

Should children be prevented from playing Australian Rules football?

What they said...

'I can't do stuff - I can't go to the supermarket when it's busy or go to a cafe with my girlfriend, or drive my car... I'm the shell of the person that I was'

Paddy McCartin, 24-year-old former St Kilda player, commenting on the effect of repeated on-field concussions

'These papers don't say, "Don't play sports." . . . They support good [head safety] policies in sports'

Seena Fazel, professor of forensic psychiatry at the University of Oxford, explaining the conclusions he believes should be drawn from his research

The issue at a glance

On January 27, 2021, it was reported that Dr Chris Nowinski, co-founder of the United States-based Concussion Legacy Foundation, had warned against children playing the adult version of Australian Rules football because of the associated health risks.

<https://www.theage.com.au/sport/afl/afl-brain-disease-cases-tip-of-the-iceberg-us-expert-20210127-p56x95.html>

On January 23, 2021, it was reported that former Richmond footballer Shane Tuck, who committed suicide on July 20, 2020, at the age of 38, had the most severe case the Australian Sports Brain Bank has yet seen of the degenerative brain disease CTE (chronic traumatic encephalopathy), which was also found post-mortem in former players Polly Farmer and Danny Frawley. CTE has been linked to head injuries sustained in contact sports such as Australian Rules football. <https://www.foxsports.com.au/afl/afl-news-2021-shane-tuck-death-cte-brain-disease-disorder-graham-polly-farmer-danny-spud-frawley/news-story/f32588fe0d6b7076da29685f14ec5296>

On September 17, 2020, former AFL player Shaun Smith was awarded a \$1.4m insurance payout for 'total and permanent disablement caused by multiple concussions while playing football', in what has been judged a landmark case.

<https://www.theguardian.com/sport/2020/sep/18/concussion-payout-to-former-afl-player-shaun-smith-reinforces-cte-link-with-contact-sport>

The debate over the safety of Australian Rules football and whether it is a suitable game for children has been developing over the last decade.

Background

The information presented below has been drawn from the Wikipedia entry 'Head injuries in the Australian Football League'. The full text can be accessed at

https://en.wikipedia.org/wiki/Head_injuries_in_the_Australian_Football_League.

Information has also been drawn from a Sydney Morning Herald Explainer article titled 'What are CTE and concussion and how do they affect athletes?' by Konrad Marshall, published on September 1, 2020. The full text can be accessed at

<https://www.smh.com.au/sport/what-are-cte-and-concussion-and-how-do-they-affect-athletes-20200310-p548p1.html>)

Head injuries in the Australian Football League

Head injuries in the Australian Football League (AFL) is a controversial topic with many players sustaining head-related injuries during the AFL season, some of these being caused by the players themselves 'ducking' their heads to receive a high contact which warrants a free kick. One of the most common forms of head injury sustained in the AFL is concussion, which will affect about 6-7 players per team, per season. The reason head injuries are a big concern is that they relate to an increased probability of developing forms of cognitive impairment such as depression and dementia later in life.

Physical injuries to the head

During round 6 in the 2002 AFL season, Essendon team captain James Hird suffered a facial injury after a collision with teammate Mark McVeigh during a match between Essendon and Fremantle which resulted in several bone fractures, Hird's injuries were compared to injuries seen in motor-car accidents. Former Brisbane Lions' captain Jonathan Brown is another AFL player whose facial injuries were compared to those in a car accident; the three-time award winner of the AFL's most courageous player, was injured after colliding with the knee of Fremantle's Luke McPharlin. Brown's injuries consisted of eight breaks around his eye socket, mandible, and cheek bone, which took hours of reconstructive surgery to repair.

Mental injuries, concussion and CTE

Most of the severe mental injuries associated with AFL develop later in life when the player has retired from the AFL; these injuries are sometimes a result of heavy contact to the player's head leading to concussion. Evidence suggests that some negative effects of concussion on cognitive and motor function may continue to harm the player many years after the initial injury; some research also links clinical depression to contact related concussion.

More recent research has indicated that serious mental injury can be sustained from blows referred to as subconcussive, that is, blows which damage the brain but do not result in diagnosable concussion. Repeated smaller blows to the head can also result in long term damage to the player through a condition known as Chronic Traumatic Encephalopathy (CTE). CTE is a degenerative brain disease found in people with a long history of head trauma – not so much a handful of big concussions but rather hundreds (or thousands) of smaller impacts over several years.

CTE often manifests as a kind of dementia while the sufferer is alive but can only be diagnosed conclusively post-mortem. Once a person who has pledged their brain dies, they are sent to a mortuary where their brain is removed and weighed then fixed in formalin to preserve the tissue. An dissection of the brain is then undertaken which, if the person has CTE, will reveal physical abnormalities that have developed as a result of repeated brain injury. This is referred to as a 'degenerated brain'.

Since February 2020 three autopsies have been performed on former professional Australian Rules footballers and each has been shown to have CTE. Two of these players had committed suicide, an act believed to be linked to the brain trauma they had received and their resultant psychological condition.

Several scientific papers have found a correlation between multiple concussions (three or more) and a greater chance of cognitive impairment later in life, increasing the risk of everything from anxiety to epilepsy, Parkinson's disease and the nervous system disease ALS, also known as Lou Gehrig's disease. People who sustain even mild traumatic brain injuries often experience underlying neurological problems at an accelerated rate, notes Dr Mark Cook, chair of medicine at the University of Melbourne and director of neurology at St Vincent's Hospital.

Premature retirements and effects in later life resulting from brain injuries

The list of young players retiring after enduring frequent and/or severe concussions has grown to more than a dozen in recent years, including Koby Stevens, Jack Frost and Liam Picken. Others remain on doctor-ordered inactive list after a string of hits, including Patrick McCartin, 24, the number one pick from the 2014 draft, who said in an interview in 2019: 'I'm the shell of the person that I was, really. I'm completely different.'

There are also long-retired players suffering debilitating cognitive issues, including memory loss and mood swings, confusion, and seizures. Many have pledged to donate their brains to the Australian Sports Brain Bank. Player agent Peter Jess has been in touch with athletes from several sports and says there is a consistency to the issues they report.

Prevention

In recent years, the AFL have taken steps to reduce the effects of concussion and the number of players suffering it.

The AFL have modified rules of the game to protect the head of the player and reduce head contact during contests and have also given out a concussion management plan. Prevention is also up to the player as well. For a player to comply with the concussion management plan they must miss the next game; however, some players are not registering as being concussed and are risking worsening their injury by playing the next week.

Internet information

On January 27, 2021, The Age published an article titled 'AFL brain disease cases "tip of the iceberg": US expert' which details the warning given by United States head trauma expert Dr Chris Nowinski that CTE is a greater problem for AFL than is currently recognised.

The full text of the article can be accessed at <https://www.theage.com.au/sport/afl/afl-brain-disease-cases-tip-of-the-iceberg-us-expert-20210127-p56x95.html>

On January 23, 2021, Fox Sport published an article titled "'The worst case I've seen": Study shows Shane Tuck suffered from severe case of CTE'. The article details the results of a postmortem brain dissection that reveals that the former Richmond player, who took his life in 2020, suffered from severe CTE.

The full article can be accessed at <https://www.foxsports.com.au/afl/afl-news-2021-shane-tuck-death-cte-brain-disease-disorder-graham-polly-farmer-danny-spud-frawley/news-story/f32588fe0d6b7076da29685f14ec5296>

On January 10, 2021, ABC News published a news report titled 'Study finds AFL players with concussion likely returning to play with damaged brain cells' which details the possibility of testing players for the effects of brain damaged following concussion.

