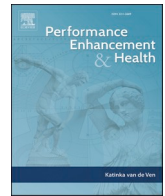




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View Point

## Preventing sport-acquired brain damage in children: ‘If in doubt, sit them out’ on its own is not good enough

Jack Hardwicke<sup>a,\*</sup> , Christopher R. Matthews<sup>a</sup>, Keith Parry<sup>b</sup>, Melanie Lang<sup>c</sup>, Daniel Walker<sup>d</sup>, Matthew Shaw<sup>e</sup>, Joe Piggin<sup>f</sup>, Rachael Bullingham<sup>g</sup>, Howard T. Hurst<sup>h</sup>, Eric Anderson<sup>i</sup><sup>a</sup> Department of Sport Science, School of Science and Technology, Nottingham Trent University, UK<sup>b</sup> Department in Sport and Event Management, Bournemouth University Centre, UK<sup>c</sup> Institute for Social Responsibility (ISR), Edge Hill University, Ormskirk, UK<sup>d</sup> University of Bradford, West Yorkshire, UK<sup>e</sup> Department of Sport, Food, and Natural Sciences, Western Norway University of Applied Sciences, Norway<sup>f</sup> School of Sport, Exercise and Health Sciences, Loughborough University, London, UK<sup>g</sup> School of Sport and Exercise Science, University of Worcester, Worcester, UK<sup>h</sup> School for Sport and Wellbeing, University of Central Lancashire, Preston, UK<sup>i</sup> University of Winchester, UK

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Concerns for the health problems related to sport-acquired brain damage have grown in recent decades (Malcolm, 2019). Much of this has been associated with impact-sports, defined here as those wherein rapid acceleration or de-acceleration of the brain occurs within the rules of play, thus making brain damage an anticipated consequence of participation. Such damage and subsequent injuries occur most obviously in combat sports, where participants are struck in the head, but also occurs in absence of the head being struck directly, such as during tackling in rugby or being ‘checked’ in ice-hockey.

Brain damage in impact-sports, specifically, has garnered considerable attention amongst medical experts, academics, journalists, activists, athletes and the public, as well as there being ongoing civil litigation against sporting organisations for alleged malpractice (Kilgallon, 2024). While there are various brain health issues associated with impact-sport participation, two that dominate popular discourse are: 1) Traumatic brain injuries (TBI), and 2) Chronic Traumatic Encephalopathy (CTE), a neurodegenerative disease associated with repetitive head impacts.

Within this broad context, there have been limited policy responses from governments and sporting governing bodies in relation to *primary*

*prevention* of sport-acquired brain damage and injuries. That is, actions that aim to prevent injury, illness and harm before it occurs. For impact-sports, this approach would mean eliminating exposure by removing aspects known to be the cause of TBI, such as the tackle in rugby Hancock et al. (2024). A preventative approach would be the most effective method of reducing TBIs specifically (Cross et al., 2019), and brain damage generally, in impact-sports.

Yet, this approach would threaten what are perceived to be integral parts of these sports and are the source of enjoyment for many (spectators and participants). Primary prevention would also undermine corporate interests through disrupting the professional codes of impact-sports (Piggin et al., 2023). Likely in part because of these points, combined with the often-unquestioned cultural belief that all sport is always straightforwardly ‘healthy’ (Waddington, 2000), many of the organisational actions toward dealing with brain damage have been oriented around secondary and tertiary health care. This approach accepts some level of brain damage as inevitable and therefore actions have mostly focused on: 1) identifying and managing TBIs after they occur, and 2) increasing education on the risks associated with such injuries.

\* Corresponding author at: Department of Sport Science, School of Science and Technology, Nottingham Trent University.

E-mail address: [Jack.hardwicke@ntu.ac.uk](mailto:Jack.hardwicke@ntu.ac.uk) (J. Hardwicke).

