Routledge
Taylor & Francis Group

Journal of the Philosophy of Sport

ISSN: 0094-8705 (Print) 1543-2939 (Online) Journal homepage: www.tandfonline.com/journals/rjps20

A core–periphery framework to evaluate dangerous actions in sport

Emily Ryall & Alistair Brown

To cite this article: Emily Ryall & Alistair Brown (29 Apr 2026): A core–periphery framework to evaluate dangerous actions in sport, Journal of the Philosophy of Sport, DOI: 10.1080/00948705.2026.2652331

To link to this article: https://doi.org/10.1080/00948705.2026.2652331

Published online: 29 Apr 2026.

JOURNAL OF THE PHILOSOPHY OF SPORT
https://doi.org/10.1080/00948705.2026.2652331

Routledge
Taylor & Francis Group

A core–periphery framework to evaluate dangerous actions in sport

Emily Ryall and Alistair Brown

School of Education, Health and Sciences, University of Gloucestershire, Gloucester, UK

ABSTRACT

This paper introduces a novel framework for evaluating dangerous actions in sport by integrating Pike's Essentialist theory with a core–periphery model of action centrality. Recognising that some actions are more fundamental to a sport's identity than others, the framework distinguishes between core and peripheral actions and assesses their associated risks of harm. Through visual mapping and RAG (Red/Amber/Green) rating, the model enables sport governing bodies to make ethically defensible decisions about rule modifications, such as lowering tackle height in rugby or restricting heading in youth football. The framework is applied to the case of cliff-diving to demonstrate how peripheral yet high-risk actions can be mitigated or eliminated without compromising the sport's integrity. By offering a structured, normative tool for balancing sports tradition with athlete welfare, this approach contributes to transparent, evidence-based policy in sport ethics and governance.

KEYWORDS Risk assessment; essential actions; rule modification in sport; sports ethics

Introduction

This paper was prompted by attempting to understand the relationship between the actions in any given sport and the risk of harm associated with those actions. Such analysis is vital considering high-profile litigation cases in NFL and rugby union, increased media scrutiny on sports organisations and a greater focus on ensuring health and wellbeing in wider culture. The effects of these have intensified calls for transparent frameworks to justify which risks should be permitted in sport, and to what extent they can and should be mitigated (Genovard et al. 2025).

The relationship between those aspects of a sport that are considered essential, despite the risks of harm and injury they present, can be illustrated by a passage by Jon Pike in his defence of rugby union:

CONTACT Emily Ryall eryall@glos.ac.uk School of Education, Health and Sciences, University of Gloucestershire, Gloucester, UK

> Suppose we understand rugby in terms of its essential actions, first amongst these being tackling. In normal life, the practice of running at someone, grabbing them around the torso, and pushing them to the ground is a kind of assault. If I did that on the High Street, I would be arrested, because this action is likely to cause harm to the person who I run at, grapple with, and force to the ground (hereafter 'tackle'). The practice of rugby makes this different: tackling actions are constitutive of rugby (in most of its forms) and are *essential* to it. (2020, 160)

What is implicit in this passage is that although rugby tackling is inherently dangerous and would typically be condemned outside of sport, it is morally accepted within rugby because it constitutes an essential part of the game. If we value and wish to preserve the sport of rugby, we must therefore accept the risks associated with the act of tackling.

The aim of this article is to articulate a novel framework for evaluating dangerous actions in sport by expanding and substantiating Pike's Essentialist theory of sport with a core–periphery model of action centrality.

An Essentialist theory of sport

What defines a sport has a long history of debate in the sport philosophy literature (see Klein 2017). Whilst the relationship between sport in general, and a specific sport (e.g. football, badminton, free-diving) is complex and multi-faceted, the starting point for understanding any given sport can be found by looking in the rulebook drafted by that sport's governing body. At the very least, the rules (or laws) of the sport will indicate the aim and means of achieving the aim: the sport's constitutive rules. Although there may be other rules involved in playing a sport (such as regulative, auxiliary, informal, or ethical (see Loland 2002; Torres 2000), as the Formalist position notes, it is the constitutive rules that are core to any definition of a sport.

The constitutive, formal rules of the sport set out the means, *viz*. actions, that define that sport. As such, they determine what makes any given sport, sport *X*, rather than sport *Y*. This is necessary if we are to ascertain what amendments can, and should, be made to that sport without changing the sport to such an extent that is no longer considered sport *X*.

This is a question that Pike (2018) starts to consider in his analysis of the 2016 case of Van den Driessche, who was banned for using a concealed electric motor in a cycling race. For Pike, the key concern was not, as the governing body argued, that it was a form of 'mechanical doping'. Rather, Pike asserts that Van den Driessche's actions were logically incompatible with the essential action of cycling. In essence, she was no longer carrying out the actions – cycling unaided – that the sport mandated. This mirrors an argument made by Edwards (2008) in which he argues that athletes using prosthetic limbs should not be eligible for able-bodied running events because

they are not demonstrating the essential action of running but, instead, are engaged in a different action (prosthetic movement). Such arguments reflect those presented by the Formalist account of sport which adheres to the logical-incompatibility thesis, i.e. to break the rules of a sport means you are no longer playing that sport.