The full article can be accessed at <https://www.abc.net.au/news/2021-01-10/study-finds-concussed-afl-players-likely-returning-too-early/13018148>

On September 17, 2020, The Guardian published an article titled 'Concussion payout to former AFL player Shaun Smith reinforces CTE link with contact sport' which details the compensation win of a former ALF player claiming to suffer with CTE as a result of in-game injuries.

The full text can be accessed at <https://www.theguardian.com/sport/2020/sep/18/concussion-payout-to-former-afl-player-shaun-smith-reinforces-cte-link-with-contact-sport>

On September 1, 2020, The Sydney Morning Herald published as part of its Explainer series an informative piece titled ‘What are CTE and concussion and how do they affect athletes?’ which describes CTE and concussion and their effects.

The full text can be accessed at <https://www.smh.com.au/sport/what-are-cte-and-concussion-and-how-do-they-affect-athletes-20200310-p548p1.html>

On September 1, 2020, the AFL website published an article titled ‘AFL responds after analysis reveals Danny Frawley had stage two CTE’ which quoted AFL chief, Gillian McLachlan, explaining that the AFL had put greater on-field protections in place to reduce the risk of injuries such as those suffered by former player and coach Danny Frawley.

<https://www.afl.com.au/news/494423/analysis-reveals-danny-frawley-suffered-from-stage-two-cte-at-time-of-death>

On September 1, 2020, The Age published an article titled ‘AFL concussion class action ‘probably not too far away’ which discusses the likelihood of players claiming to be suffering the aftereffects of in-game head injuries seeking compensation from the AFL.

The full text can be accessed at <https://www.theage.com.au/sport/afl/afl-concussion-class-action-probably-not-too-far-away-20200901-p55rbo.html>

On March 11, 2020, The Daily Mail published a report of claims by a friend of deceased AFL player Danny Frawley that the player’s subsequent brain deterioration and ‘strange’ behaviour he believed were linked to ‘head knocks in footy’

The full text can be accessed at <https://www.dailymail.co.uk/news/article-8095123/Title-goes-here.html>

On March 1, 2020, The Sydney Morning Herald published an article titled ‘AFL concussion prompts “over the top careful” protocols for young players’ which presents a range of views on what is an appropriate manner to deal with the risk of head injury to young football players.

The full text can be accessed at <https://www.smh.com.au/national/nsw/afl-concussion-prompts-over-the-top-careful-protocols-for-young-players-20200228-p545dj.html>

On January 22, 2020, The Washington Post published an article titled ‘From scientist to salesman’ which argues that the claims made regarding the risks to young players from gridiron football by Dr Bennett Omalu are built on distortions of the research.

The full text can be accessed at

<https://webcache.googleusercontent.com/search?q=cache:rI68f2kCjN8J:https://www.washingtonpost.com/graphics/2020/sports/cte-bennet-omalu/+&cd=14&hl=en&ct=clnk&gl=au>

On January 13, 2020, FiveThirtyEight published an analysis titled ‘Should Parents Be Afraid to Let Their Kids Play Football?’ which presents arguments and research on either side of the debate surrounding NFL football in the United States.

The full text can be accessed at <https://fivethirtyeight.com/features/should-parents-be-afraid-to-let-their-kids-play-football/>

On September 26, 2019, The New York Times published an analysis and comment titled ‘The Concussion Crisis in Australian Rules Football’ which gives a detailed background to the growing concern within the AFL regarding concussion and other forms of head injury.

The full text can be accessed at <https://www.nytimes.com/2019/09/26/sports/afl-football-concussions.html>

On August 15, 2019, Today published a report titled “‘Concussion’ doctor says kids shouldn't play contact sports until they're 18’

The report detailed warnings from United States neuropathologist Dr Bennett Omalu that the risk of brain injury associated with contact sport makes it unsuitable for children.

The full text can be accessed at <https://www.today.com/health/concussion-doctor-warns-against-contact-sports-kids-t115938>

On August 13, 2019, the ABC segment Triple Hack published a report titled ‘Neuroscientists are calling for a ban on junior contact sports. But could regional towns ever give up weekend footy?’

The report detailed warnings from United States neuropathologist Dr Bennett Omalu that the risk of brain injury associated with contact sport makes it unsuitable for children. The report also considers some opposing views.

The full text can be accessed at <https://www.abc.net.au/triplej/programs/hack/cte-expert-calls-for-ban-on-contact-sports-in-australia/11409732>

On August 11, 2019, The Sydney Morning Herald published a report titled ‘Contact sports will 'cease to exist' within a generation’. The report detailed warnings from United States neuropathologist Dr Bennett Omalu that the risk of brain injury associated with contact sport makes it likely they will cease to be played.

The full text can be accessed at <https://www.smh.com.au/sport/nrl/contact-sports-will-cease-to-exist-within-a-generation-20190809-p52fpf.html>

On June 15, 2019, The Herald Sun published a report titled ‘Concussions in junior sport triple among grassroots Aussie rules footballers’

The report details the increasing incidence of concussion among junior players of Australian Rules football.

The full text can be accessed at <https://www.heraldsun.com.au/news/victoria/concussions-in-junior-sport-triple-among-grassroots-aussie-rules-footballers/news-story/cbdede8807581b8b56b77be38df3141a>

On May 26, 2019, head-injured St Kilda player, Paddy McCartin, gave an interview on the Triple M Footy AFL show, The Sunday Rub, detailing the effects he is suffering because of repeated concussions.

The full interview can be accessed at <https://www.triplem.com.au/story/listen-paddy-mccartin-s-opens-up-on-his-physical-emotional-struggles-with-concussion-138739>

On April 3, 2019, Vox published a comment and analysis by behavioural neuroscientist, Chris Nowinski, titled ‘Youth tackle football will be considered unthinkable 50 years from now’. Nowinski argues that the potential for brain damage will ultimately see gridiron football abandoned as a game for young players.

The full text can be accessed at <https://www.vox.com/2019/3/27/18174368/football-concussion-brain-injury-cte-youth-football>

On July 24, 2017, The Roar published an opinion piece titled ‘Ban AFL in schools: A no-brainer!’

The comment, written by Tex Redmund, argues that the risk of head injuries to young players is too great for Australian Rules to continue to be played in schools.

<https://www.theroar.com.au/2017/07/25/ban-afl-schools-no-brainer/>

On July 17, 2015, Sunshine Coast Daily published an article titled ‘Our kids are in hospital, parents question AFL body’ which details injuries received by Under 13 players and parental dissatisfaction with the AFL Sunshine Coast Juniors management committee.

The full text can be accessed at <https://www.sunshinecoastdaily.com.au/news/mums-say-code-needs-to-do-more-to-ensure-safety-on/2708457/>

On February 27, 2015, The Weekly Times published an article titled ‘Study confirms social and health benefits for community football’ which details some of the advantages Australian Rules offers young players.

The full text can be accessed at <https://www.weeklytimesnow.com.au/sport/study-confirms-social-and-health-benefits-for-community-football/news-story/17ab338612a822f4691cb3047b735532>

The Management of Concussion in Australian Football with Specific Provision for Children Aged 5-17 Years.

The full text can be accessed at

http://www.aflcommunityclub.com.au/fileadmin/user_upload/Health_Fitness/2017_Community_Concussion_Guidelines.pdf

The AFL’s Junior Football Match Guide details the modified rules of the game at different ages, including those rules that relate to tackles.

The full text can be accessed at https://websites.sportstg.com/get_file.cgi?id=2978062

Arguments in favour of preventing children from playing Australian Rules football

1. Australian Rules football is a dangerous sport

Those who argue that Australian Rules football is too hazardous a game to be played by children point to a variety of data indicating the serious risks, particularly of brain injury, associated with the sport.

