rates similar to males)

CONCUSSION TREATMENTS – MYTH & FACTS

MYTH

- Need prolonged rest after a concussion

FACT

- Rest recommended for a max of 48 hrs
- Do not return to activity where concussion occurred if at high risk of subsequent concussion
- Evidence that aerobic exercise speeds up recovery from concussion
 - Protocol to help patients exercise without exacerbating symptoms
 - Low level symptoms are NOT harmful

CONCUSSION TREATMENTS – MYTH & FACTS

MYTH

- Can't sleep after concussion but it's not a factor in my other post-concussion symptoms

FACT

- Sleep changes are very common after concussion
- Sleep is a very important factor in cognitive function and mood
 - Poor sleep causes concentration problems, memory problems
- Obstructive sleep apnea is a common finding in those with persisting symptoms that have gained weight and snore; sleep apnea is a serious condition that needs to be treated
 - Sleep apnea associated with poor cognitive function
- Poor sleep can cause or worsen headaches

CONCUSSION TREATMENTS – MYTH & FACTS

MYTH

- Depression & Anxiety that happen after concussion shouldn't be treated as they aren't the main problem

FACT

- Depression & anxiety when untreated interfere with recovery
 - Impair cognition: Poor memory, poor concentration
 - Impair sleep: Poor sleep affects cognition (memory/concentration)

CONCUSSION TREATMENTS – MYTH & FACTS

MYTH

- Anti-depressants are addictive

FACT

- Anti-depressants are NOT addictive
- Treating depression/low mood/anxiety improves cognitive function

CONCUSSION TREATMENTS – MYTH & FACTS

MYTH

- Cannabis/CBD oil/THC is helping my anxiety, helping me sleep

FACT

- Cannabis/ CBD oil/THC are not established treatments for mood disorders or sleep
- Cannabis/ CBD oil/THC are addictive
- Cannabis/ CBD oil/THC affect cognitive function
- Cannabis/ CBD oil/THC have been associated with psychosis and low mood

CONCUSSION TREATMENTS – MYTH & FACTS

MYTH

- It's OK to take Tylenol/Ibuprofen when I get a headache
- You shouldn't treat headache from concussion with medications as you may mask symptoms

FACT

- Headaches need to be treated
- Tylenol/Ibuprofen and other such analgesics if taken >14 days per month cause medication overuse headache
- Headache prevention medications are effective in many patients to prevent and cure post-traumatic headache
- Usually the headache prevention medications are taken for a few months to help resolve the headaches

CONCUSSION TREATMENTS – MYTH & FACTS

MYTH

- I have visual problems (blurred, pain, dizziness) and I was prescribed vision therapy as it is supposed to help

FACT

- Many visual symptoms after concussion: double vision, blurred vision, avoidance of near tasks, reading difficulties, illusory motion, sensitivity to visual motion, intolerance of complex environments, sensitivity to light
- There is no evidence that vision therapy works for post-concussion visual symptoms
- Vision therapy does have evidence in certain childhood diseases like strabismus (lazy eye)

CONCUSSION TREATMENTS – MYTH & FACTS

MYTH

- I cannot return to work as I am not back to baseline- my lawyer said my compensation will be affected
- My lawyer has said that I need such and such therapy

FACT

- Lawyers are not medical practitioners and should not be prescribing therapy
- Return to work is associated with better recovery so every attempt should be made to make a graduated return to work
- You do not have to be at 100% to return to work; it's OK to return with accommodations
- Speak to employer and your medical practitioners to try to get a return to work plan

CONCUSSION – MYTH & FACTS

MYTH

- There are no long-term effects of concussion

FACT

- If symptoms of a concussion aren't treated then can result in prolonged concussion symptoms that can affect cognitive (memory/concentration), physical (headache, dizziness) and emotional functioning (depression/anxiety/PTSD) for many months to years