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## 1. The limits of 'If in doubt, sit them out'

This over-focus on secondary and tertiary prevention is clearly demonstrated in the significant uptake and support across various sporting peoples and organisations for the message of 'If in doubt, sit them out'. Indeed, it has been adopted at governmental level, being the strapline for the [UK Government Concussion Guidelines for Grassroots Sports \(2023\)](#) and the [Australian Government Sport Commission Concussion and Brain Health Position Statement \(2024\)](#). This phrase and associated guidance have simplicity and important utility. After all, if a sportsperson has a suspected TBI in any athletic setting, impact-sport or otherwise, they should absolutely be sat out for the duration of that competition or training session. The guidance also appropriately stresses that pitch-side assessment for TBI should not be used at grassroots levels, with any suspicion of TBI resulting in immediate removal from participation.

We are thus broadly supportive of this cautious approach and the calls for educating all involved in sport on recognising signs of TBI, removing anyone (adult or child) with suspected TBI and following 'safe' and progressive return-to-activity protocols.

But when considering children's participation (anyone under the age of 18) in impact-sports, where brain damage and injury occur as anticipated consequences, *this approach on its own is not good enough*. We make this case based on the following points.

1. *If in doubt, sit them out* does nothing to *prevent* children from receiving brain injuries in the first place. And preventing unnecessary brain injury ought to be where our efforts are focused; prevention of harm is a key tenet of child safeguarding after all. This point is made salient given that: 1) there are many alternative versions of these sports available that do not structure body/head collisions into the rules of 'play', and 2) impact versions of these sports offer no unique benefits to health compared to non-impact versions (for an example in rugby, see [Griffin et al., 2021](#)).
2. *If in doubt, sit them out* distracts from concerns around the accumulation of routinised 'non-concussive' injuries in impact-sports and their association with CTE ([Nowinski et al., 2022](#)). Non-concussive impacts to the brain do not usually give rise to readily observable signs and symptoms of TBI and thus fall outside the scope of the 'If in doubt' messaging and guidance. This may mislead participants, coaches, parents and teachers into believing that education around the recognition and removal of children with observable TBI is the responsible mitigation technique, instead of trying to prevent all such avoidable brain damage in the first instance. This is a potential unintended consequence of what we understand to be a well-intentioned approach to public health education. We also acknowledge that some researchers, mostly those with ties to the sports industry (e.g. [Fortington et al., 2024](#)), dispute associations between impact-sport participation and CTE. Regardless of these ongoing debates, our argument stands even if just TBIs are considered.
3. *If in doubt, sit them out* provides performance and profit focused sport organisations a talking point that is touted as ongoing efforts to protect participants (including children). It provides a clear but potentially and actually symbolic example that active steps are being made to address the problem, deflecting criticism and avoiding critical reflections on the appropriateness of children's participation in actions associated with brain damage in the first place. This is to say, the guidance has advertent or inadvertent utility in promoting only tertiary health care, which draws focus away from prevention. When this happens, it serves to naturalise brain damage as an inevitable and accepted consequence of children's participation in sport.

## 2. Protecting children

We do not call for the complete removal of this strapline from sport –

it has important utility for consenting adults participating in impact-sports and for when *accidents* occur in children's non-impact sports (like tripping over whilst playing basketball). A second impact after a TBI can be fatal, and that is the tragic genesis of the slogan. Therefore, we support its ongoing place in secondary and tertiary health care in the specific contexts just outlined.

But when it comes to safeguarding and protecting children, which is a public health policy issue, sport *must* be held to the same cultural standards as other societal domains ([Lang, 2022](#)). That is, there is a moral necessity to reduce known harms associated with childhood injuries, with the [World Health Organisation \(2014\)](#) outlining *prevention* as being the most effective strategy. Indeed, even [England Rugby \(2025\)](#) on their 'Player Welfare' webpage (at the time of writing) assures us of their understanding of this by stating that "we know that prevention is better than cure".