An Australian Institute of Health and Welfare publication, ‘Australian sports injury hospitalisations 2011–12’ indicated that around one-third of all sports injury hospitalisations were associated with playing various codes of football. Australian Rules football had the highest population-based age-standardised rates of injury hospitalisation (18 cases per 100,000 population). This data was drawn from some 36,000 people aged 15 and over who were hospitalised as the result of an injury sustained while playing sport in the twelve months surveyed. <https://www.aihw.gov.au/reports/injury/australian-sports-injury-hospitalisations-2011-12/contents/summary>

A similar study released five years later, ‘Hospitalised sports injury in Australia, 2016–17’ found that almost 60,000 people were hospitalised for sports injuries during the twelve-month period considered. This was a nearly 100 percent increase over the rate of injury five years earlier. <https://www.aihw.gov.au/reports/injury/hospitalised-sports-injury-australia-2016-17/contents/summary> For males, the sports that most frequently led to hospitalisation were football (all codes -38 percent) and the case was the same for women with football resulting in 15 percent of hospitalisations. <https://www.aihw.gov.au/reports/injury/hospitalised-sports-injury-australia-2016-17/contents/summary>

Recent studies have particularly highlighted the brain damage that can result from contact sports such as Australian Rules football. Dr Chris Nowinski, co-founder of the United States-

based Concussion Legacy Foundation, has recently stated with regard to Australian Rules football, 'Tackling is dangerous. There's no safe way to do it. There are fair ways to do it, but there's no safe way to bring another man - or woman - to the ground and stop their momentum at the same time.' <https://www.theage.com.au/sport/afl/afl-brain-disease-cases-tip-of-the-iceberg-us-expert-20210127-p56x95.html>

Speaking of the effect of American grid iron football on participants, neuropathologist Dr Omalu has stated, 'The human brain is 60 to 80 percent water. The human brain floats freely inside your skull, and the human brain has no reasonable capacity to cure itself, so when you have a blow to your head, there is no regeneration. In the game of football, some of these blows to the head are equivalent to a car crash at 13 miles per hour...

Each and every impact you have causes microscopic injuries in your brain... And it's final, there is no cure, and it is progressive. So, sub concussive blows are accumulated upon each other. There is no safe blow to the human head. Every impact to your head can be dangerous. That is why you need to protect your head from all types of blunt force trauma.'

Of particular concern in the Australian context is recent evidence that Australian Rules footballers are developing CTE (chronic traumatic encephalopathy), as a result of playing the sport. Chronic Traumatic Encephalopathy (CTE) is a degenerative brain disease found in people with a long history of head trauma – not so much a handful of big concussions but rather hundreds (or thousands) of smaller impacts over a number of years. CTE was first diagnosed in 1928 in boxers, under the name dementia pugilistica (also known as 'punch drunk syndrome' and later 'slug nutty') but it gained renewed attention in 2005, when pathologist Bennet Omalu found CTE in the brain of an American footballer, former Pittsburgh Steeler Mike Webster. <https://www.smh.com.au/sport/what-are-cte-and-concussion-and-how-do-they-affect-athletes-20200310-p548p1.html>

CTE often manifests as a kind of dementia showing cognitive impairment, depression, short term memory loss, emotional instability, substance misuse and suicidal thoughts or behaviour; however, it can only be conclusively diagnosed post-mortem. Once a person who has pledged their brain dies, they are sent to a mortuary where their brain is removed and weighed then fixed in formalin to preserve the tissue before autopsy.

[https://www.alz.org/alzheimers-dementia/what-is-dementia/related_conditions/chronic-traumatic-encephalopathy-\(cte\)](https://www.alz.org/alzheimers-dementia/what-is-dementia/related_conditions/chronic-traumatic-encephalopathy-(cte))

Three recent postmortems have revealed that three prominent AFL players have suffered with CTE. In February 2020, stage three CTE was officially diagnosed in a former AFL player – the revered player and coach Graham 'Polly' Farmer, who died in late 2019 after battling dementia for a number of years. In August 2020, a postmortem revealed that St Kilda champion player and coach Danny Frawley was suffering with stage two CTE when he died the year before as a result of an apparent suicide.

<https://www.afl.com.au/news/494423/analysis-reveals-danny-frawley-suffered-from-stage-two-cte-at-time-of-death> Friends have suggested his mental health struggles were related to the head knocks Frawley had received on the football field.

<https://www.dailymail.co.uk/news/article-8095123/Title-goes-here.html> In January 2021, it was reported that former Richmond footballer Shane Tuck, who committed suicide six months before had the most severe case the Australian Sports Brain Bank has yet seen of CTE. <https://www.foxsports.com.au/afl/afl-news-2021-shane-tuck-death-cte-brain-disease-disorder-graham-polly-farmer-danny-spud-frawley/news-story/f32588fe0d6b7076da29685f14ec5296>

This cluster of diagnoses has triggered mounting concern among health professionals regarding the head injuries Australian Rules footballers are receiving.

2. Australian Rules football is particularly dangerous for children

Opponents of Australian Rules football for children argue that damage to the brain has particularly harmful consequences for young people whose brains are not yet fully developed. Forensic and neuropathologist, Dr Bennett Omalu, first discovered CTE in the brain of a high-profile American football player in 2002. Dr Omalu has stressed the high level of risk that playing contact sports poses for children, arguing that it greatly increases their chances of developing CTE. Dr Omalu is urging contact sports to reconsider junior competitions.

<https://www.abc.net.au/triplej/programs/hack/cte-expert-calls-for-ban-on-contact-sports-in-australia/11409732>

Dr Omalu has stated, 'It's been very well established that playing high impact, high contact sports is not good for children.' He has further explained, 'When you're building a skyscraper, at the foundation phase it's very important, because that's when you're building the intricate support structures of the building. The same applies to the brain of a child. Your brain is not yet fully developed until you're about 18 - 25 years old.'

<https://www.abc.net.au/triplej/programs/hack/cte-expert-calls-for-ban-on-contact-sports-in-australia/11409732>

Dr Omalu has criticised the emphasis that is placed on temporary enjoyment, that sees adults discounting the potential for serious long-term harm to children's neural development. He has stated, 'What is wrong with us as a modern society? Do we uphold and place the excitement of sports above the humanity of our children?'

<https://www.abc.net.au/triplej/programs/hack/cte-expert-calls-for-ban-on-contact-sports-in-australia/11409732>

Tex Redmund, writing for The Roar in July 2017, has explained the severity of the harm that Australian Rules football can cause to young players. Redmund has stated, 'A brain injury actually has a more devastating impact on a child than an injury of the same severity has on a mature adult.'

The cognitive impairments of children may not be immediately obvious after the injury but may become apparent as the child gets older and faces increased cognitive and social expectations for new learning and more complex, socially appropriate behavior.

These delayed effects can create lifetime challenges for living and learning for children, their families, schools and communities. Some children may have lifelong physical challenges.'

