



Understanding Concussions using MRI

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Why it's Important

Concussions are common globally and in Aotearoa New Zealand, and can cause a wide range of symptoms that affect people's lives. Some recover quickly, while others face long, complex recoveries with lasting physical, social, psychological, and financial impacts. We still have much to learn about what happens in the brain shortly after a concussion and how to improve recovery outcomes, which is why further research is needed to better understand these early brain changes.

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What we did

We compared a group of 40 athletes following a sports-related concussion to a group of healthy control participants.



Each participant underwent an MRI scan of their brain – for the concussion group this took place within two weeks of their injury.

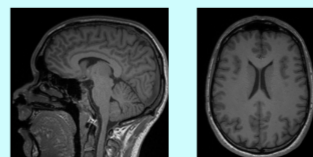
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What we found

We found subtle brain changes in those with a concussion compared to the healthy control group. Specifically, we found abnormally elevated T2 relaxation times, something that might indicate subtle brain inflammation. We also found that the concussed group had elevated magnetic susceptibility indicating abnormal brain iron accumulation.

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What it means



These abnormalities may reflect subtle inflammation and iron accumulation in the brains of people who have experienced a concussion. Although further research is needed to strengthen confidence in these findings, they suggest that these MRI methods could be useful tools for understanding concussions and monitoring brain recovery. By gaining a clearer picture of what happens in the brain after injury, we can be better equipped to intervene and improve recovery outcomes.