For Pike, the Formalist account of sport is insufficient. Not because, as other critiques have pointed out, the constitutive rules do not take account of tacit rules or the ethos when defining sport (D'Agostino 1981). Rather, Pike asserts that the rules only arise from our desire to want to test our physical capabilities: 'It is the skills that generate the rules, not the other way around' (2018, 328). This leads Pike to propose his theory of Local Essentialism. Pike, however, does not provide a deep account of his theory other than to argue that humans are disposed to certain actions and invent sports to test how well they can do them. The actions he mentions are broad and non-exhaustive but include:

> kicking, running, throwing, catching, punching, pedalling, swimming, hitting, jumping, sliding, pushing, pulling, holding, and so on. (Pike 2018, 328)

Sports, according to Pike, are the outcomes of these tests, either individually as demonstrated in athletics, or in combination, as in football, rugby, hockey, etc. However, while Pike begins to outline an Essentialist theory of sport, he goes no further than setting out an outline thesis.

A core–periphery framework for mapping essential actions in sport

As Pike initiated, mapping a sport's essential actions seems like a reasonable place to start prior to evaluating the risk of harm associated with that sport. On this account, the essential action in football (or soccer) is a ball kicking action; the essential action in tennis is a ball hitting action; the essential action in climbing is a body transversing action; the essential action in motor racing is a vehicle driving action, and so on. It ought to be noted that there may be some simplification in this description, in that a vehicle driving action is a combination of other actions, such as pressing a pedal with the feet and moving a steering wheel with the hands. Nevertheless, if someone was to say that the essential action in football was a vehicle driving action, we would say that they have got the wrong sport. That is not to say that the only action football requires is ball kicking. As Pike acknowledges, sports are generally much more complex than requiring a single action. Football requires other actions, such as running, tackling and heading.

It is perhaps the last action that is noted in the football example that is relevant to this paper, since heading a football risks brain injury to such an extent this action has been prohibited in some forms of the game (FA 2024).

This then raises the question of whether heading *is* an essential action in football or if it can be eliminated without affecting the nature of the sport itself. Similarly, scrummaging in rugby has been a source of concern about the likelihood of injury and, while Pike suggests tackling is an essential action in rugby and is therefore morally permitted, it is not clear whether this is also the case for scrummaging. Although heading in football and scrummaging in rugby union are common across all instances of those sports, these actions are clearly not as central as the actions of running, kicking, throwing and tackling. This leads us to a seemingly aporetic statement that some essential actions are less essential than other essential actions.

Recognising that some actions are less essential than others in a sport finds parallels in Hemmingsen's (2024) suggestion that sport, in its general sense, can be defined by considering what is core to it, and what is peripheral to it. Hemmingsen's model attempts to bridge the gap between an analytical approach to definition favoured by Suits (1995) and Wittgenstein's (2001) 'family resemblance' conception. In his proposal, Hemmingsen suggests that sports can be mapped by recourse to focal attributes, e.g. physical skill, competitiveness and constitutive rules. There are some sports that will then be found in the core of the model, and some sports that will be found at the periphery. That is not to say that those sports at the periphery are not sport, but rather they are not what we consider to be archetypal sport. Hemmingsen argues that a core–periphery model

> has the best of both worlds: like the essentialist, it can point to the specific features that demarcate sport from non-sport, while adopting the family resemblance view's move away from necessary and sufficient criteria. (2024, 107)

Hemmingsen's use of the core–periphery model is applied to sport in general, but here we attempt to use it to map essential actions in particular sports to indicate which actions are core to that sport, and which are peripheral. An example of this mapping is shown in Figure 1:

Such a model can visually illustrate which actions are more or less core to that sport. At the centre are the actions that are primarily associated with that sport, so for football, the action is kicking, for boxing – punching, for motor racing – driving, and so on. However, for all these sports, there are other actions that are still considered essential but less so. Football also requires running and tackling. One might be able to imagine a game of football taking place where players remain static and only kick the ball between one another and occasionally into the goal, but in practice, as the sport is a contest between teams attempting to limit each other's opportunities to kick the ball, it also requires a lot of running and tackling. So, we may say that these two actions are core but less central than the action of kicking. There are also actions that are seen as essential to the sport, such as heading, but occur less frequently and as such are seen as peripheral to the game. These would also