<https://www.theroar.com.au/2017/07/25/ban-afl-schools-no-brainer/>

Given the potential for long-term brain damage, evidence of a recent rise in the incidence of head injuries among junior players is seen as grounds for concern. A 2019 study among footballers aged 15 to 17 has found that cases of concussion rose threefold from 0.5 to 1.5 per club per season on average between 2009-2011 and 2015-2017. Academics have said the numbers of concussions recorded were probably the tip of the iceberg, because the study did not include injuries from training sessions, pre-season games or finals. The number of concussions was likely to be even higher because many junior players did not seek medical treatment. <https://www.heraldsun.com.au/news/victoria/concussions-in-junior-sport-triple-among-grassroots-aussie-rules-footballers/news-story/cbdede8807581b8b56b77be38df3141a>

According to a 2019 study by the Murdoch Children's Research Institute, concussion is the third most common injury for junior footballers. But junior football players may not be aware of what it means to have a concussion and how CTE properly develops within an individual. <https://junctionjournalism.com/2020/05/01/tackling-head-injury-risks-in-junior-afl/> Murdoch Children's Research Institute's director of clinical sciences research, Vicky Anderson, has stressed the evidence of enduring damage demonstrated by those young players who come to the Institute for further investigation. She has indicated that 25 per cent of adolescents who visited the clinic had ongoing symptoms such as headache, fatigue, balance problems and depression or anxiety. <https://www.heraldsun.com.au/news/victoria/concussions-in-junior->

[sport-triple-among-grassroots-aussie-rules-footballers/news-story/cbdede8807581b8b56b77be38df3141a](https://www.today.com/health/concussion-doctor-warns-against-contact-sports-kids-t115938)

Dr Omalu has referred to the lifelong adverse consequences that can result for children who suffer concussion. Referring to two Swedish studies, one published in 2014 and the other in 2016, which examined the health consequences of suffering a single concussion that resulted in hospitalisation. The studies tracked over one million children for 41 years. The researchers found that among the consequences of such an injury were a greater likelihood to die before the age of 42; two to four times the risk of committing suicide as an adult; and about two to four times the risk of developing a major psychiatric illness as an adult. In addition to this, there was a greater likelihood of diminished intelligence, of addiction and of violent or criminal behaviour. <https://www.today.com/health/concussion-doctor-warns-against-contact-sports-kids-t115938>

It has also been noted that the earlier a child begins playing contact sports and suffering head trauma, the greater is the likelihood of adult-onset disease and the earlier that onset is likely to be. An analysis of the first 211 football players diagnosed with CTE at Boston University found those who started tackle football before age 12 could have a 13-year-earlier onset of the cognitive, behavioral, and mood symptoms associated with CTE. It was also discovered that athletes who played contact sports for more than nine years had a six times greater risk of developing Lewy body disease, a cause of Parkinson's, than those who played eight or fewer years. Both of these findings have been seen as reasons for precluding children from contact sports such as football.

<https://www.vox.com/2019/3/27/18174368/football-concussion-brain-injury-cte-youth-football>

3. Rule changes and helmets do not sufficiently reduce the risk

Opponents of children playing high contact sports such as Australian Rules football argue that such games are inherently unsafe and that no modification to rules or use of equipment such as helmets can reduce the danger to an acceptable level.

It is generally acknowledged that though risks in contact sports may be able to be reduced by changes in regulations, these risks cannot be eliminated. The NRL's Head of Football, Participation, Pathways & Development, Luke Ellis, has stated that though the game is structured to be as safe as possible for all junior players, 'sometimes, head knocks are inevitable'. <https://www.abc.net.au/triplej/programs/hack/cte-expert-calls-for-ban-on-contact-sports-in-australia/11409732>

This point was quantified by Forensic and neuropathologist, Dr Bennett Omalu, who has stated, 'If a child plays rugby or football for only one season, there is a 100 percent risk exposure for that child to suffer permanent brain damage. This is the truth of science.' <https://www.kidspot.com.au/parenting/parenthood/parenting-style/expert-says-kids-should-be-banned-from-playing-contact-sport/news-story/6f82fc8826f976e06fd0c466f48fb2c6>

Dr Omalu has further argued that claims that football can be made safer are misleading. He has stated, 'Let me ask you, can you make fire safer? I suppose you could make it safer by putting it in a lighter. A lighter is safer than a matchstick, right? But would you give your 5-year-old child a lighter to play with?' <https://www.wiscontext.org/dr-bennet-omalu-asserts-brain-injury-sports-civil-rights-issue-our-time>

Dr Chris Nowinski, co-founder of the United States-based Concussion Legacy Foundation, has recently stated regarding Australian Rules football, that no changes in regulations could adequately reduce the risks associated with the sport. Dr Nowinski has stated, 'There are universal changes that can be made. If we just talk about tweaking the rules at the pro level, we're not going to stop CTE. The risk accumulates over an athlete's entire career.'

<https://www.theage.com.au/sport/afl/afl-brain-disease-cases-tip-of-the-iceberg-us-expert-20210127-p56x95.html>

Dr Nowinski has further stated that improving how Australian Rules deals with concussions to reduce their number and ensure that players are out of the game for a longer recuperation period after receiving a concussion will not be sufficient to significantly reduce the risk of CTE. He has stated, 'We don't have any evidence to support the idea that changing how we treat concussions will significantly change CTE outcomes. If you have 30 per cent fewer concussions because of rule changes, but you still have as many hard blows to the head, you're not going to see a big difference.' <https://www.theage.com.au/sport/afl/afl-brain-disease-cases-tip-of-the-iceberg-us-expert-20210127-p56x95.html>

Dr Nowinski has concluded, 'Tackling is dangerous. There's no safe way to do it. There are fair ways to do it, but there's no safe way to bring another man - or woman - to the ground and stop their momentum at the same time.' <https://www.theage.com.au/sport/afl/afl-brain-disease-cases-tip-of-the-iceberg-us-expert-20210127-p56x95.html>

Equally, claims that helmets might improve the safety of Australian Rules for both young and older players have been widely disputed. In October 2012, Australian Science published an article titled 'Helmets won't cure football's concussion headache'. The piece included the overall judgement, 'There is no evidence that wearing padded helmets would be either beneficial or detrimental for children [playing Australian Rules football].'

<http://www.australasianscience.com.au/article/issue-october-2012/helmets-wont-cure-footballs-concussion-headache.html>

The AFL has similarly stated, 'There is no definitive scientific evidence that helmets prevent concussion or other brain injuries in Australian football.'

Some experts believe that younger players who wear a helmet may change their playing style, and receive more head impacts as a result. Accordingly, while there is no scientific evidence either way, helmets are not recommended for the prevention of concussion.'

<http://www.aflcommunityclub.com.au/index.php?id=883#:~:text=There%20is%20no%20definitive%20scientific,head%20impacts%20as%20a%20result.>

It is widely accepted that helmets are of little to no use in the prevention of concussion or other percussive brain injury. Concussions are caused when the brain moves inside the skull, tearing connective tissue and striking the interior of the cranium. Regular helmets only protect the skull from fractures and do not prevent the brain from rattling inside the head. Thus, both young and old players can receive the type of injury that causes CTE even while wearing a helmet.

<https://www.pledgesports.org/2019/11/its-a-surprise-that-football-helmets-dont-actually-protect-against-concussions/>

4. Children are unable to make an informed decision regarding the risks they face when playing Australian Rules football

It has been argued that children are too young to make an informed decision about the risks they face when playing contact sport such as Australian Rules football.

Forensic and neuropathologist, Dr Bennett Omalu, has argued that there is an ethical and legal difference between adults, who should be able to make informed decisions about their lives, and children who have not yet reached a point where they have the experience and maturity to be able to do so. Dr Omalu has stated, 'As physicians, it is our role to educate and inform an adult about the dangers of, for example, smoking. If that adult decides to smoke, he is free to do so, and I will be the first to defend that freedom. In the same way, if an adult chooses to play football, ice hockey, mixed martial arts or boxing, it is within his rights.'

However, as a society, the question we have to answer is, when we knowingly and willfully allow a child to play high-impact contact sports, are we endangering that child?’

https://www.nytimes.com/2015/12/07/opinion/dont-let-kids-play-football.html?_r=3

Dr Omalu concludes, ‘Our children are minors who have not reached the age of consent. It is our moral duty as a society to protect the most vulnerable of us.

The human brain becomes fully developed at about 18 to 25 years old. We should at least wait for our children to grow up, be provided with the information and education on the risk of play and let them make their own decisions. No adult, not a parent or a coach, should be allowed to make this potentially life-altering decision for a child.’

