Public Health Association
AUSTRALIA

Public Health Association of Australia Submission on Concussions and Repeated Head Trauma in Contact Sports

Contact for recipient:
Committee Secretary
Senate Standing Committees on
Community Affairs
A: PO Box 6100, Parliament House
Canberra ACT 2600
E: community.affairs.sen@aph.gov.au
T: (02) 6277 3515

Contact for PHAA:
Terry Slevin – Chief Executive Officer
A: 20 Napier Close, Deakin ACT 2600
E: phaa@phaa.net.au **T:** (02) 6285 2373

14 April 2023

Contents

Preamble 3

The Public Health Association of Australia 3

Vision for a healthy population 3

Mission for the Public Health Association of Australia 3

Executive Summary 4

Introduction 5

Foreword 5

PHAA Response to the Concussions and Repeated Head Trauma in Contact Sports Inquiry Terms of Reference 6

TOR (a) The guidelines and practices contact sports associations and clubs follow in cases of player concussions and repeated head trauma, including practices undermining recovery periods and potential risk disclosure..... 6

TOR (e) The role of sports associations and clubs in the debate around concussion and repeated head trauma, including in financing research. 7

TOR (i) Alternative approaches to concussions and repeated head trauma in contact sport, and awareness raising about its risks. 7

Conclusion 9

References 10

Preamble

The Public Health Association of Australia

The Public Health Association of Australia (PHAA) is recognised as the principal non-government organisation for public health in Australia working to promote the health and well-being of all Australians. It is the pre-eminent voice for the public's health in Australia.

The PHAA works to ensure that the public's health is improved through sustained and determined efforts of the Board, the National Office, the State and Territory Branches, the Special Interest Groups and members.

The efforts of the PHAA are enhanced by our vision for a healthy Australia and by engaging with like-minded stakeholders in order to build coalitions of interest that influence public opinion, the media, political parties and governments.

Health is a human right, a vital resource for everyday life, and key factor in sustainability. Health equity and inequity do not exist in isolation from the conditions that underpin people's health. The health status of all people is impacted by the social, cultural, political, environmental and economic determinants of health. Specific focus on these determinants is necessary to reduce the unfair and unjust effects of conditions of living that cause poor health and disease. These determinants underpin the strategic direction of the Association.

All members of the Association are committed to better health outcomes based on these principles.

Vision for a healthy population

A healthy region, a healthy nation, healthy people: living in an equitable society underpinned by a well-functioning ecosystem and a healthy environment, improving and promoting health for all.

The reduction of social and health inequities should be an over-arching goal of national policy and recognised as a key measure of our progress as a society. All public health activities and related government policy should be directed towards reducing social and health inequity nationally and, where possible, internationally.

Mission for the Public Health Association of Australia

As the leading national peak body for public health representation and advocacy, to drive better health outcomes through increased knowledge, better access and equity, evidence informed policy and effective population-based practice in public health.

Executive Summary

Concussions can occur to anyone participating in contact and non-contact sports. Concussions can cause short term effects including headaches, nausea, vomiting, slurred speech, dizziness, temporary loss of memory, and inability to focus. (1) Most people recover within two weeks, but typically recovery occurs within hours or days. (1) Some symptoms may last for months, and some side effects of the concussion may appear years later. (1) A person should never return to sport while they have or are suspected of having a concussion. (1)

Concussions cause increased demand on hospitals (particularly emergency departments) and GPs, time away from work and school, potential loss of income, inability to complete daily activities and drive. (2) If you have a repeated head trauma, your signs and symptoms can be more severe and longer lasting. (2)

With many Australian adults and children participating in sports every week (3), it is vital to ensure the best preventative interventions are in place to ensure less people get hurt.

Our recommendations are the following:

- **Recommendation:** *The definition of sports related concussion must be consistent with the international standard and clear to a layman*.
- **Recommendation:** *Sports related concussion guidelines must be standardised and i) created by a diverse but independent expert body prioritising health, ii) updated yearly, iii) separate for children and adults, iv) address repeated head trauma protocol, v) mandatory for all relevant sports and all levels of competition, and vi) ensure every coach and other team administrators receive re-training on guidelines after the update.*
- **Recommendation:** *More research into primary prevention interventions is required to reduce the occurrence of concussion. We propose sporting organisations fund this research at an arm's length.*
- **Recommendation:** *More research into management guidelines, return to play and management decisions for players with repeated head trauma.*
- **Recommendation:** *More research is needed to demonstrate different impacts of rule changes.*
- **Recommendation:** *Rules should be altered now despite the research deficit. If it is believed the rule could help reduce incidence of sports related concussions, we support the precautionary approach.*
- **Recommendation:** *Yearly mandatory training about concussion prevention, detection, and management for all coaches, players, referees, parents, and executives with regular discussions on safety throughout the season.*

Please do not hesitate to contact me should you require additional information or have any queries in relation to this submission.

