

Insights

TECHNOLOGICAL ADVANCEMENTS IN RUGBY: SMART MOUTHGUARDS AND PLAYER SAFETY

DIGITAL SPEAKS SERIES

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SUMMARY

In a ground-breaking move to redefine player safety standards, Rugby Union has introduced smart mouthguard technology in an innovative approach to automatically withdraw players from the field who are suspected of sustaining head injuries.

Rugby Union's governing body, World Rugby, announced its intention to integrate smart mouthguards into all elite rugby matches in the Autumn of 2023, with the technology being brought in worldwide from the start of 2024. The smart mouthguards are fitted with micro-sensors that operate by measuring the G-force impact of head collisions in real time and will utilise Bluetooth technology to instantly alert an independent doctor whenever a player experiences a significant collision. The sensors also collate the number of knocks a player experiences, as damage to the brain can be caused by an accumulation of smaller impact events.

The introduction of the Head Injury Assessment (HIA) protocol assists with the identification, diagnosis and management of head impact events potentially leading to concussions. All players must wear the smart mouthguard devices to be eligible for an in-match 'HIA1' off-field assessment, which permits players to return to the field if passed. If a player chooses not to wear the mouthguard and suffers a suspected head injury, they will not be eligible to return and will be permanently substituted.

The real time alert system sends notifications to an app and ensures that players who do suffer impactful hits, missed by TV cameras, referees and team doctors, or those players not displaying concussion symptoms are withdrawn from the game for a HIA by an independent matchday doctor. Even if cleared to continue, further checks will be conducted post-match and also 36-48 hours after impact as per the HIA protocol. To comprehensively maximise player safety, players will also be required to wear the mouthguards during training sessions.

History was made in the 2024 Six Nations as Scotland's George Turner became the first player to be removed from a match after his smart mouthguard detected an impactful collision exceeding the threshold. A HIA was carried out before George was returned to the field to finish the game.

The initiative reflects World Rugby's commitment to creating a safer environment for its athletes following concerns about the sports consequences, particularly regarding brain injuries following a number of players (past and present) going public with various diagnoses amid legal action against rugby's governing bodies.

Rugby is a game focussed on the physical - around contact and collisions. Whilst there is increasing awareness and more stringent safety protocols in place than ever before, the sport is looking to continue to evolve and adapt with advancing knowledge and technological capabilities to maximise player safety both during and after their careers, whilst ensuring the very fabric and fundamental nature of the game is not destroyed.

As Rugby Union embraces this technological revolution, it sets a powerful precedent for the whole sport, across all levels, as well as for other sports - indicating the pivotal role of technology in shaping the future of athlete well-being. From the use of AI in the NFL (creating digital athletes to maximise performance but also enhance player safety) to the protective Halo found in modern F1 cars, the increased importance in protecting athlete's health and welfare is obvious. The fusion of sports and cutting-edge technology offers many benefits, and this transformative step in rugby stands as a progressive move exemplifying how technological innovations can assist in producing a safer future and elevate the standard of care for its athletes and sports people.

If you would like to know more about these developments, please get in touch with Marcus Pearl, Kate Jeffery, Abbey James or Max Dixon, or with the wider [Sports, Media and Entertainment Team](#) for more general sporting queries.

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MEET THE TEAM



Kate Jeffery

Associate Director, London

kate.jeffery@bclplaw.com

[+44 \(0\) 20 3400 3667](tel:+442034003667)



Max Dixon

Associate, London

max.dixon@bclplaw.com

[+44 \(0\) 20 3400 4018](tel:+442034004018)



Marcus Pearl

Partner and Global Practice Group
Leader – Technology, Commercial &
Data, London

marcus.pearl@bclplaw.com

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