<https://bleacherreport.com/articles/2596649-dr-bennet-omalu-says-parents-should-not-let-children-play-football>

Dr Omalu notes that laws have been put in place to prevent children from harming themselves by smoking cigarettes or consuming alcohol, with age restrictions to prevent minors from purchasing them. He argues that the same sort of approach needs to be taken to the playing of sports which are harmful to children and about which they are not yet old enough to make informed decisions. He suggests that authority figures such as parents, coaches and doctors should insist on young men and women not playing contact sports as minors. <https://bleacherreport.com/articles/2596649-dr-bennet-omalu-says-parents-should-not-let-children-play-football>

Dr Omalu has also noted that football is so culturally revered in some countries that children are particularly unable to make an unbiased decision about the safety of playing it. Dr Omalu has stated, ‘Many... kids have been raised in cultures where football is elevated to a level of religion. So, their thinking of football is not objective, it is emotional, it's a habit. That's called conformational thinking...’ <https://www.wiscontext.org/dr-bennet-omalu-asserts-brain-injury-sports-civil-rights-issue-our-time>

Dr Chris Nowinski, co-founder of the United States-based Concussion Legacy Foundation, has also claimed that children are in no position to appreciate the danger they face from a condition such as CTE. He has stated, ‘You just don't start hitting children in the head... We're crazy to have children who... don't even understand what CTE means playing by the same rules as adults.’ <https://www.theage.com.au/sport/afl/afl-brain-disease-cases-tip-of-the-iceberg-us-expert-20210127-p56x95.html>

A number of those involved in either training or studying junior footballers who have suffered head trauma have noted that these young players lack the knowledge and the maturity to recognise the dangers posed to their health.

Jamie Boland, who has coached junior football across all age divisions for almost 30 years at the Macleod Junior Football Club, has stated, ‘I find that 16-year-old boys, 14-year-old and under, when they get concussed, they will not come to the coach, they will not go to the trainer.’ Neuroscientist Dr Alan Pearce, who specialises in the research of sports related concussions, has observed that boys get a feeling of pride and toughness when they get hit in a game of football and feel it shows their coaches and peers that they are a determined athlete. <https://junctionjournalism.com/2020/05/01/tackling-head-injury-risks-in-junior-afl/>

Observations such as these have been taken to demonstrate that children do not have the experience or the judgement to determine whether they should risk their physical and mental health in a high contact sport such as Australian Rules football. They also indicate that children do not know how to respond appropriately when they are injured.

The Australian Capital Territory has already implemented legislation under the Controlled Sports Act 2019 to protect young participants. It currently applies only to combat sports such as boxing and other high-risk activities. This law requires the registration of officials (from promoters to medical personnel); the registration of contestants subject to appropriate medical advice; and rules which prohibit dangerous techniques and establish age

requirements. <https://www.sport.act.gov.au/clubs-and-organisations/combat-sport-applications> The minimum age for contestants to compete in a registered event is 18 years old. <https://www.legislation.act.gov.au/sl/2019-26/> Those concerned about the health impact on young competitors of Australian Rules football and other high contact sports argue that young players should be protected in the same way from these activities that they are from combat sports and that a minimum age requirement should be established.

5. There are other safer games that children can play

Those who argue that children should be prevented from playing contact sports such as Australian Rules football note that there are many safer alternatives.

Statistically, the safest sports are those with the lowest rates of injury. The Colorado School of Public Health ran a study in which they tracked more than 150 schools across the United States. Those sports which were found to be among the safest were swimming, tennis, golf, volleyball and track and field (athletics). These are all individual activities. In terms of team sports, one of the safest was found to be baseball. None of these sports is without any risk; however, all have a far lower risk of repeated head injury than contact sports such as football. <https://www.enjuris.com/blog/resources/safest-sports/>

Basketball is another team sport which while having a high risk of lower body injury, especially to ankles and knees, does not have the high risk of head injury seen in football. <https://orthopedicspecialistsofseattle.com/orthopedics-news/safe-sports-for-children-and-teens/>

A more wide-ranging United States study of sports suitable for children is the Aspen Institute's Healthy Sport Index. The Healthy Sport Index promotes itself as combining 'the best available data and expert analysis to identify the relative benefits and risks of participating in the 10 most popular high school boys' and girls' sports. The tool is a product of the Aspen Institute Sports & Society Program, developed in partnership with Hospital for Special Surgery (HSS) and with the guidance of an advisory group of medical doctors, researchers and other specialists whose experience spans a range of disciplines, sports, and athlete populations.' <https://healthysportindex.com/about/>

The Index rates sports against three criteria, physical activity, psychosocial value, and safety. When an equal emphasis is placed on all three criteria, the ranking of sports suitable for male children is cross country, swimming, track and field, soccer, tennis, basketball, wrestling, baseball, lacrosse, and football. When equal weighting is given to all criteria, the ranking for female children is swimming, cross country, tennis, volleyball, soccer, basketball, track and field, softball, lacrosse, and cheerleading. Interestingly, football is not listed for girls at all (as the game is not open to females in the United States) and football comes last for boys both when the criteria are equally weighted and when safety is preferred.

<https://healthysportindex.com/>

According to the 2016 to 2017 data on sports related hospital admissions in Australia the safest sports to play are golf, water skiing, fishing, hockey (all types), adventure and extreme sports, dancing, racquet sports, fitness and gym, swimming and diving, surfing, running, athletics and track and field, and recreational walking.

<https://www.aihw.gov.au/reports/injury/hospitalised-sports-injury-australia-2016-17/data>

Forensic pathologist, Dr Bennett Omalu, recommends non-contact sports such as swimming, track and field, volleyball, basketball, table tennis, lawn tennis and badminton. He has stated, 'There are so many of them. There is still a risk of accidental injury. You have to play safe.'

<https://www.today.com/health/concussion-doctor-warns-against-contact-sports-kids-t115938>

Dr Omalu believes that it is only a matter of time before society will cease to endorse sporting competitions which cause serious harm to children and adults. He has stated,

‘Attitudes are changing. Participation in [American] football is dropping, quite drastically, by 10 per cent in one year...

We are dealing with human life here. In the next generation or two, mankind won't be playing sports like rugby or football or ice hockey or mixed martial arts.

It just doesn't make sense to be damaging the brain of a human being. In a game like rugby, in every play there is a blow or impact to the head. The human species evolves, it's part of who we are to change. Society evolves, we move forward...

That means maybe by the time my generation passes away. The children being born today, with all that we know today now, I don't think they will embrace these violent sports the way we did.’ <https://www.smh.com.au/sport/nrl/contact-sports-will-cease-to-exist-within-a-generation-20190809-p52fpf.html>

Arguments against preventing children playing Australian Rules football

1. The link between serious health conditions and Australian Rules football has not been conclusively established

Defenders of Australian Rules football and its suitability as a game to be played by children argue that no clear connection has been established between playing football and suffering significant brain injury.

