

# Rugby players take part in ground-breaking concussion study

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University of Birmingham Professor Tony Belli with the prototype of the hand-held device to test for concussion  
Credit: University of Birmingham

Rugby and the Rugby Players' Association, will run throughout the 2017/18 rugby season and is the biggest of its kind to take place in the history of UK sport. It is a key element in the University of Birmingham's research programme to create a test that can be performed rapidly pitch-side and will determine whether a player has been concussed. The study is part of the University of Birmingham's REpetitive COncussion in Sport (RECOS) project.

The test also has the potential to assist in return to play decisions and could be used across sports, from grassroots to professional level. It is hoped it could also be used more widely by frontline medics in the NHS and military to improve diagnosis and treatment within the first critical hour after brain trauma.

The team at the University's College of Medical and Dental Sciences, led by neurosurgeon Professor Tony Belli, has spent the last nine years carrying out research which has led to the

development of a test that measures biomarkers present in the saliva and urine of players. The test, if validated, could be done on a hand-held device, which is currently under development.

Professor Belli said: "Early and accurate diagnosis of concussion is one of the biggest challenges we face clinically and is particularly a major concern in the sporting world.

"The University of Birmingham recently made a significant breakthrough after identifying molecules, which can be found in saliva and act as biomarkers to indicate whether the brain has suffered injury.

"In this exciting next study with the RFU, Premiership Rugby and the Rugby Players' Association, we will collect players' saliva and urine pre and post-injury, which we will then test in the laboratory in order to assess the reliability of these biomarkers.

"If these biomarkers are found reliable, we can continue our work with industrial partners with the hope to have a device available within the next two years that will instantaneously diagnose concussion on the pitch-side with the same accuracy as in the laboratory - a major step forward for both sport and medicine."

Dr Simon Kemp, RFU Chief Medical Officer, explained: "This is an important addition to the breadth of research we are undertaking into concussion and player welfare more broadly. There is currently no reliable or proven biomarker or objective test for the diagnosis of concussion and this lack of objectivity is the biggest challenge facing medical professionals in dealing with this type of injury.

"While very much an exploratory piece of research, this is a project that has the potential to make a very significant impact on the diagnosis and management of players following concussion."

Premiership Rugby Head of Elite Performance and Player Development Corin Palmer said: "Premiership Rugby is committed to putting our clubs and players at the front and centre of what we do, and player welfare is our number one priority. This research has the potential to impact positively on the way in which we assess and manage concussion and as such we are keen to give it our full support."

that was conducted last season. The King-Devick results are currently being analysed and the aim is to publish the findings following scientific peer review.

Provided by University of Birmingham

"All Premiership Rugby clubs and players are already taking part in the preparatory stages of the research ahead of the new season, and we look forward to seeing the results of Professor Belli's work."

The Rugby Players' Association's Rugby Director Richard Bryan said: "The RPA Players' Board has given its full support to this vital research study which we hope will be a significant development for the future of concussion diagnosis."

"This forms part of the RPA's ongoing commitment to work collaboratively with the RFU and Premiership Rugby to ensure that the game continues to make advances in concussion education, research and management for the wellbeing of all players."

Players participating in the study will provide saliva and urine samples to act as a base-line benchmark. During a match, players with confirmed or suspected [concussion](#) will provide saliva samples immediately following injury. Players will also provide follow-up saliva samples, as well as urine samples, as they go through the return to play protocol. These will be compared to the baseline benchmarks, plus those from players from the same game who did not suffer head injury, and those who had other injuries. If there are no Head Injury Assessments (HIAs) or confirmed concussions in a match, then no samples will be collected.

The study will be carried out during all Aviva Premiership and Greene King IPA Championship club competitions where the HIA is in operation and will run alongside the existing HIA off field screen that will be for a fixed period of ten minutes. This study replaces the King-Devick research project

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