Introduction

PHAA welcomes the opportunity to provide input to the Senate Standing Community Affairs Committee for an inquiry into concussions and repeated head trauma in contact sports.

"What is prevention?
In the context of health, prevention includes taking measures to keep people healthy and well and to avoid the onset of illness, disease or injury"- *National Preventative Health Strategy* 2021 (4)

We start with the definition of prevention as provided by the NPHS (a bi-partisan supported strategy), because the TORs for this inquiry are entirely focused on "secondary prevention" methods, i.e., detection and management of concussions and repeated head trauma. (4) Of course secondary prevention is important. However, if we aim to "avoid the onset of … injury" then we need to be decreasing the risk of concussion occurring in the first place, i.e. primary prevention. (4) This means fewer people getting hurt.

PHAA acknowledges the vast social, physical and mental benefits of playing, participating in and watching sport. We also acknowledge that participating in any sport can also increase a person's risk of injury. This risk-benefit balance is most tested in sports where there's a chance of the sportsperson's head receiving a biomechanical hit (think rugby). To ensure this balance continues to benefit, we need sound rules and rule implementation, education, clear post-concussion guidelines and preventative practices bult into training from a young age.

Our submission will be addressing the TORs from the primary prevention perspective. Preventing injury keeps people independent, healthy, and reduces demand on hospital systems, general practitioners and other medical services. In 2015-2016, injuries were responsible for the third most health spending of all the burden of disease groups, accounting for an estimated $8.9 billion. (5) Injuries are all preventable.

Australia needs to do better at preventing injury. This is why we affirm that the committee should adopt a safety-first perspective of reducing incidence of concussion, rather than focussing entirely on the management of concussion.

Foreword

Contact versus non-contact sport

The inquiry is investigating concussion and repeated head trauma in *contact sports*. However, definitions of contact sport are ambiguous and typically reference sports with tackling. To limit the occurrence of concussion and head trauma to contact sport is to ignore the many other non-contact sports which also have risk of concussion.

The American Association for Neurological Surgeons compiled a list of ten sports which caused head injury that year. The following non-contact games were listed: baseball/softball, basketball, soccer, horseback riding, golf and skating. (6) Noting that amongst Australia's top played sports are golf, basketball, soccer and also netball, cricket and tennis (consider the velocity of cricket, tennis and netballs); (7); this inquiry should open its scope to all sports which carry the risk of concussion. As concussions frequently occur in both contact and non-contact sports (6), it is incorrect to exclude non-contact sports from this inquiry.

In our submission, PHAA will be including any sport where there is clear potential for concussion into the definition of contact sport.

Sport at all levels

We appreciate that the inquiry has made clear that the TORs refer to "contact sports at all levels, for all genders and age groups". We believe it is important to stress that concussion and repeated head trauma may occur at any level of competition and in many sports.

Of Australians aged 15 and over, 41% play sport at least once a week. (3) With 62% of young adults aged 15-19, 43% of children aged 0-14 and 31% of Aboriginal and Torres Strait Islanders aged 18 and over, all participating in sport at least once a week. (3) The majority of these statistics represent everyday Australians playing in club, local or school sports. Concussion doesn't just occur at an elite level; it can occur at any level of sport.

PHAA Response to the Concussions and Repeated Head Trauma in Contact Sports Inquiry Terms of Reference

TOR (a) The guidelines and practices contact sports associations and clubs follow in cases of player concussions and repeated head trauma, including practices undermining recovery periods and potential risk disclosure.

Before addressing primary prevention recommendations, it is important to first ensure that there is a clear definition of concussion and evidence-based guidelines available for sports clubs and associations to follow.

Clearly defining sports related concussion

According to the 2016 consensus statement on concussion in sport created at the 5th international conference on concussion in sport, a sport related concussion (SRC) is, "a traumatic brain injury induced by biomechanical forces." (8) This definition is repeated in the Concussion in Sport Australia Position Statement released by the Australian Institute of Sport (AIS). (9)

However, the AIS Statement also says shortly afterwards that, "it is yet unclear whether concussion involves mild structural changes, which would position it within the traumatic brain injury spectrum." (9) This definition is confusing to readers, whereby in one sentence, AIS is identifying SRC as a traumatic brain injury, and in the next, they are querying whether SRC is on the traumatic brain injury spectrum.

Recommendation: *The definition of sports related concussion must be consistent with the international standard and clear to a layman*.