It has been noted that a number of United States studies have failed to establish a link between participating in percussive sports and showing symptoms of brain injury. A United States study of some 10,000 people found no association between participation in contact sports and later cognitive decline or increase in symptoms of depression. Adam Bohr, a researcher in integrative physiology at the University of Colorado Boulder and one of the co-authors of the study, stated, ‘We don't see this being a massive epidemic across a huge swath of the population.’ <https://fivethirtyeight.com/features/should-parents-be-afraid-to-let-their-kids-play-football/>

Another American study tracked Wisconsin high school football players from the 1950s. Those former players, surveyed decades later in their 60s, did not have different cognitive or depression outcomes compared to nonplayers. Likewise, another recent survey of 35 retired NFL players over the age of 50 did not find a link between the number of concussions a player incurred and his cognitive decline. <https://fivethirtyeight.com/features/should-parents-be-afraid-to-let-their-kids-play-football/>

Similar doubts regarding the connection between playing contact sports and suffering brain injury have also been raised. Monash University neuropsychologist, Dr Catherine Willmott, who has worked with the AFL on multiple sports concussion studies has suggested that the finding that some ALF senior players have developed CTE does not indicate that the game is necessarily injurious for young players. Dr Willmott has stated, ‘The finding of this (CTE) in Polly Farmer's brain doesn't equate to every child who plays Aussie Rules being at risk.’ Dr Willmott has further stated, ‘Many children make quick, full recoveries from a single concussion.’ <https://www.smh.com.au/national/nsw/afl-concussion-prompts-over-the-top-careful-protocols-for-young-players-20200228-p545dj.html>

It has further been noted that some of the claims made by researchers warning of the dangers of contact sport for young players have been disputed. Neuropathologist, Dr Bennett Omalu, has cited a Swedish study that he has claimed indicates that young people who play contact sport before the age of twelve have a dramatically increased incidence of several neurological conditions. The original authors of this study have disputed Dr Omalu's interpretation of their work. The Swedish research examined a population that included people who had suffered concussions in sports but also people who had survived much more severe injuries, such as

head impacts during car crashes that resulted in lengthy hospitalisations.

<https://webcache.googleusercontent.com/search?q=cache:rI68f2kCjN8J:https://www.washingtonpost.com/graphics/2020/sports/cte-bennet-omalu/+&cd=14&hl=en&ct=clnk&gl=au>

The lead researcher, Seena Fazel, professor of forensic psychiatry at the University of Oxford, has stated, ‘We’re not just talking about someone who’s had a bang on the head at a sports match. . . . We’re talking about the more severe end of the spectrum. . . . These papers don’t say, “Don’t play sports.” . . . They support good [head safety] policies in sports.’

<https://webcache.googleusercontent.com/search?q=cache:rI68f2kCjN8J:https://www.washingtonpost.com/graphics/2020/sports/cte-bennet-omalu/+&cd=14&hl=en&ct=clnk&gl=au>

Furthermore, it is very difficult to establish that playing Australian Rules football (or any other high contact sport) has led to brain injury. CTE normally does not manifest symptoms until years after players have ceased playing and determining the condition cannot be done via symptomology as there are numerous conditions that cause the same set of symptoms as does CTE. Definitive diagnosis can only be achieved through brain dissection postmortem. Even in this context there have been disputes and diagnoses have been challenged because of the retrospective design of these studies with the potential for referral and recall bias, and whether or not the pathologic findings made postmortem cause the presumed clinical signs and symptoms. In addition, it remains uncertain whether the presumed risk factors such as sports activity, cerebral concussions, and subconcussive blows are solely causative of the clinical signs and symptoms. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4631072/>

These and other diagnosis issues have been encountered by those players seeking financial compensation for injury. They need to show that the hits they absorbed as pro players directly led to their current medical problems. Jack Anderson, who teaches sports law at the University of Melbourne, has explained that players face having to respond to questions such as, ‘How much of any brain damage they suffer with was due to their career and how much is attributable to other activities or factors?’ <https://www.nytimes.com/2019/09/26/sports/afl-football-concussions.html>

Substantiating injury claims with medical records is also difficult. In Victoria, where most AFL teams play, doctors are required to keep records for only seven years after a patient turns 25. This makes it difficult for older players to document their injuries.

<https://www.nytimes.com/2019/09/26/sports/afl-football-concussions.html>

2. A ‘match program’ has been developed and the rules for junior football have been modified to reduce the risks for young players

Those who argue that Australian Rules football is a safe game to be played by children and adolescents note that the AFL has in recent times set out a ‘match program’ for children that emphasises different skills appropriate to different stages of development and has also modified the rules of the game to reduce the risks faced by young players.

In 2008, the Australian Football League in collaboration with state football bodies and the Australian Sports Commission (ASC) developed the Next Generation Australian Football Match Policy – for the conduct of the game for players aged 5-18 years. The Next Generation Australian Football Match Policy seeks to meet the needs of young players. It opens with this overall statement of belief, ‘The AFL and its state affiliates have a view that any person wishing to participate in our great game should be able to do so in a manner that is appropriate to his or her skills, needs and aspirations. . . . it is appropriate young players are introduced to the game through a sequentially modified match program that consists of modifications to the Laws of Australian Football. In other words, young players have different needs to adults.’ https://websites.sportstg.com/get_file.cgi?id=1374747

The AFL Youth Match Program consists of three stages covering ages 5 to 8 years, 9 to 10 years, and 11 to 12 years. There are distinct skill objectives for the different stages of development. There is a Junior Girls Match Program for girls aged 11 to 12.

https://websites.sportstg.com/get_file.cgi?id=1374747

The rules of the game have also been significantly altered for young players. One major change is to delay the stage at which young players can tackle each other. The new Junior Football Match Guide for players aged 5-12 years discusses the changes to the rules regarding tackling. It states, 'The physiological and emotional readiness of children's bodies to withstand the pressures of tackling...needs to be recognised in assessing when to introduce tackling. The "age of readiness" will vary from child to child, but generally is recognised as being around the 11-12 years age group.'

https://websites.sportstg.com/get_file.cgi?id=2978062

At ages 8 and below 'There is to be absolutely no contact or spoiling whatsoever, except accidental and light 'shoulder to shoulder' contact while running to and at the ball. Players cannot:

Hold an opponent with their hands

Steal the ball or knock it out of an opponent's hands

Push, bump or barge another player (incidental contact only is permitted)

Smother an opponent's kick

Shepherd (pushing, bumping or blocking an opposing player from gaining possession of the ball or reaching the contest) https://websites.sportstg.com/get_file.cgi?id=2978062

For Under 9s, players can perform a modified tackle. A player in possession of the ball may be tackled by an opponent wrapping both arms around the area below the top of the shoulders and on/above the knees. The tackle may be from either side or from behind, providing the tackle from behind does not thrust forward the player with the ball (i.e push the player in the back). https://websites.sportstg.com/get_file.cgi?id=2978062

If the player in possession of the ball is taken to the ground in the act of tackling, they will receive a free kick. If the umpire feels the player drops to the ground deliberately in order to receive a free kick, they will be penalised for holding the ball. There is strictly no bumping, slinging or deliberately bringing the opposition player in possession of the ball to the ground. https://websites.sportstg.com/get_file.cgi?id=2978062

For Under 11s and Under 12s full tackling rules as apply in the adult version of the game come into force. These are outlined in the Laws of Australian Football.

https://websites.sportstg.com/get_file.cgi?id=2978062

Regarding young players (5 to 17 years) who suffer a concussion, the same protocols and safeguards as apply to adult players are used; however, some additional elements of protection are added.

Symptom evaluation in the child often requires the addition of parent and/or teacher input.

Further, the child is not to return to football, or other sport, until he/she has successfully returned to school / learning, is symptom-free, and has received medical clearance.

http://www.aflcommunityclub.com.au/fileadmin/user_upload/Health_Fitness/2017_Community_Concussion_Guidelines.pdf

The AFL has a Member Protection Policy that focuses on the relevant legislation to ensure the safety, health and welfare of young people and volunteers who participate in and deliver junior football competitions. The law related to the welfare of junior participants emphasises the serious obligations for anybody taking responsibility for providing junior participants with activities and/or care. https://websites.sportstg.com/get_file.cgi?id=2978062

Sports Medicine Australia has stated that recent studies have indicated that the rates of injury in junior Australian football, particularly AFL Auskick, are very low. Sports Medicine Australia has also noted that among the factors that decrease a player's likelihood of being

injured in Australian Rules football is playing a modified rules version at junior level.
<https://sma.org.au/resources-advice/sport-fact-sheets/afl-fact-sheet/>

3. Protocols and regulations have been put in place to reduce the risks associated with head injuries in Australian Rules football for senior players

Defenders of Australian Rules football against charges that the safety risks it poses are too high argue that the administrators of the game have made significant changes to reduce the hazards involved.

