

Concussion

A concussion is a mild traumatic brain injury (mTBI) resulting from a blow or jolt to the head, which 'stuns' the nerves and affects how the brain functions. Whilst there is usually no evidence of structural damage on commonly used scans such as CT or MRI, symptoms often include headache, dizziness, memory issues, difficulty concentrating, fatigue and/or mood changes.

It is highly recommended that people consult medical advice and review if they suspect they might have sustained a concussion. The following information are general guidelines only, and should not be substituted for individual medical advice. Immediately after a concussion, there is a period of cognitive and physical rest that avoids activities that increase symptoms or pose a risk of further head injury (usually 24-48 hours). Individuals can then gradually increase their activities, if symptoms do not worsen, until they reach pre-injury levels.

Post-Concussion Syndrome

Most people are expected to fully recover from a concussion within two to four weeks, though recovery can sometimes take up to three months. If symptoms last longer than this, it may indicate the development of Post-Concussion Syndrome (PCS).

One challenge in diagnosing PCS is that its symptoms, like headaches or dizziness, are not specific to concussions. These symptoms can also occur in healthy individuals or people with other conditions. Additionally, several factors can worsen PCS symptoms, including mental health issues, learning or attention difficulties, problems with vision, eye movement, balance, or the neck, headaches or migraines, sleep problems, and pain. Previous injuries may also complicate the situation by either worsening or mimicking symptoms.

While most people recover from a single concussion within a short time, repeated concussions can sometimes lead to prolonged symptoms and more severe complications.

Chronic Traumatic Encephalopathy (CTE)

Historically, CTE was called "punch drunk" or "dementia pugilistica" because it was first observed in boxers. Today, CTE is recognised as a condition involving specific changes in the brain, seen only through postmortem examination (after death). These changes are referred to as CTE neuropathologic change (CTE-NC).

It is thought that CTE-NC is more common in people with a history of repetitive head trauma, however, it's important to understand that studies linking CTE to head trauma are not able to show direct causation, meaning we can not say for sure that repeated head impacts cause CTE, but there seems to be a possible connection. At this stage, CTE-NC is still relatively uncommon in athletes, when strict criteria are used.

What we don't know yet:



- how common CTE-NC or a possible associated condition called Traumatic Encephalopathy Syndrome (clinical symptoms when the person is alive) is among athletes, military veterans, or the general population.
- if CTE-NC always leads to specific neurological (brain-related) or psychiatric problems.
- the severity and frequency of head impacts that can increase the risk of CTE
- whether CTE-NC always gets worse over time.
- CTE-NC may overlap with other brain conditions like Alzheimer's disease, making it harder to diagnose accurately.

CTE and related conditions are complex and still being studied. For people exposed to repetitive head impacts, it's important to be aware of the potential risks, but more research is needed to fully understand how these conditions develop and what symptoms they might cause. (Consensus Statement 2022)

Psychology and concussion

1. *Neuropsychological Assessment*

- Neuropsychologists play a key role in managing the cognitive and emotional consequences of multiple concussions
- Baseline Testing: Before injuries occur, baseline cognitive testing may be conducted, especially for athletes. This provides a reference point for post-concussion comparisons.
- Post-Injury Cognitive Testing: If symptoms persist for more than three months, neuropsychological tests are used to evaluate memory, attention, and other cognitive functions. Comparing these results to baseline testing or normative data helps determine the extent of cognitive impairment.
- Tracking Recovery: Repeat assessments help track cognitive recovery over time and provide a basis for return-to-play or work decisions.

2. *Symptom Management and Psychological Support*

- Psychoeducation: We provide education to patients and their families about the nature of concussions and the importance of proper recovery. Psychological support is also crucial in managing anxiety or frustration that may arise from or contribute to prolonged symptoms.
- Rehabilitation: For those with lasting cognitive symptoms, structured rehabilitation programs are designed to help individuals compensate for deficits and improve their cognitive performance in daily life.
- Psychological Support: Depression, anxiety, and irritability are common after multiple concussions. Psychological services can help address the emotional and psychological impacts of the injury.



Adapted from:

- Patricios, J. et al. (2023). Consensus statement on concussion in sport: The 6th International Conference on Concussion in Sport-Amsterdam, October 2022. *British Journal of Sports Medicine*, 57(11), 695-711. <https://doi.org/10.1136/bjsports-2023-106898>
- Australian Football League. (2024). *The management of sport-related concussion in Australian football: With special supplement for the management of concussion in children and adolescents*. Australian Football League.