Evidence-based mandatory guidelines

The evidence-base on how to manage SRC is evolving and more independent research is required to ensure a player's safe recovery and return to sport.

We note key differences between sporting codes which seem inconsistent. For instance, until weeks ago, National Rugby League's and Netball Australia's guidelines (last update 2019 and 2018 respectively) cleared players for re-commencement of full contact play after 7-8 days, whereas Australian Football League and Rugby Union won't clear players before day 12 post injury. (10–12) National Rugby League has only just changed their rules to align with the 12-day protocol. Cricket Australia provides no timeline for sitting out post-concussion. (13) The guidelines also state that players who are suspected of a SRC, but are cleared,

can return to play that same day. (13) This varies greatly to other sports where once suspected, the player cannot return. (12,13)

For children, the guidelines recommend longer sitting out periods post-concussion. However, there was some divergence between what the minimum time should be and the age cut off for adults and children. Also, management of concussions for people who have experienced repeated head trauma was absent, despite the more severe impact concussion has on these players.

The management of these injuries should not vary so widely. We urge that there be standard SRC guidelines which are mandatory for all sports at all levels to follow. These guidelines should be formed primarily by experts in the health field, including head trauma doctors, public health advisors, pediatricians, researchers, and neurologists. It is important that the expert body be independent of any sporting code affiliation to avoid conflict of interest. Sports association doctors should be consulted, but only to gain perspectives of on-field experience, not to weaken the guidelines. We believe this will ensure that the guidelines are up-to-date, consistent, and clear.

The guidelines must be mandatory for all levels of sport, updated regularly and implemented with education campaigns.

Recommendation: *Sports related concussion guidelines must be standardised and i) created by a diverse and independent expert body prioritising health, ii) updated yearly, iii) separate for children and adults, iv) address repeated head trauma protocol, v) mandatory for all relevant sports and all levels of competition, and vi) ensure every team, coach and other team administrators receive re-training on guidelines after the update.*

TOR (e) The role of sports associations and clubs in the debate around concussion and repeated head trauma, including in financing research.

SRC is a difficult injury to study and research into how to prevent concussions is lacking, despite high sports participation rates.

Further research into the effectiveness of primary prevention methods such as education, body positioning, rule changes, and muscle training is much needed. Also, more research is required to understand repeated head trauma and how guidelines need to be applied to players who have experienced multiple SRC.

We believe that the sporting clubs, codes, and associations have a responsibility to support the financing of this research. This is because they make profits in circumstances where athletes may incur concussion.

However, the research must be conducted at arm's length from industry and the researchers must be independent from the sporting associations, clubs and codes. Researchers need to be able to provide unbiased findings regarding how to effectively minimise the risk of concussion during play.

Recommendation: *More research into primary prevention interventions is required to reduce the occurrence of concussion. We propose sporting organisations fund this research at an arm's length.*

Recommendation: *More research into management guidelines, return to play and management decisions for players with repeated head trauma.*

TOR (i) Alternative approaches to concussions and repeated head trauma in contact sport, and awareness raising about its risks.

PHAA disagrees with the notion that a primary prevention measure, like raising awareness, is an "alternative approach to concussion". Minimising the risk of concussion should be the first approach.

As stated, there are serious deficits in the research regarding SRC prevention. However, we believe instead of waiting for more people to be hurt, precautions should be taken and preventative interventions should be implemented and evaluated.

Early intervention with potential prevention measures is safer than not attempting the interventions at all.

Rules Change

Rules are a key tool in the primary prevention of concussion and repeated head injuries, "the rules of play are the foundation of safe conduct in sports because they set expectations for behaviour and define infractions". (14)

Implementing safer rules has shown to decrease the incidence of concussions. (15,16) These rules depend on the sport, however tend to involve banning or limiting the use of certain drills or techniques, forbidding dangerous tackles and rucks, and making other specific alterations. (15,16) Restricting the number of collision practices in youth contact sports has also been implemented to reduce the frequency of head impacts in games and practice. (16)

Without enforcing adherence to the rule changes, concussion risk is not mitigated. (14) If referees are too lenient, players may take advantage and become aggressive during play. (14) Officials must be frequently re-trained about rule changes and the seriousness of head injuries. (14) Another way to ensure implementation might be to review video playbacks of games and assess whether officials are enforcing safety rules. (14) Officials who fail to enforce rules that affect player safety should be disciplined. Greater penalties for dangerous play should also apply to players and their coaches.