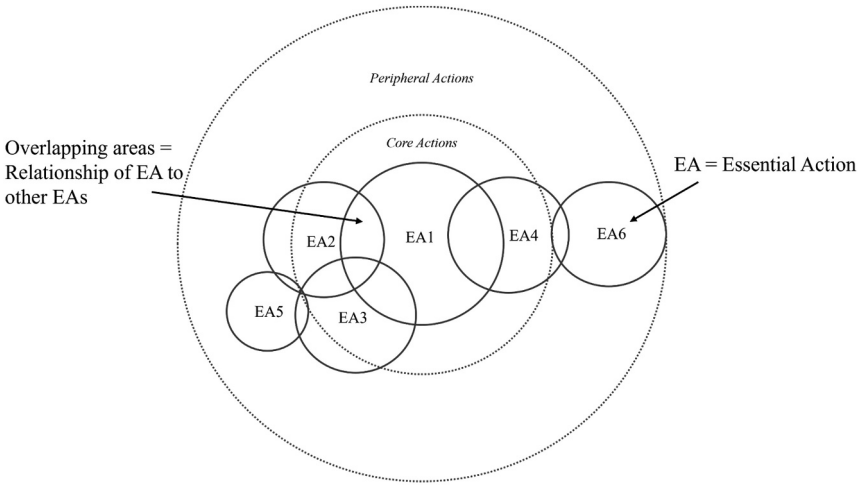

Figure 1. Core–periphery model of essential actions in sport.

include actions that are regulative or restorative if constitutive rules have been infringed, such as a throw-in to restart the game if the ball has gone over the sidelines (Torres 2000). While it is unlikely that anyone would argue throwing is a central action required in football, there are some players and teams that have developed the throw-in to such an extent that it has become a core part of their strategy. As such, we might start to map the essential actions of football as follows (Figure 2):

While an essentialist position identifies the constitutive actions that define a sport, a core–periphery framework adds nuance by recognising that these actions vary in centrality. Essentialism provides the baseline, what makes a sport that sport, whereas the core–periphery model maps degrees of essentiality, distinguishing between actions that are core (e.g. kicking in football) and those that are peripheral yet still part of the game (e.g. heading or throw-ins). Rather than being contradictory, the two approaches are complementary: essentialism secures the identity of a sport, while a core–periphery model enables the evaluation of actions without undermining that identity.

Evaluating dangerous actions in sport

As anyone who has taken part in sport is well aware, the likelihood of suffering injury is high, although thankfully most injuries are minor. Recognising that sport cannot be made completely safe opens the door to justifying certain dangerous actions in a sport, hence Pike's statement at the start of this article which defends the sport of rugby and its essential action of

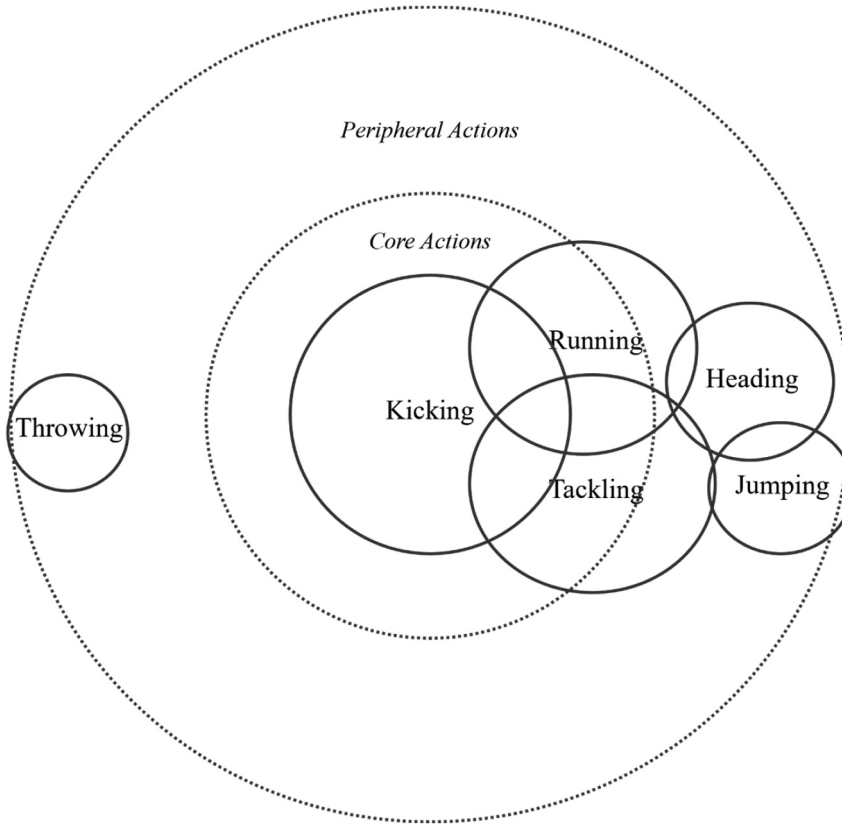

Figure 2. A core–periphery model of essential actions in football.

tackling. The action of tackling is inevitably dangerous since it involves a high-energy collision of two or more people. Tackling is normally an unacceptable way of interacting with others, yet in rugby it is essential because it tests a player's ability to stop or resist an opponent's forward progress. The consequences of a tackle may be injury, but as Pike notes:

> Its participants do not have a right to absolute safety on the field of play, because such a right is incompatible with the existence of the game. (2020, 161)

Despite this, it is nevertheless expected that the risks associated with certain actions are mitigated to reduce unnecessary danger. The degree to which we accept a risk of harm can be illustrated in the following diagram (Figure 3):

This axis of risk of harm starts to set out how to assess the moral acceptability of essential actions. If an action is judged to be one where the likelihood of suffering a severe injury is high (EA3), an assessment needs to be made as to whether these risks can be reduced without affecting the integrity of the sport itself. The ideal case (based on the principle of non-maleficence) would be to

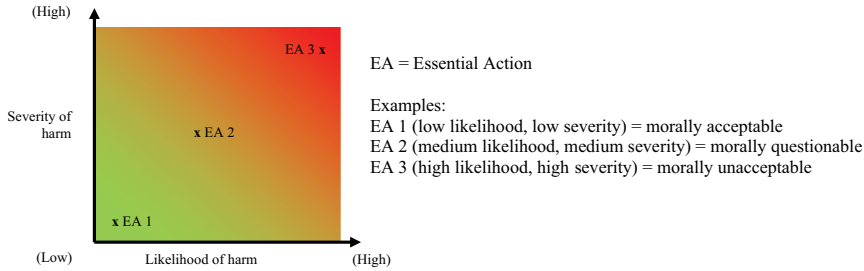

Figure 3. The axis of moral acceptability of risk of harm (Brown and Ryall forthcoming).

reduce the risks of harm to point EA1 where the likelihood and severity of harm is low. The line between EA1 and EA3 where the risk of harm changes from morally acceptable to morally unacceptable is likely to be contingent on culture, wider social norms and individual risk appetite (an argument we have set out in more detail in Brown and Ryall forthcoming) but it seems reasonable to suggest that if an essential action can be made less dangerous without affecting the fundamental nature of that sport, it ought to be.

This can be illustrated by the recent law change concerning tackling in rugby. Early laws of the game did not proscribe tackles above a specific height and were only created in the 1970s when a law was first introduced to restrict the tackle to below the shoulders of the opposing player (Trueman, n.d.). The tackle height area was reduced further in recent years with several national rugby governing bodies introducing restrictions to tackles to below the waist or sternum following World Rugby recommendations (World Rugby 2023). While tackling still poses risks of harm, there have been attempts to mitigate these risks and reduce those risks to a conventionally acceptable level.

The danger associated with some actions can be mitigated by modifying the nature of that action itself, as through the tackle height law changes, or via other means. Some sports require a prior assessment of competency, such as ski-jumping, cliff-diving or motor racing, on the basis that individuals need to demonstrate their proficiency in carrying out an action before they can perform it in a competition setting. The standardisation of coaching practices through qualification is also a mechanism to ensure that those who wish to engage in a sport are given the tools and awareness of risks to be able to participate as safely as possible (Ryall and Olivier 2011, 2026). Similarly, some sports are categorised according to sex, weight and/or age (boxing as an obvious example), not only to ensure fair and attractive competition, but also to reduce the risks of harm. Where the risk of harm to certain populations can be demonstrated, further mitigation can be implemented. For example, the action of heading a football is banned for children in various jurisdictions (such as England and the United States) following substantive medical evidence regarding children's greater susceptibility to concussion (O'Kane 2016).

Other forms of risk mitigation can be achieved through the development and implementation of new technology and safety equipment. For example, when fencing became a codified sport in the seventeenth century, the risks of suffering a severe wound, or worse, needed to be mitigated. The target for foil fencing became restricted to the area between neck and waist where a degree of protection could be worn. Yet this reduced the opportunity to test the full range of actions in fencing, and when the wire mask was invented in the late eighteenth century, the rules were once again changed to allow a 'real' fight that included targeting the head but with each party well protected from harm (Fare 2025). As the sport of fencing illustrates, there may be an ideal version of the sport that tests the fullest range of actions, but if some peripheral actions are judged too dangerous even with available mitigation, they may need to be eliminated until technological advances enable them to be restored.

