AUT BRAIN HEALTH RESEARCH INSTITUTE

Headway

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

We are aware that people are hearing mixed messages about the potential long-term effects from concussion and repeated head impacts. 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 or confusion immediately after the injury. Symptoms can include headaches, sensitivity to light, feeling extremely tired, or difficulty remembering things.
Repeated head impacts are where a person experiences multiple hits to the head or body that can cause the brain to move within the hard skull e.g., from a hard tackle or an assault. The person may not have any immediate symptoms, but the effects may add up over time.

What are the potential long-term impacts?

1. Development of Brain Disorders – There is consistent evidence showing a link between concussion and increased risk of developing brain disorders such as dementia and stroke.[1-5] However, the size of this risk (e.g., how many people will be affected and how many concussions is too many) remains unclear. Concussion is one of 14 known risk factors for dementia.[6]

2. Cognitive Functioning Difficulties – There is consistent evidence showing a link between repeated concussions (e.g., lots and/or in quick succession) and difficulties in a person's ability to think later in life. The cognitive functions that can be affected include: difficulties making decisions quickly, being able to multi-task, remembering things, processing new information and reduced self-control.[7-9] We still do not know how big the risk is or how many concussions it takes to cause long-term cognitive issues. For the majority of people, experiencing a few concussions over your lifetime does not impact your ability to think in later life.[10]

3. Chronic Traumatic Encephalopathy (CTE) – CTE is a term that describes degenerative changes in the brains structure. CTE is identified by clusters of a protein called tau that form in specific areas of the brain. These tau clusters can only be seen following a medical exam of the brain after death (autopsy).[11,12]
Research indicates there is an association between repeated head impacts sustained over many years in contact sports and violence, and increased risk of developing CTE.[13-16] We still do not know how the tau clusters in the brain relate to symptoms experienced during life or how much of the tau protein in the brain is problematic. The symptoms people may experience in later life have not been linked exclusively to CTE changes seen in the brain.
Many of the symptoms that people experience following concussion and repeated head impacts can be treated to reduce the risk of long-term problems.[17-20]

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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 overall evidence base at this point in time. We will continue to update this summary as more information becomes available.