Recommendation: *More research is needed to demonstrate different impacts of rule changes.*

Recommendation: *Rules should be altered now despite the research deficit. If it is believed the rule could help reduce incidence of sports related concussions, we support the precautionary approach.*

Education

It is everyone's responsibility to prevent concussions: coaches, players, referees, parents, executives. By promoting awareness of concussion, the game will be less aggressive; leading to a fairer, safer play. (17)

With the yearly update of concussion guidelines, sporting associations and clubs must ensure mandatory concussion prevention, detection and management re-training for all relevant staff and players. (16) This training should feature the current concussion prevention techniques, research and rule changes.

Outside of official education, teams need regular discussions on how to play safely to encourage a culture of ensuring that everyone can walk off the field/court/pitch/rink unharmed. (14) Behaviour which demonstrates a safety-first culture from all levels of a team, in all levels of competition, is the most likely way to reduce the risk of concussion after rule change. (14)

Recommendation: *Yearly mandatory training about concussion prevention, detection, and management for all coaches, players, referees, parents, and executives, with regular discussions on safety throughout the season.*

Equipment and body positioning

Helmets and headgear are not SRC proof. (18,19) They can significantly decrease the risk of other nonfatal and fatal head injuries, but are not the solution for preventing concussions. (18,19) Wearing helmets and headgear can also give players a false sense of security, which can embolden them to hit harder than usual. (14,16)

Education about equipment limitations and how to safely make contact with another player is required to avoid a false sense of security and to ultimately protect players.

Another prevention option is practicing safe tackle training. This involves teaching players safer ways to tackle, like avoiding head-to-head collision, spear tackling, elbow to head and ensuring your own head is positioned upwards. (14,16) This does already occur to an extent, however should be promoted and encouraged at every level of sports.

Prevention is multifaceted. It will take a combination of measures to truly reduce the risk of SRC and repeated head trauma from occurring.

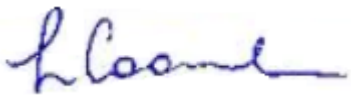
Conclusion

PHAA supports the inquiry into concussions and repeated head trauma in contact sports. However, we are keen to ensure more attention is provided to primary prevention measures to reduce the number of sport related concussions. We are particularly keen that the following points are highlighted:

- **Recommendation:** *The definition of sports related concussion must be consistent with the international standard and clear to a layman*.
- **Recommendation:** *Sports related concussion guidelines must be standardised and i) created by a diverse but independent expert body prioritising health, ii) updated yearly, iii) separate for children and adults, iv) address repeated head trauma protocol, v) mandatory for all relevant sports and all levels of competition, and vi) ensure every coach and other team administrators receive re-training on guidelines after the update.*
- **Recommendation:** *More research into primary prevention interventions is required to reduce the occurrence of concussion. We propose sporting organisations fund this research at an arm's length.*
- **Recommendation:** *More research into management guidelines, return to play and management decisions for players with repeated head trauma.*
- **Recommendation:** *More research is needed to demonstrate different impacts of rule changes.*
- **Recommendation:** *Rules should be altered now despite the research deficit. If it is believed the rule could help reduce incidence of sports related concussions, we support the precautionary approach.*
- **Recommendation:** *Yearly mandatory training about concussion prevention, detection, and management for all coaches, players, referees, parents, and executives with regular discussions on safety throughout the season.*

The PHAA appreciates the opportunity to make this submission and the opportunity to advocate for safer sports.

Please do not hesitate to contact me should you require additional information or have any queries in relation to this submission.