A core–periphery framework for evaluating dangerous actions in sport

If we accept that certain actions are more or less essential in any given sport, and that those actions can be judged as more or less dangerous, we can bring together the core–periphery framework and the axis of risk of harm as follows (Figure 4):

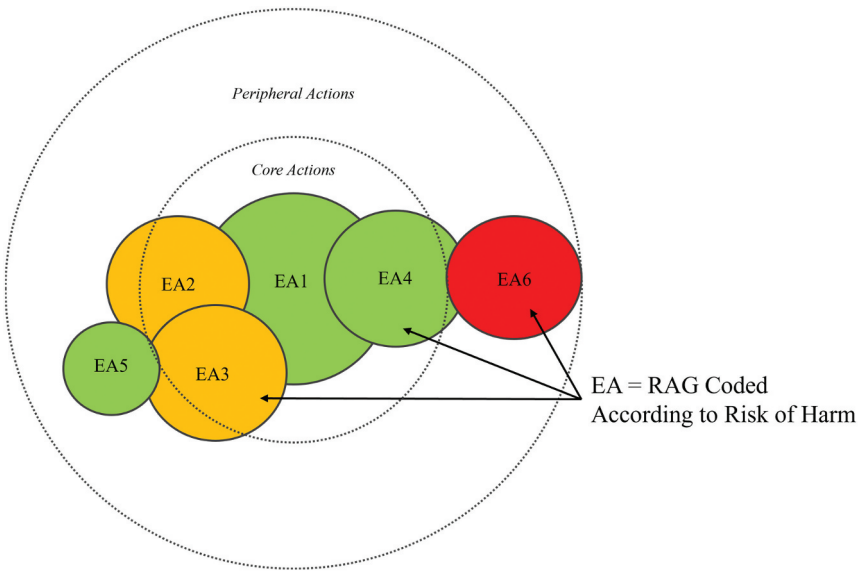

Figure 4. RAG rating of EAs in sport.

This RAG rated core–periphery framework provides a visual account of dangerous actions in sport and indicates where, and to what extent, mitigation of harm can be carried out. In the example set out in Figure 4, the primary concern is the harm associated with EA6. This is a peripheral action within the sport and a judgement can be made as to whether that action should be eliminated from the sport entirely, or whether other mitigation measures are required.

To highlight this model in practice, we draw upon the example of cliff-diving, a sport generally considered to be dangerous with a high risk of harm that comprises of few actions. The EAs in cliff-diving can be set out as follows: propelling the body away from the cliff; controlling the body in freefall; and controlling the body on water entry. The core action that is relevant to the sport is the ability to control the body in freefall (EA1) (as this is the action that scores points), and to a lesser extent, the ability to control the body on entry to the water (EA2). Being able to propel the body away from the cliff (EA3) is a necessary action in the sport although it is purely a means to enable EA1. In RAG rating these actions, an inability to control the body in freefall is only dangerous if it leads to uncontrolled spinning and blackouts, as experienced by Felix Blaumgartner on his freefall attempt from space (Pattarini et al. 2013) and, as such, this is unlikely to occur at the height jumped by cliff-divers. In cliff-diving, 'controlling the body in freefall' can therefore be rated as green/amber, as an action that on its own has a low likelihood of harm. In contrast, it is 'propelling the body away from cliff' which can result in severe injury and even death through uncontrolled entry into the water (Pandey et al. 2022; Yılmaz et al. 2021), so this is rated as red. 'Controlling the body on water entry' is also red rated as it is a cause of severe injury when carried out poorly (Ernstbrunner et al. 2017). This leads to the visual illustration of risk associated with the sport of cliff-diving shown in Figure 5.

When establishing how to reduce the levels of risk in cliff-diving, it can be noted that the main risks are associated with the peripheral actions of jumping off the cliff (EA3) and entering the water (EA2), so it is those actions that need to be mitigated. The action of jumping off a cliff is arguably so peripheral to the sport that it can be eliminated entirely, although it is the mechanism which enables the action of diving. Officially sanctioned events in cliff-diving recognise that the act of jumping off a cliff is not necessary to the sport itself and, as such, mandate the use of specifically designed platforms with safety features, from which to dive. This mitigation has the effect of reframing EA3 as the ability to jump from a platform rather than propel one's body away from a cliff and is much less dangerous. For the risks of harm connected to EA2, sports governing bodies now specify a maximum height of 27 m for men, and 21 m for women, based on the risks associated with the impact of uncontrolled entry into water when travelling at a speed of 96 km/60mph. There are also mitigations regulating minimum water depth, quality

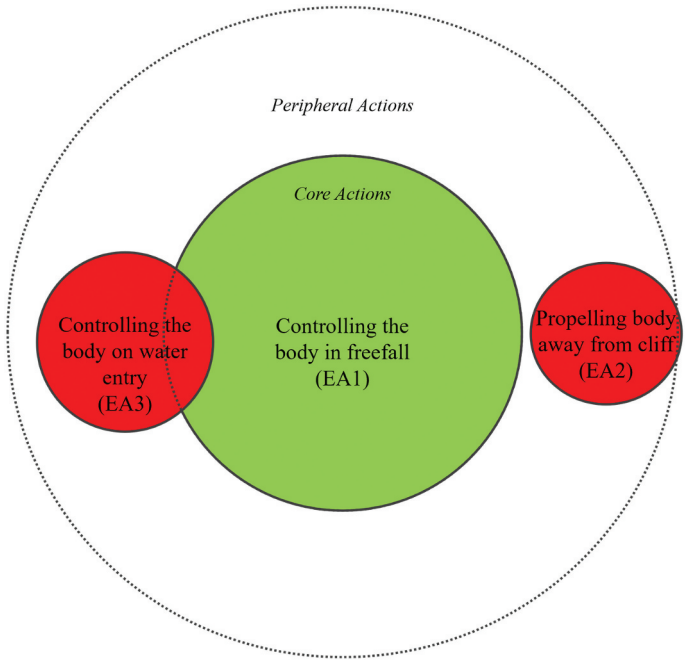

Figure 5. RAG rating of the EAs in cliff-diving.

and temperature, and the requirement to have safety and medical crews at specific locations near the entry point (Debenham 2025; World Aquatics 2025).