AFL chief, Gillon McLachlan, has argued that the game had changed considerably over the last couple of decades with the League putting in place reforms to provide greater on-field protection for players, while educating clubs about the effects of concussion.

<https://www.afl.com.au/news/494423/analysis-reveals-danny-frawley-suffered-from-stage-two-cte-at-time-of-death>

In September 2020, McLachlan stated, 'We have strengthened matchday protocols for the identification and management of concussion, we continue to change the Laws of the Game to discourage high contact, and also moved earlier this season to change the Tribunal rules to more strictly sanction tackles that endanger the head.'

<https://www.afl.com.au/news/494423/analysis-reveals-danny-frawley-suffered-from-stage-two-cte-at-time-of-death>

In June 2017, the AFL released the new guideline document, 'The Management of Concussion in Australian Football'. The concussion management plan includes directions on recognising a suspected concussion, removing the player from the game and referring the player to a medical doctor for assessment. The player is not to return to the field during that game or practice session and not to return subsequently until medically judged fit to do so.

http://www.aflcommunityclub.com.au/fileadmin/user_upload/Health_Fitness/2017_Community_Concussion_Guidelines.pdf

Regarding on-ground rules of play, the AFL has consistently worked to clarify those regulations that prohibit high tackles. As of 2019, the Laws of Australian Football regard as 'prohibited contact', making 'high contact to an opposition Player (including the top of the shoulders) with any part of their body.'

<https://resources.afl.com.au/afl/document/2019/12/04/d8d5f2cf-04eb-4530-b2d5-5cc799ff625c/2019-Laws-of-Australian-Football.pdf>

The League has worked consistently to act against players who strike the heads of other players or caused them to make contact with the ground. For example, in 2017 the rules were changed so that fines were imposed for blows to the head made with insufficient force to constitute a Low Impact offence. Prior to this no penalty had been applied.

http://www.aflcommunityclub.com.au/fileadmin/user_upload/Coach_AFL/2017_Tribunal_Guidelines.pdf

In June 2020, the AFL commission passed an urgent amendment to the tribunal guidelines to make sure anyone found guilty of a dangerous tackle will face a minimum one-week suspension. AFL football operations head Steve Hocking has explained that whether a player is concussed or gets straight up again is not the measure of impact to be considered. Hocking stated, 'It is the action, we are pulling it right back to the action here [not the outcome].'

Hocking further stated that the tribunal was also notified that the AFL's intent is for the potential to cause serious injury to be accepted as a serious consideration in levying penalties on players for acts. The AFL has indicated that it wanted to send a clear message to players across all levels of football that any dangerous tackle will be met with a heavy penalty.

<https://www.theage.com.au/sport/afl/afl-overhauls-rule-on-sling-tackles-20200615-p552ts.html>

The AFL has also expressed its willingness to continue to make changes to rules and protocols to increase player safety. Referring to the diagnosis that suicide victim and former AFL player Danny Frawley had had stage 2 CTE, McLachlan has stated, 'In our discussions, Anita [Danny Frawley's wife] has been really clear that she wants the learnings from Danny's death to continue to provide a benefit to sport and we will continue to work with Anita and the family and researchers to learn as much as we can and to continue to make whatever changes are necessary to keep the people who play our game safe.'

<https://www.afl.com.au/news/494423/analysis-reveals-danny-frawley-suffered-from-stage-two-cte-at-time-of-death>

4. Sporting activity carries many health, psychological and social benefits

Those who argue that Australian youth should not be prevented from participating in Australian Rules football point to the many health, psychological and social benefits that playing sport provides.

On September 8, 2020, Better Health Victoria noted, 'Australians' physical activity levels are low. Physical inactivity can also place a burden on the health system, and lead to premature death or disability from injuries such as falls. It is estimated to cost the Australian economy around \$13 billion each year. Research suggests over a third of the total burden of disease experienced by Australians may be prevented by modifying lifestyle risk factors such as increasing your level of physical activity.

If we are active, not only are we likely to reduce body fat, but reduce our risk of obesity, type 2 diabetes, cardiovascular disease (CVD) and some cancers. Our overall mental health and wellbeing is also likely to improve.'

<https://www.betterhealth.vic.gov.au/health/HealthyLiving/sports-and-physical-activity>

Better Health Victoria also discussed some of those factors contributing to an unhealthy lifestyle, 'The sedentary nature of our lifestyle can also lead to poorer health outcomes. Many of us are sitting or lying down for long periods such as spending time in front of a computer at work or driving to work or school. Also, a lot of our downtime is spent on electronic devices scrolling through social media, bingeing on our favourite programs or playing games. A recent survey found around 90 percent of Australian children have 10 hours or more screen time each week.'

<https://www.betterhealth.vic.gov.au/health/HealthyLiving/sports-and-physical-activity>

Better Health Victoria also stressed the importance of organised sport as a means of giving children the exercise they require. Its website states, 'According to the latest participation research, over 60 percent of Australian children (5-14 years) were involved in organised activities (such as those through an organisation or at a specific venue) at least once a week. Children in this age group are more likely to be involved in sport-related and organised activities than other age groups.'

<https://www.betterhealth.vic.gov.au/health/HealthyLiving/sports-and-physical-activity>

In February 2015, LaTrobe University's Centre for Sport and Social Impact released a report which indicated the significant community and social advantages to be derived from Australian Rules football. The study found that for every dollar spent on community football generated at least a \$4.40 return in social return in terms of social connectedness, wellbeing, mental health status, employment outcomes, personal development, and physical health.

<https://www.weeklytimesnow.com.au/sport/study-confirms-social-and-health-benefits-for-community-football/news-story/17ab338612a822f4691cb3047b735532>

Community football clubs' reach was found to extend to 10 people for every one player, and the clubs were three times more useful for developing social networks than work, education or other community group networks. The research also found that those social networks helped the club provided individuals with significantly increased chances of securing

employment, particularly to 15 to 24-year-olds.

<https://www.weeklytimesnow.com.au/sport/study-confirms-social-and-health-benefits-for-community-football/news-story/17ab338612a822f4691cb3047b735532>

Playing Australian Rules football has also been shown to have particular advantages for Indigenous youth. A 2017 study conducted by the Bankwest Curtin Economics Centre (BCEC) found that playing football serves to bring people from all sectors of the community together, including Indigenous, refugee and migrant groups, in a safe space of mutual respect. BCEC Principal Research Fellow and report author Associate Professor Mike Dockery stated, 'Of significance is both the high rates of young Indigenous men participating in AFL – reaching up to 65 per cent in remote areas across Australia – and the positive impact this has on mental health...' <https://www.scimex.org/newsfeed/benefits-of-footy-go-beyond-physical-health-new-research>

Professor Dockery added, 'AFL has an important role to play in fostering mental health and positively engaging disaffected youth... We found playing football led to better school attendance for Indigenous boys in remote areas. Football clubs and carnivals are being used to deliver road safety and anti-domestic violence programs, to conduct health checks, and vehicle safety and seat-belt checks.' <https://www.scimex.org/newsfeed/benefits-of-footy-go-beyond-physical-health-new-research>

5. Most sporting activities pose some degree of risk

Defenders of Australian Rules football and its suitability as a game to be played by children argue that its relative dangers have been exaggerated. They claim that there is some degree of risk in all sports and that the extent of the hazards represented by Australian Rules have been overstated.