Terry Slevin
Chief Executive Officer

Leanne Coombe
Policy & Advocacy Manager

Public Health Association of Australia

14/04/2023

References

1. Pearce A. The potentially long-lasting effects of concussion [Internet]. Royal Australian College of General Practitioners News. 2019 [cited 2023 Apr 5]. Available from: https://www1.racgp.org.au/newsgp/clinical/the-long-lasting-effects-of-concussion
2. Health Direct. Concussion [Internet]. Health Direct. 2022 [cited 2023 Apr 5]. Available from: https://www.healthdirect.gov.au/concussion
3. Clearinghouse for Sport. Participation in Sport: Quick Facts [Internet]. Australian Government. 2022 [cited 2023 Mar 31]. Available from: https://www.clearinghouseforsport.gov.au/participation-in-sport
4. Department of Health. National Preventive Health Strategy [Internet]. Canberra; 2021 [cited 2023 Apr 4]. Available from: https://www.health.gov.au/sites/default/files/documents/2021/12/national-preventive-health-strategy-2021-2030_1.pdf
5. Australian Institute for Health and Welfare. Injury expenditure in Australia 2015–16 [Internet]. Australian Government. 2020 [cited 2023 Apr 4]. Available from: https://www.aihw.gov.au/reports/health-welfare-expenditure/injury-expenditure-in-australia-2015-16/contents/summary
6. Agarwal N, Thakkar R, Than K. Sports-related Head Injury [Internet]. American Association of Neurological Surgeons. 2023 [cited 2023 Apr 4]. Available from: https://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Sports-related-Head-Injury
7. Statista. Number of people participating in sports in Australia financial year 2022, by type [Internet]. 2022 [cited 2023 Mar 31]. Available from: https://www.statista.com/statistics/879755/australia-sports-participants-by-type/
8. McCrory P, Meeuwisse W, Dvorak J, Aubry M, Bailes J, Broglio S, et al. Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016. Br J Sports Med [Internet]. 2017 Apr 26 [cited 2023 Mar 31]; bjsports-2017-097699. Available from: http://dx.doi.org/10.1136/bjsports-2017-097699
9. Elkington L, Manzanero S, Hughes D. CONCUSSION IN SPORT AUSTRALIA POSITION STATEMENT [Internet]. Australian Institute of Sport, Australian Medical Association, Australasian College of Sport and Exercise Physicians and Sports Medicine Australia. 2019 [cited 2023 Mar 31]. Available from: https://www.sportaus.gov.au/__data/assets/pdf_file/0005/683501/February_2019_-_Concussion_Position_Statement_AC.pdf
10. Australian Football League. THE MANAGEMENT OF SPORT-RELATED CONCUSSION IN AUSTRALIAN FOOTBALL [Internet]. Australian Football League. 2021 [cited 2023 Apr 5]. Available from: https://www.play.afl/globalassets/assets/clubhelp/pdf-excel-doc/management-of-sport-related-concussion-in-australian-football-25-april-2021-final-1.pdf
11. Australian Rugby League Commission. Guidelines for the Management of Concussion in Rugby League [Internet]. National Rugby League Participation Policies. 2019 [cited 2023 Apr 5]. Available from: https://www.playrugbyleague.com/media/2604/the-management-of-concussion-in-rugby-league-final.pdf

12. Rugby Australia. CONCUSSION PROCEDURE (RUGBY PUBLIC – STANDARD CARE PATHWAY) [Internet]. Rugby Australia. [cited 2023 Apr 5]. Available from: https://d26phqdbpt0w91.cloudfront.net/NonVideo/1ec5a184-03eb-4dc2-83d7-1b44e698cb6f.pdf

13. Cricket AUSTRALIA CHIEF MEDICAL OFFICER. CONCUSSION AND HEAD TRAUMA POLICY [Internet]. Cricket Australia. 2020 [cited 2023 Apr 5]. Available from: https://www.cricketaustralia.com.au/cricket/-/media/CC16CAFEAAB944A98E209E2B58086515.ashx

14. Graham R, Rivara FP, Ford MA, Spicer CM. Sports-Related Concussions in Youth [Internet]. Graham R, Spicer CM, Ford MA, Rivara FP, editors. Washington, D.C.: National Academies Press; 2014 [cited 2023 Apr 3]. Available from: https://pubmed.ncbi.nlm.nih.gov/24199265/

15. Benson BW, McIntosh AS, Maddocks D, Herring SA, Raftery M, Dvořák J. What are the most effective risk-reduction strategies in sport concussion? Br J Sports Med [Internet]. 2013 Apr 11 [cited 2023 Apr 6];47(5):321–6. Available from: http://dx.doi.org/10.1136/bjsports-2013-092216

16. Physiopedia contributors. Concussion Prevention Strategies [Internet]. Physiopedia. 2021 [cited 2023 Apr 4]. Available from: https://www.physio-pedia.com/Concussion_Prevention_Strategies#:~:text=Primary%20Prevention,-Primary%20prevention%20strategies&text=Recent%20literature%20into%20strategies%20for,hockey%2C%20soccer%2C%20and%20rugby.

17. Australia Wide First Aid. Preventing Concussions in Sports [Internet]. Australia Wide First Aid. 2022 [cited 2023 Apr 4]. Available from: https://www.australiawidefirstaid.com.au/resources/preventing-concussions-in-sports

18. Centre for Disease Control and Prevention. Helmet Safety [Internet]. CDC. 20AD [cited 2023 Apr 3]. Available from: https://www.cdc.gov/headsup/helmets/index.html

19. Lee LK, Flaherty MR, Blanchard AM, Agarwal M. Helmet Use in Preventing Head Injuries in Bicycling, Snow Sports, and Other Recreational Activities and Sports. Pediatrics [Internet]. 2022 Sep 1 [cited 2023 Apr 4];150(3). Available from: https://doi.org/10.1542/peds.2022-058877