All of these mitigations and their associated rule changes have the effect of altering the RAG rating of the essential actions and the mapping of official competitions in the model, as illustrated in Figure 6.

Implications and value of the core–periphery risk assessment framework

The core–periphery framework provides a clear and structured approach to evaluating dangerous actions in sport. For sport governing bodies, the framework provides a defensible basis for rule changes. Rather than responding reactively to injuries or public pressure, organisations can justify decisions, such as lowering tackle height in rugby or banning heading in football, through a transparent process grounded in essentiality and risk. This enhances the legitimacy of decision-making and fosters trust among athletes, coaches and spectators.

The framework can also benefit coaches and practitioners by identifying which skills are central to performance but carry disproportionate and

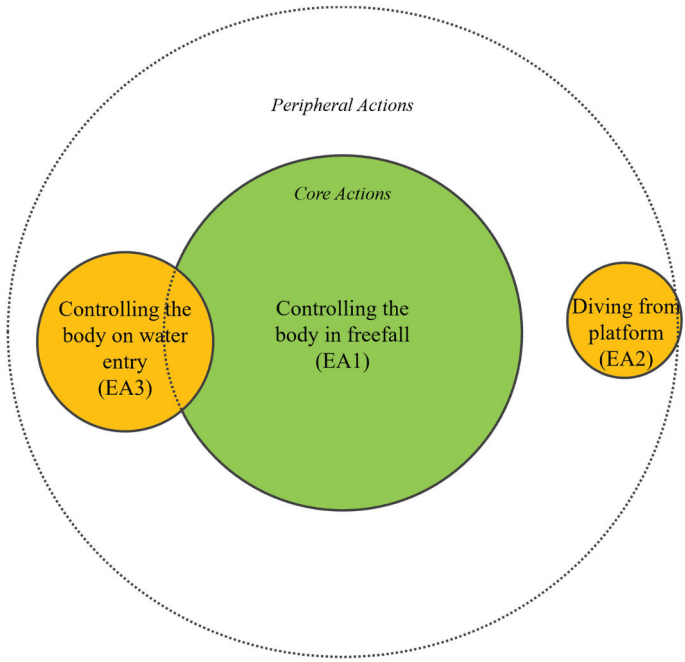

Figure 6. RAG rating of mitigated EAs in cliff-diving.

unacceptable risk. This enables coaches to adapt the development of certain skills and training protocols, ensuring that risk mitigation does not compromise competitive integrity, as can be seen in coaching practices that limit the practice hours on tackling or scrummaging in rugby (World Rugby 2021) or heading in football (Evans et al. 2022). Similarly, medical professionals and legal experts can use the model to assess duty of care and liability, particularly in contexts where litigation or safeguarding concerns arise.

Beyond governance and practice, the framework has broader ethical and societal implications. It addresses the growing expectation that sports organisations balance the preservation of tradition with the moral obligation to reduce unnecessary harm. By offering a visual and conceptual tool for evaluating risk, the framework promotes transparency and consistency in decision-making, countering perceptions of arbitrariness in policy changes.

Limitations

While the core–periphery framework of dangerous actions in sport provides a clear, visual depiction of where the risks of harm in a sport lie, there are limitations and contradictions that need further consideration. The first of these is how to determine which actions are core and which are peripheral to

any given sport. Torres (2000) initially distinguished between constitutive skill (the ability to pass a football – a core action) and restorative skill (the ability to throw a football from the sideline – a peripheral action) arguing that constitutive skills are more central, and therefore valuable, than restorative skills. Yet, take an action such as scrummaging in rugby union. This is a restorative skill; it only occurs as a means to restart the game after a rule infraction. It would therefore, under the framework, be considered a peripheral action to the sport of rugby. Yet there are many (prop forwards) who perceive scrummaging as a central action to their participation. They would be incensed at any suggestion that as a high-risk peripheral action, scrummaging could be eliminated from the game. And they have a point, as although scrummaging is a restorative (peripheral) action, without it, the sport of rugby union would become more akin to the sport of rugby league: two similar but distinct forms of the game. As Stenros and Montola (2024, 52) ask: 'Who gets to decide what is central and peripheral – and, by extension, what is meaningful in games?' A means of overcoming this limitation is to apply a conventionalist approach advocated by Morgan (2020) which accepts that it is for the community themselves to determine which actions are more or less meaningful, and thus more or less essential (Brown and Ryall forthcoming).