Legal precedence for protecting children from preventable injury and harm is also found in Article 19 of the United Nations Convention on the Rights of the Child, while Article 24 in the same urges preventative actions to promote the highest standard of children's health through "abolishing traditional practices prejudicial to the health of children" (1989). Compulsory contact rugby being part of the British physical education curriculum would be one clear example of a traditional practice that is prejudicial to the health of children and should be abolished under the scope of child's rights ([Anderson et al., 2023](#); [White et al., 2022](#)).

Let us not forget that when a child receives brain damage through participation in impact-sport this is most often an anticipated and predictable consequence of the structure of the sport – it is not, then, an 'accident'. Any resultant harm is therefore avoidable *and* preventable. By not advocating and actioning primary preventative strategies, governments and sporting organisations are misaligned with both public health approaches to child safeguarding and internationally recognised children's rights conventions. This is a sad, but all too true, indictment.

## 3. What should be done?

It's relatively easy to understand that the most effective way to prevent brain damage in impact-sports is to remove the elements that require bodies to collide and brains to rattle as routine practice. No 'headgear', education programmes, 'smart' gumshields measuring impact forces, neuromuscular warmups, teaching of 'proper technique' and such like *prevent* brain damage in the first instance.

It then stands to reason that any person, organisation or government who wishes to prevent unnecessary brain damage in children ought to be mandating non-impact versions of such sports. This is the most effective, obvious and actionable strategy. And little effort in terms of imagination or strategizing is required as such alternatives already exist. Contact rugby and American football have tag/touch/flag versions. Body checks can be removed from youth ice hockey. Youth boxing can continue without punches to the head. Some people in positions of authority in association football are now working in this direction.

For example, the English Football Association (FA) trialled the removal of all deliberate heading in football matches across the, somewhat arbitrarily chosen, under-12 s level for the 2022/2023 season ([Walker, 2023](#)). Subsequently, they are implementing a 'phasing out' of deliberate heading beginning with U7-U9 in the 2024/25 season, which will increase to U10 in 2025/26 and U11 in 2026/27. The US Soccer Federation and the Scottish FA have taken similar actions, introducing heading restrictions in U10s and U11s in 2015 and 2020, respectively, and have since increased this to U12s. The Scottish FA also restrict heading sessions to once a week for U16s and U17s ([Scottish Football Association, 2025](#)). *Genuinely preventative strategies are both possible and happening (slowly but surely)*.

In sum, we are calling for far more critical considerations around sport-acquired brain damage in children. The 'If in doubt, sit them out' messaging and associated guidance has been excellent in raising

awareness on the dangers of brain injuries along with a revaluing of health over performance in sporting settings. Much is owed to the parents of Ben Robinson for this (Bull, 2021). Now we must push further and advocate for approaches grounded in primary prevention, public health logics and *prioritising children's wellbeing* over sporting traditions and performance-oriented concerns. Based on our time working in this area, that much seems obvious to us.

To be clear, brain damage, and the known unnecessary suffering associated with it, should not be a routine and expected feature of children's lives, and to our knowledge, it is only in some sporting contexts that it is. This can and must be prevented. And those who research, organise and manage impact-sports that do not follow such a course of action will soon enough find themselves on the wrong side of history.

#### CRediT authorship contribution statement

**Jack Hardwicke:** Writing – review & editing, Writing – original draft, Conceptualization. **Christopher R. Matthews:** Writing – original draft. **Keith Parry:** Writing – original draft. **Melanie Lang:** Writing – original draft. **Daniel Walker:** Writing – original draft. **Matthew Shaw:** Writing – original draft. **Joe Pigg:** Writing – original draft. **Rachael Bullingham:** Writing – original draft. **Howard T. Hurst:** Writing – original draft. **Eric Anderson:** Writing – original draft.

#### Declaration of competing interest

KP is affiliated with the Concussion Legacy Foundation UK. All other authors report no conflicting interests.

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