There is a range of evidence to indicate that many sports are as dangerous as or more dangerous than Australian Rules football. The Australian Institute of Health and Welfare has recently released data which indicates that Australians who take part in motor sports are more likely to end up in hospital than those who participate in any other sport. In 2016/17, motor sports, rugby and roller sports - like roller skating or skateboarding - had the highest rate of injuries per 100,000 participants. Rugby was the country's riskiest football code per 100,000 participants. Cycling had the highest number of injuries in absolute terms with 4919 injured in 2016/17. Cycling was the most common cause of injuries that resulted in a hospital stay for men, while for women it was equestrian sports. Soccer caused the most injuries for Australians aged under-15, rugby and Australian rules for 15- to 24-year-olds, then soccer again for 25- to 44-year-olds. One in 10 sports injuries were life threatening, with swimming and diving, cycling, equestrian sports, motor sports and recreational walking the most likely to see life-threatening injuries. <https://www.youngwitness.com.au/story/6649344/motor-sports-australias-riskiest-activity/>

The same findings were replicated in another Australian Institute of Health and Welfare survey published three years earlier. The 2013-2014 survey found wheeled motor sports, such as motorcycling and go-carting, were the riskiest with more than 3,500 hospitalisations per 100,000 participants. This was followed by roller sports, such as roller skating and skateboarding, with more than 2,000 hospitalisations per 100,000 participants. Roller sports had almost double the injury rate of Australian Rules and rugby, which had 1,319 and 1,292 hospitalisations per 100,000 participants respectively.

<https://www.abc.net.au/health/thepulse/stories/2014/11/04/4121352.htm>

Referring specifically to concussion risk, a study published in Sports Health in May-June 2018 revealed that concussion is less common in AFL than other tackling sports.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5958447/> Again, referring to the relative concussion risk, the injury profile of Australian football tends to be more contact-orientated

than soccer but more noncontact-oriented than rugby union and related sports (American football and rugby league.) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5958447/> Despite the recent media focus on head injuries, the most prevalent injuries in the AFL are hamstring strains, ACL injuries, shoulder sprains and dislocations, leg and foot stress fractures, and ankle sprains or joint injuries.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5958447/>

Referring to the most common type of injury found in lower level and junior Australian Rules competitions, the Sports Health study found that irrespective of the level of play, the lower limbs are the most commonly injured body region.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5958447/>

These same results have been replicated on a local level in some schools. Robbie Wright, a former St Kilda player who, as a physiotherapist, runs north Sydney Barker School's concussion management program, has stated that the school sees more head injuries from basketball than AFL, and more students get hurt playing rugby.

<https://www.smh.com.au/national/nsw/afl-concussion-prompts-over-the-top-careful-protocols-for-young-players-20200228-p545dj.html>

Broken bones were the most common type of injury requiring children in Australia to be hospitalised across all sports. In a longitudinal study conducted by Macquarie University, the researchers analysed data over a 10-year period on injuries suffered by children up to 16 years old. They found broken bones to be the single biggest cause of hospitalisation accounting for 41 per cent of all paediatric trauma admissions. Of 686,409 children admitted to hospital over 10 years as a result of an injury, the largest number (287,646) were hospitalised for fractures. <https://www.sbs.com.au/news/insight/broken-bones-and-hospital-visits-new-study-reveals-the-danger-of-kids-sport>

Looking at the danger posed by sports across the world, Rules of Sport.com listed the top five most dangerous sports as base jumping, swimming, cycling, running and sky diving. No form of football made the list. The ranking was achieved in terms of deaths per 100,000 of population. <https://www.rulesofsport.com/faq/what-is-the-world-s-most-dangerous-sport.html>

It has been suggested that neither children nor their parents seem to have been dissuaded from junior Australian Rules football by the publicity about the threat of head injuries. An AFL spokesperson has claimed there has been a 10 per cent increase in the number of girls (18 and under) and boys (17 and under) signing up to play AFL across greater Sydney in the twelve months from 2019 to 2020. <https://www.smh.com.au/national/nsw/afl-concussion-prompts-over-the-top-careful-protocols-for-young-players-20200228-p545dj.html>

Further implications

Over the last ten years the ALF has made substantial moves to reduce the likelihood of head injuries both to professional players and lower-level players and to those playing as juniors. These changes to tackling rules and the development of better protocols for the management of on-field concussions were initially in response to the growing awareness in the United States of the risk that head trauma poses to professional and amateur athletes.

<https://www.nytimes.com/2019/09/26/sports/afl-football-concussions.html>

The AFL faces challenges on several fronts as a consequence of mounting publicity regarding head injuries. One is the growing momentum among retired players to gain some sort of recompense for the claimed long-term effects of the head injuries they received while playing. On September 17, 2020, former AFL player Shaun Smith was awarded a \$1.4m insurance payout for 'total and permanent disablement caused by multiple concussions while playing football' <https://www.theguardian.com/sport/2020/sep/18/concussion-payout-to-former-afl-player-shaun-smith-reinforces-cte-link-with-contact-sport> and former Adelaide player Sam Shaw had launched legal action in relation to the handling of his concussion

during his career with the Crows. However, while an ex-players' class action has been mooted for several years, as of September 2020, no such proceedings had commenced. <https://www.theage.com.au/sport/afl/afl-concussion-class-action-probably-not-too-far-away-20200901-p55rbo.html>

The threat of players taking successful action against the ALF is reduced by the fact that retired players have been excluded from the national workers' compensation plan since the 1970s, after a player was paralyzed in a game. Club directors realised that they were personally liable if a player sued his team. So, the sports minister in Victoria successfully lobbied the state government to exclude professional athletes, including footballers, from receiving workers' compensation. Other states passed similar legislation. Sports executives are now free from personal liability, yet injured players still cannot file claims.

<https://www.nytimes.com/2019/09/26/sports/afl-football-concussions.html>

Despite the difficulties, players agent Jess Smith has suggested, 'There's potentially a class action going to occur in the near future, mainly for players from the 1980s and 1990s, with the issue of what concussion protocols were like then.

When you look at all that, you wonder whether or not, in the same way as the American sports did... whether a settlement or a redress type scheme...based on independent medical assessment of players would be the way to go.'

<https://www.theguardian.com/sport/2020/sep/18/concussion-payout-to-former-afl-player-shaun-smith-reinforces-cte-link-with-contact-sport>

The engine that is likely to drive a players' class action against the AFL is the further discovery of CTE among retired players whose brains have been dissected postmortem. In the space of the last twelve months CTE has been found in the brains of three prominent former AFL players, two of whom died as a result of suicide following a pre-death history of anxiety and depression, both conditions associated with CTE. An increasing number of AFL players and other athletes from contact sports are now pledging their brains to the Australian Sports Brain Bank. <https://www.abc.net.au/triplej/programs/hack/sports-brain-bank/9593798> If the evidence of CTE continues to mount it will create a case the AFL will find it difficult to resist.

The other major source of concern to the AFL regarding play-related head injuries is the impact on the parents of potential young players. If the game is seen to be unreasonably hazardous then parents will begin to discourage their children from playing. As junior and lower-level competition is the seedbed and ultimately the recruitment pool from which the AFL draws its senior players this would ultimately make the game unsustainable.

<https://www.couriermail.com.au/ipad/lion-brown-slams-afl/news-story/d0229159a4a7a19a5ad87a3de045f99e>

To this point, substantial withdrawal from the game among young players does not seem to be occurring; however, much will depend on the extent to which the Sports Brain Bank discovers further evidence of CTE among former players. It is also the case that the current heightened awareness of the potential for brain injury means that head trauma is being taken seriously at all levels and what once went unnoticed is now recorded and responded to. This is another avenue through which the true extent of the problem will become more apparent. The consequences for Australian Rules football and other contact sports remain to be seen.