Rugby's implementation lessons: the importance of a 'compliance wedge' to support successful implementation for injury prevention

Martin Raftery (),¹ Éanna Cian Falvey ()^{1,2}

World Rugby (the world governing body for rugby) has been committed to evidence-based risk management of concussion since introducing an off-field assessment in 2012. That year, the Concussion in Sports consensus meeting recommended the SCAT3 as a standardised assessment for concussion in sport. The SCAT3 and SCAT5 are the basis for the World Rugby Head Injury Assessment (HIA) protocol.¹

World Rugby faced two significant obstacles when aiming to implement a concussion risk management plan: (1) the global nature of the game—rugby is played in over 120 countries, and (2) rugby is a limitedinterchange sport (players unable to return to play), rather than free-interchange sport (unlike many other team sports). As a limited-interchange sport, rugby needed to change the game's laws (rules) to allow temporary substitution for head injury.

THE WORLD RUGBY RESEARCH UNIT

The World Rugby Research Unit (WRRU) comprises sports medicine doctors with significant on-field experience working with a team of sports scientists, academic researchers and rugby administrators. This tripartite approach is supported by Hanson *et al*² who proposed using three complementary expert groups, termed as content experts (researchers), process experts (clinicians) and context experts (members of sporting bodies) to close the gaps between injury prevention research and safety promotion practice.²

The WRRU has a primary goal to improve player welfare and safety in rugby. It has recognised that the critical driver of change in managing injuries and in particular head injuries within the sport should be based on 'evidence, not emotion'. Figure 1^{3–9}

Correspondence to Dr Éanna Cian Falvey, World Rugby Limited, 8 World Rugby House, 10 Pembroke St Lower, Dublin 2, Ireland; Eanna.Falvey@worldrugby.org outlines the research framework that has driven changes in the process of concussion diagnosis, management, and more recently, prevention within rugby. An important measure of our concussion management interventions is the reduction in the number of concussed players returning to play following a head injury. Prior to our research-driven programme beginning in 2012, 57% of rugby union players who had a concussion returned to play,¹⁰ compared with 11% in our latest study covering the 2015–2018 period.⁷

Eight years of concussion management experience has taught us that while a multidisciplinary implementation approach engages stakeholders, a compliance strategy (often a more onerous undertaking) is needed to change behaviour more effectively. We have progressively learnt that a successful compliance strategy requires 'visible' actions or 'reinforcement from authorities' within the sport. We termed these interventions, 'compliance wedges', and our experience is that their use has substantially contributed to improved implementation across our global sport.

WHAT IS A COMPLIANCE WEDGE'?

The compliance wedge is a subtle tool used to reinforce a behaviour change early in the implementation process. All or specific stakeholders may be targeted by compliance wedges. Since commencing this project, we have used the following compliance wedges to achieve improved outcomes:

- Catchcry 1—'player welfare is number 1 priority'—this was successfully negotiated as a World Rugby business priority and was used to influence administrators to support a law change to introduce temporary substitution for head injury.
- Catchcry 2—answer with evidence, not emotion—presented to the World Rugby Executive Committee as the priority philosophy for managing player welfare issues. The evidence supporting the reliability of the HIA process reinforced this off-field assessment during a period of intense media scrutiny.

World Rugby's decision to retain central control of competition access to the HIA process has provided a significant opportunity to implement compliance wedges with practitioners, coaches, competitions and administrators. The ability to allow or withdraw access to the HIA process has meant World Rugby could enforce such measure as:

► The introduction of Player Welfare Standards, now a legal requirement for competitions. This means World

BASem

1



RUGBY RESEARCH-DRIVEN CONCUSSION MANAGEMENT

Figure 1 World Rugby Research Unit (WRRU) concussion diagnosis, management and prevention research. Published studies are referenced, †—indicates data available at https://playerwelfare.worldrugby.org/?documentid=module&module=24. HTSF, High Tackle Sanction Framework; SCAT, Sport Concussion Assessment Tool.

¹Medical Department, World Rugby Limited, Dublin, Ireland

²Department of Medicine, University College Cork, Cork, Ireland

Rugby sets medical, education and compliance standards for all participating medical practitioners and teams through this agreement.

Introduction of the CSx App—an online HIA tool that reinforced procedural compliance, facilitated uniform assessment of head injuries in rugby, underpinned research and improved data collection consistency.