CONCUSSION – MYTH & FACTS

MYTH

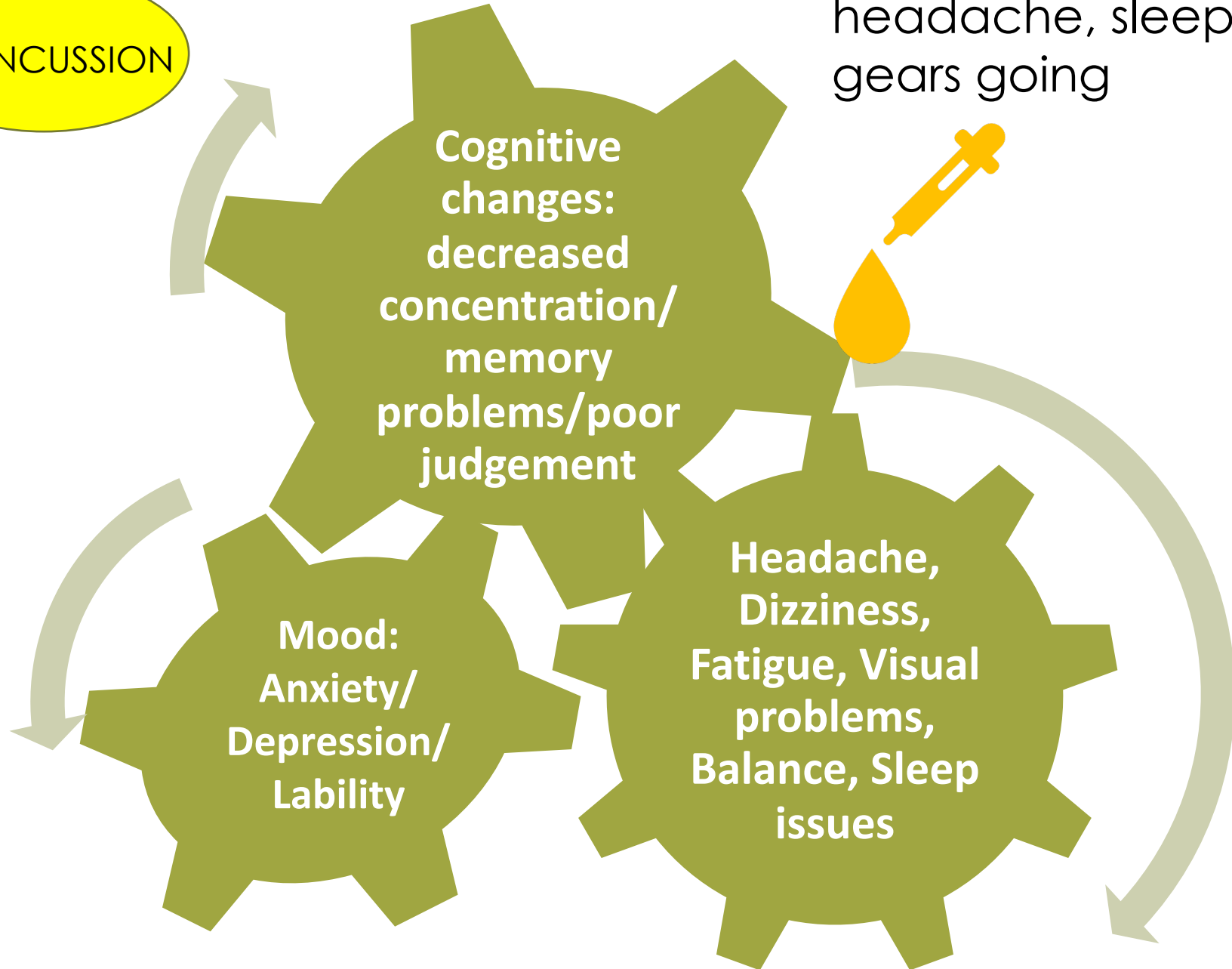
- There are no long-term effects of concussion

FACT

- Concussion/mild TBI has been implicated as a risk factor for:
 - Chronic traumatic encephalopathy,
 - Parkinson's Disease,
 - Alzheimer's Disease,
 - Amyotrophic Lateral Sclerosis (ALS),
 - Frontotemporal dementia
- More evidence of risk for repeated concussions but still present even for 1 concussion
- Biology of relationship is unknown

CONCUSSION

Targeted therapy for mood, headache, sleep to get the gears going



SUMMARY of MYTHS & FACTS - Concussion

1. Many myths circulating about diagnosis and therapies related to concussion and persisting symptoms of concussion, need to be critical of all information you receive
2. There is much research being done in concussion so every day we are learning new things. Can stay on top of the latest by finding reliable websites (Brain Injury Associations/Hospitals/Universities-see resources at end)
3. Many treatments for the symptoms related to concussion, treating symptoms improves outcome
4. Aerobic exercise helps recovery-need to find a level that you can do
5. Return to work/school is good for recovery – need to work towards this as soon as possible

GETTING THE RIGHT HELP

- <https://braininjuryguidelines.org>
- <https://www.uhn.ca/Krembil/Canadian-Concussion-Centre/Education#webinarseries>
- www.concussionsontario.org
- Concussion Awareness Training Tool (CATT):
www.cattonline.com
- **Centre for Effective Practice:** Clinical Tool for the Diagnosis and Management of Concussion: cep.health
- ECHO Concussion: <https://uhn.echoontario.ca/concussion>
- **Ontario Health – Quality Standards** (in progress)