



What does research tell us about the potential long-term health effects from repeated head impacts and concussion in sport?

We are aware that many of our members are hearing mixed messages about what the research tells us about the potential long-term health effects from concussions and repeated head impacts from sport. To address this, we have worked with experts across New Zealand to develop this summary for you.

What do we mean by concussion and repeated head impacts?

Concussion is a form of mild traumatic brain injury. The person may experience dizziness, confusion or may lose consciousness immediately after the injury. They may also experience symptoms such as headaches, sensitivity to light or noise, feel extremely tired, need to sleep more, find it hard to pay attention or remember things.

Repeated head impacts are where a person experiences multiple hits to the head or body that can cause the brain to be shaken within the skull e.g. from a hard tackle. These head impacts do not cause short term symptoms but may add up over time.

What are the potential long-term impacts?

There are three potential longer-term health effects that people may refer to. After examining the evidence, we consider that:

- 1. Development of Brain Disorders** – There is consistent evidence showing a link between repeated concussions in sport and increased risk of developing brain disorders such as dementia, Alzheimer’s Disease and stroke.¹⁻⁴ However how big the risk is (e.g., how many people will be affected and how many concussions is too many) remains unclear.
- 2. Cognitive functioning difficulties**– There is consistent evidence showing a link between repeated concussions in sport and increased cognitive difficulties in later life. However, only certain areas of cognitive functioning are affected. These areas include; difficulties in making decisions quickly, being able to multi-task, remembering things, processing new information and concentrating.⁵⁻⁷ As is the case with brain disorders, we still do not know how big the risk is.
- 3. Chronic Traumatic Encephalopathy (CTE)** – CTE can only be diagnosed after someone has died. This is because CTE is characterised by clusters of a protein called tau in specific areas of their brain. These tau clusters can only be seen following a medical exam of the brain after death (autopsy).^{8,9} Research suggests there is link between repeated head impacts sustained over many years in contact sports and increased risk of developing CTE.^{10,11 12,13} There is no consistent evidence that sustaining one or more sports-related concussions leads to CTE. We still do not know how the CTE progresses over time, how the tau clusters in the brain relate to possible symptoms of CTE when people are alive or how much of the tau protein in the brain is problematic.

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NOTE: We acknowledge that there are research studies that show different results to those described in this statement. Differences often occur due to different populations being studied and differences in research methods used. We believe on the weight of the current evidence that these statements reflect the overall message that can be determined from the evidence at this point in time.