COMPLIANCE WEDGE APPLICATION

At the Rugby World Cup in Japan in 2019, we introduced a concussion prevention strategy called the High Tackle Sanction Framework (HTSF) aimed at lowering the tackle height to reduce concussion risk.⁹ This strategy focused on referee sanction interpretation and enforcement to lower the tackle height. Despite not using a specific 'concussion wedge', this strategy was successful leading to a 37% reduction in tackle concussion rates (when compared with global elite rugby competition in 2018).⁹

Our explanation for the success of the HTSF during Rugby World Cup (RWC) without a more directed compliance wedge focused on concussion reduction was the unique nature of this RWC competition, the closed format of the competition, easy accessibility to all referees and team doctors and the intense media scrutiny.

In domestic rugby, away from the RWC spotlight and without an identified compliance wedge, we face a dilution of the advantages of the HTSF as a concussion prevention strategy. Rugby is geographically diverse and independently administered, with regional nuances in how it is played and officiated. Hanson *et al*² highlighted that a centrally driven injury prevention strategy's success would be dependent on stakeholder support and input into implementation.

Acknowledging this, World Rugby must now work to bring the game's stakeholders into the implementation process; to help identify the most effective compliance wedge(s) to change behaviour and advance injury prevention strategy.

Acknowledgements We would like to acknowledge and sincerely thank the team doctors and medical practitioners for their help in facilitating collection of head injury assessment (HIA) data.

Contributors MR and ECF conceived of and wrote this editorial. ECF is the guarantor. All authors had full access to all of the data in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis. The manuscript has not been published elsewhere and is not being considered for publication elsewhere.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests ECF and MR are employed by World Rugby, the governing body for rugby union worldwide.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.



Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: http:// creativecommons.org/licenses/by-nc/4.0/.

© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.



To cite Raftery M, Falvey ÉC. *Br J Sports Med* 2022;**56**:1–2.

Accepted 22 January 2021 Published Online First 3 February 2021

Br J Sports Med 2022;56:1–2. doi:10.1136/bjsports-2020-103454

ORCID iDs

Martin Raftery http://orcid.org/0000-0003-4788-837X Éanna Cian Falvey http://orcid.org/0000-0003-3961-1805

REFERENCES

- 1 Rugby W. World rugby Hia protocol. Available: https:// playerwelfare.worldrugby.org/content/getfile.php? h=b47de0127c9f35e604d51e2eac1815cc&p= downloads/concussion/HIA_Protocol_EN.pdf
- 2 Hanson D, Allegrante JP, Sleet DA, et al. Research alone is not sufficient to prevent sports injury. Br J Sports Med 2014;48:682–4.
- 3 Tucker R, Falvey EC, Fuller GW, et al. Sport concussion assessment tool: baseline and clinical reference limits for concussion diagnosis and management in elite rugby Union. J Sci Med Sport 2021;24:122–8.
- 4 Tucker R, Falvey E, Fuller G, *et al.* Effect of a concussion on subsequent baseline SCAT performance in professional rugby players: a retrospective cohort study in global elite rugby Union. *BMJ Open* 2020;10:e036894.
- 5 Tucker R, Falvey E, Fuller G, et al. Baseline SCAT performance in men and women: comparison of baseline concussion screens between 6288 elite men's and 764 women's rugby players. *Clin J Sport Med* 2020. doi:10.1097/JSM.000000000000847. [Epub ahead of print: 25 Aug 2020].
- 6 Tucker R, Brown J, Falvey E, *et al.* The effect of exercise on baseline SCAT5 performance in male professional rugby players. *Sports Med Open* 2020;6:37.
- 7 Fuller GW, Tucker R, Starling L, et al. The performance of the world rugby head injury assessment screening tool: a diagnostic accuracy study. Sports Med Open 2020:6:2.
- 8 Tucker R, Raftery M, Kemp S, et al. Risk factors for head injury events in professional rugby Union: a video analysis of 464 head injury events to inform proposed injury prevention strategies. Br J Sports Med 2017;51:1152–7.
- 9 Raftery M, Tucker R, Falvey Éanna Cian. Getting tough on concussion: how welfare-driven law change may improve player safety-a rugby Union experience. *Br J Sports Med* 2021;55:527-9.
- 10 Kemp SPT, Hudson Z, Brooks JHM, et al. The epidemiology of head injuries in English professional rugby Union. *Clin J Sport Med* 2008;18:227–34.