

New study highlights the brain trauma risks for young athletes

August 29 2023, by Stephen Townsend, Alan Pearce and Kathleen Bachynski



Credit: AI-generated image ([disclaimer](#))

The [Boston University CTE Center](#) today reported the results of the largest-ever study of chronic traumatic encephalopathy (CTE) in young athletes.

The [study](#), examining autopsied tissue, found signs of CTE in 63 out of 152 young [athlete](#) brains. The subjects of the study competed in youth, [high school](#) and college competitions, and all died before the age of 30.

This case series includes the first American woman athlete diagnosed with the disease, just months after the Australian Sports Brain Bank reported the world's first case of CTE in a [female athlete](#).

The results of this study have major implications for sporting leagues around the globe. Like other dementias, CTE is often assumed to be a disease that develops later in life, but as neuropathologist and Boston University CTE Center Professor Ann McKee says, "this study clearly shows that the pathology of CTE starts early."

These latest findings come as Australia's Senate is due to [report](#) the findings of its inquiry into concussions and repeated [head trauma](#) in contact sport.

This should push sporting organizations to do more to protect the brains of all athletes, especially in junior and recreational competitions.

CTE and young athletes

[CTE](#) is a devastating and currently incurable form of dementia which causes [neurodegeneration of the brain](#). The disease has [long been](#) associated with contact sport participation.

Dementias like CTE are often thought of as diseases of the elderly. However, some high-profile cases of CTE have been identified among younger athletes.

In Australia, much-loved NRL player and coach [Paul Green](#) was 49 when he died and was later found to have CTE. Former AFL star [Shane](#)

[Tuck](#) was 38 when he died with the disease. Former AFLW player [Heather Anderson](#) was only 28. A [recent study](#) in the United States also found CTE in the [brain](#) of an 18-year-old athlete.

The disease is [known](#) to cause mood disorders and behavior changes. People with CTE may be at higher risk of suicide.

These cases and the latest Boston University study indicate the risk of developing CTE is not restricted to those in their middle or older years. Although there is some evidence [developing brains are more vulnerable to trauma](#)—it creates a chronic inflammatory response affecting brain development—the pathology of CTE is still being studied.

The [risk factors for young athletes](#) are complex and multifaceted but it is likely that playing junior contact sport heightens an athlete's risk of developing neurodegenerative diseases as an adult.



Credit: AI-generated image ([disclaimer](#))

The strongest [predictor](#) for developing CTE is cumulative exposure to repeated brain trauma, rather than the number of diagnosable concussions. Prolonged exposure to repeated low-level impacts appears to produce a greater lifetime volume of brain trauma when compared with athletes who sustain a small number of more forceful injuries.

Again, the reasons for this dynamic require further study. One potential explanation is that low-level impacts, which often do not reach the [clinical threshold](#) for a concussion diagnosis, are easier to ignore and play through.

For the athletes in the Boston University study to develop CTE before the age of 30, it is likely they were exposed to repeated brain trauma from an early age through youth sport.

Are contact sports safe for kids?

Public health advocates in [North America](#), [Australia](#), [New Zealand](#) [Aotearoa](#) and the [United Kingdom](#) have long expressed concerns about the risks of contact sport for children.

Improved oversight would go some way toward reducing the serious health risks of mild traumatic brain injury (concussion). These include [post-concussion syndrome](#) (where symptoms do not resolve within the expected time period of about one month) and [second impact syndrome](#) (where a young athlete who has previously been concussed receives a second impact either on the same day or up to a week later, resulting in catastrophic outcomes).

Although professional athletes are increasingly subject to monitoring for brain injuries, these practices are not consistently in place for participants in semi-professional, club or junior competitions. It is essential that sports bodies implement the same reporting, monitoring and exclusion protocols all the way through their competitions, especially in junior sport.

First steps

Existing concussion guidelines are not designed to account for the types of sub-concussive injuries (where an impact does not result in observable symptoms) most strongly associated with CTE. To protect them from the disease, contact sporting bodies must reduce [young athletes'](#) lifetime exposure to brain trauma. One way to do this would be to restrict contact in training and games for juniors.

Some sporting bodies have already taken the initial steps. [Australian Rules football players](#) are restricted to modified tackling until the age of 12. The [National Rugby League](#) will soon implement a ban on tackling until midway through under-7s competitions.

The US Soccer Federation [prohibits](#) children under 11 from heading the ball. The UK Football Association will trial [a ban on deliberate heading](#) before age 12—a clear acknowledgement of the dangers of repetitive low-grade brain trauma.

The prevalence of CTE in this study from the US, where athletes routinely wear helmets to play football and [ice hockey](#), is further evidence helmets do not protect young players from concussions or the risk of CTE.

Changes to tackling rules were met with resistance by those who [fear](#) they would "soften" the games. Further measures to protect athletes will

require courage from contact sports administrators.

This new study shows CTE can develop in young brains and builds off previous research suggesting the origins of this pathology may lie in junior contact sport. To protect players from neurodegenerative diseases like CTE, sports must [reduce cumulative exposure to brain trauma](#) for all athletes, beginning with the junior leagues. In Australia, where children have at least four football codes to choose from, this message must be received with particular urgency.

This article is republished from [The Conversation](#) under a Creative Commons license. Read the [original article](#).

Provided by The Conversation

Citation: New study highlights the brain trauma risks for young athletes (2023, August 29)
retrieved 28 April 2024 from
<https://medicalxpress.com/news/2023-08-highlights-brain-trauma-young-athletes.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--