A further criticism of this framework is concerned with the categorisation of actions within a sport. Pike's description of EAs involved broad actions, such as kicking, hitting and punching, and yet a plausible argument could be made that these actions could be deconstructed further. For example, punching in boxing could comprise of a jab, cross, hook or upper cut. These specific actions may contain their own degrees of danger and therefore could be categorised as distinct actions in the framework. Again, a response to this criticism is that it is up to the governing body and wider sport community to determine how, and which, actions are delineated.

There is also a tension between the competition requirements in certain sports, particularly the 'extreme' aesthetic sports. If judgements are being made about a competitor's ability to carry out a specific skill compared with the performance of others in their class, then there is a continual pressure on increasing the level of difficulty in these skills. For example, the elite level of competition in sports such as, 'big air' snowboarding, Red Bull mountain rampage, vert skateboarding and others, demonstrates a significantly higher (and more dangerous) level of difficulty today than in previous years. The essential actions required in snowboarding, mountain biking or skateboarding do not take into account the self-directed levels of difficulty participants attempt in order to set themselves apart from the competition.

A final criticism of the framework can be levelled at the different risks as applied to different populations. As noted, the risks associated with heading footballs are greater for children than they are for adults, and there may be other risks that differ across sexes, ages or those that

fulfil other criteria (such as pregnancy, menopause or immunodeficiencies). Similarly, the framework does not distinguish between immediate risks (concussion) and deferred risks (such as CTE). Adaptations and caveats to the use of the framework may be required for these elements.

Conclusion

This paper has set out a novel framework by which to evaluate dangerous actions in sport. Its primary contribution lies in clarifying the relationship between a sport's essential actions and the risks associated with them. This distinction can then aid decisions on whether an action can be modified or eliminated without undermining the sport's integrity. Finally, the framework indicates future avenues of research and decision-making. Scholars can employ it to analyse the interplay among essentiality, risk and moral permissibility across different sports, while governing bodies can use it to integrate new technologies or safety equipment responsibly. In doing so, the framework contributes to a culture of evidence-based policy and ethical accountability in sport–.

In summary, the core–periphery framework is not merely descriptive but normative: it provides a practical and principled method for safeguarding athlete welfare while preserving the defining features of any given sport. Its adoption could lead to more coherent, transparent and ethically defensible approaches to managing risk of harm in sporting contexts.

Acknowledgements

The authors would like to thank those who provided feedback and helpful suggestions on an earlier draft of this paper, presented at IAPS2025, in particular, John Russell, Alan Oldman and Irena Martinková.

Author contributions

CRediT: **Emily Ryall:** Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing; **Alistair Brown:** Conceptualization, Writing – original draft, Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Emily Ryall http://orcid.org/0000-0002-6050-4353

References

Brown, Alistair and Emily Ryall. Forthcoming. "A Conventionalist Approach to Evaluating Risk of Harm in Sport." In *The Oxford Handbook of the Ethics of Sport*, edited by Sebastian J. Holmen, Thomas S. Petersen, and Jesper Ryberg Oxford Handbooks.

D'Agostino, Fred. 1981. "The Ethos of Games." *Journal of the Philosophy of Sport* 8 (1): 7–18. https://doi.org/10.1080/00948705.1981.9714372.

Debenham, Lucy. 2025. "How Elite Cliff Diving Balances Risk and Reward." Red Bull. Updated on August 08, 2025. https://www.redbull.com/gb-en/how-elite-cliff-diving-balances-risk-with-reward.

Edwards, Steven D. 2008. "Should Oscar Pistorius Be Excluded From the 2008 Olympic Games?" *Sport, Ethics & Philosophy* 2 (2): 112–125. https://doi.org/10.1080/17511320802221802.

Ernstbrunner, Lukas, Armin Runer, Paul Siegert, Matthäus Ernstbrunner, Johannes Becker, Thomas Freude, Herbert Resch, and Philipp Moroder. 2017. "A Prospective Analysis of Injury Rates, Patterns and Causes in Cliff and Splash Diving." *Injury* 48 (10): 2125–2131. https://doi.org/10.1016/j.injury.2017.08.007.

Evans, Joseph, Adam Crossley, Richard Collinge, Daniel Broman, Osman Hassan Ahmed, and Richard Weiler. 2022. "How Many Headers Are Too Many? Evolving Our Understanding of Heading in English Professional Football." *British Journal of Sports Medicine* 56 (21): 1207–1208. https://doi.org/10.1136/bjsports-2022-105770.

FA. 2024. "New Rule Introduced to Phase Out Heading in Youth Football Over Next Three Seasons." Accessed September 23, 2025. https://www.thefa.com/news/2024/may/17/new-heading-rules-for-grassroots-football-youth-matches .

