Rugby kick success may come down to swing of the arm, shows research

October 6 2007

The prodigious kicking success of England rugby player Johnny Wilkinson's may come down to what he does with his arms - but it is not just his trademark preparation stance that does the trick.

In research published in the journal *Sports Biomechanics*, scientists have analysed the kicking techniques of professional and semi-professional rugby players to see which technique is most successful.

They found that players who swing their non-kicking-side arm across their chest as they make contact with the ball are the most accurate kickers, particularly over longer distances. Such movements are very obvious in the kicking technique of Wilkinson and Scotland's Chris Patterson,

The researchers believe that the momentum caused by this movement helps kickers control the amount of rotation in their bodies so that when they kick the ball their body is facing the target for longer.

Also, the movement of the arm helps counteract the movement of the leg, allowing the kicker to stay more upright, increasing their margin of error and improving their accuracy.

"If a coach is working with an inaccurate kicker who does not make use of their non-kicking-side arm, our findings could well help them improve their game," said Dr Grant Trewartha from the University of Bath, who worked with Neil Bezodis, a PhD student at Bath, and

colleagues from the University of Wales Institute, Cardiff on the project.

“In taking a kick, players try to have their torso facing the target at the point of impact with the ball.

“Swinging their non-kicking-side arm helps players to maintain this position for longer – allowing them to develop a ‘J’ shaped kicking action, rather than backwards ‘C’ shaped one.

“When you examine their action from the front, it is clear that this action also helps counteract the swing of the leg, enabling the players to remain more upright at ball contact.

“This should increase their error of margin, and increase their overall accuracy.

“It is interesting that the technique that came out on top in our analysis is a close match with the Rugby World Cup’s most successful kickers so far.”

The research involved fitting five players with reflective markers that enabled researchers to monitor the three-dimensional kicking techniques of the players.

They were then set a variety of kicking challenges, and recorded using high-resolution cameras to monitor the motion of the legs, arms and torso in three dimensions.

This data could then be fed through special analytical software that enabled the researchers to identify and measure trends in kicking techniques.

“In our study, those players who swung their non-kicking-side arm across the body were approximately twice as accurate as those who used it less or not at all.”

“In sports such as elite rugby where the difference between winning and losing can come down to an individual’s technique, every little piece of advice can help,” said Dr Trewartha, a lecturer in sport & exercise science in the University’s School for Health.

“Top professionals usually develop their kicking techniques through long hours of trial and error practice and by picking up hints and tips passed on by former professionals and top coaches.

“With biomechanical analysis, we can break down an individual’s movement as they kick a ball, and understand more clearly what is going on.

“This then gives us the opportunity to pass on advice based on the evidence of what works across the board.”

As for Wilkinson’s trademark two-armed stance as he prepares for the kick, that is a pre-performance ritual that helps him prepare for the kick, says Trewartha.

“A lot of effort goes in to helping players prepare psychologically for key moments in games,” said Dr Trewartha.

“For those that need it, biomechanical analysis of their technique could really help.”

Source: University of Bath

Citation: Rugby kick success may come down to swing of the arm, shows research (2007, October 6) retrieved 23 April 2024 from https://phys.org/news/2007-10-rugby-success-arm.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.