Fare, Malcolm. 2025. "Brief History of Fencing." British Fencing. Accessed November 4, 2025. https://www.britishfencing.com/brief-history-of-fencing/.

Genovard, Francesc, Joshua Muñoz, Josep Petchamé, and Francesc Solanellas. 2025. "Risk Management Approaches in Sports Organisations: A Scoping Review." *Heliyon* 11 (3). https://www.cell.com/heliyon/fulltext/S2405-8440(25)00650-4.

Hemmingsen, Michael. 2024. "Mapping the Terrain of Sport: A Core–Periphery Model." *Journal of the Philosophy of Sport* 51 (1): 102–124. https://doi.org/10.1080/00948705.2024.2317876.

Klein, Shawn E., ed. 2017. *Defining Sport: Conceptions and Borderlines*. Lexington Books.

Loland, Sigmund. 2002. *Fair Play in Sport: A Moral Norm System*. Routledge.

Morgan, William J. 2020. *Sport and Moral Conflict*. Temple University Press.

O'Kane, John W. 2016. "Is Heading in Youth Soccer Dangerous Play?" *The Physician and Sports Medicine* 44 (2): 190–194. https://doi.org/10.1080/00913847.2016.1149423.

Pandey, Anupam, Jisoo Yuk, Brian Chang, Frank E. Fish, and Sunghwan Jung. 2022. "Slamming Dynamics of Diving and Its Implications for Diving-Related Injuries." *Science Advances* 8 (30): eabo5888. https://doi.org/10.1126/sciadv.abo5888.

Pattarini, James M., Rebecca S. Blue, Luke T. Aikins, J. Law, A. D. Walshe, A. Garbino, M. W. Turney, and J. B. Clark. 2013. "Flat Spin and Negative G_z in High-Altitude Free Fall: Pathophysiology, Prevention, and Treatment." *Aviation, Space, and Environmental Medicine* 84 (9): 961–970. https://doi.org/10.3357/asem.3648.2013.

Pike, Jon. 2018. "Doping, 'Mechanical Doping,' and Local Essentialism in the Individuation of Sports." In *Ethics in Sport*, edited by J. William. Morgan. Human Kinetics. https://doi.org/10.5040/9781492595465.ch-022.

Pike, Jon. 2020. "Safety, Fairness, and Inclusion: Transgender Athletes and the Essence of Rugby." *Journal of the Philosophy of Sport* 48 (2): 155–168. https://doi.org/10.1080/00948705.2020.1863814.

Ryall, Emily, and Olivier Steve. 2011. "Ethical Issues in Coaching Dangerous Sports." In *The Ethics of Sports Coaching*, edited by Alun R. Hardman and Carwyn R. Jones. Routledge.

Ryall, Emily, and Olivier Steve. 2026. "Ethical Issues in Coaching Dangerous Sports." In *The Ethics of Sports Coaching*, edited by Alun R. Hardman, Carwyn R. Jones, and Pam Sailors, 2nd ed. Routledge.

Stenros, Jaakko, and Markus Montola. 2024. *The Rule Book : The Building Blocks of Games*. The MIT Press.

Suits, Bernard. 1995. "The Elements of Sport." In *Philosophic Inquiry in Sport*, edited by William J. Morgan and Klaus V. Meier. Human Kinetics.

Torres, Cesar R. 2000. "What Counts as Part of a Game? A Look at Skills." *Journal of the Philosophy of Sport* 27 (1): 81–92. https://doi.org/10.1080/00948705.2000.9714591.

Trueman, Nigel. n.d. "History of the Laws." Accessed October 9, 2025. https://www.rugbyfootballhistory.com/laws.htm .

Wittgenstein, Ludwig 2001. *Philosophical Investigations*. Translated by Elizabeth Anscombe. Blackwell.

World Aquatics. 2025. "Competition Regulations June 2025." Accessed October 9, 2025. https://resources.fina.org/fina/document/2025/07/01/ed3110a4-2291-411d-8526-6f641bd9237a/Competition-Regulations_June-2025_Clean-updated-01.07.2025-.pdf.

World Rugby. 2021. "Players, Unions and Competitions Support New Guidelines for Rugby Contact Training Load." Accessed November 11, 2025. https://www.world.rugby/news/664156/players-unions-and-clubs-support-new-guidelines-for-rugby-contact-training-load.

World Rugby. 2023. "World Rugby Confirms Lower Tackle Height Law Trials for Community Rugby." Effective May 11. https://www.world.rugby/news/808734/world-rugby-confirms-lower-tackle height-law-trials-for-community-rugby.

Yılmaz, Murat, Ersin Ikizoglu, Mert Arslan, Erkin Ozgiray, Kadri Emre Calıskan, and Resat Serhat Erbayraktar. 2021. "An Overview of Spinal Injuries Due to Dive or Fall into Shallow Water: Our Long-Term, Double-Center Experience from the Aegean Coast." *Emergency Medicine International*. https://doi.org/10.1155/2021/9937730.