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Non-sanctioning of illegal tackles in South African youth community rugby

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ABSTRACT

Objectives: The tackle event in rugby union ('rugby') contributes to the majority of players' injuries. Referees can reduce this risk by sanctioning dangerous tackles. A study in elite adult rugby suggests that referees only sanction a minority of illegal tackles. The aim of this study was to assess if this finding was similar in youth community rugby.

Design: Observational study.

Methods: Using EncodePro, 99 South African Rugby Union U18 Youth Week tournament matches were coded between 2011 and 2015. All tackles were coded by a researcher and an international referee to ensure that laws were interpreted correctly. The inter- and intra-rater reliabilities were 0.97–1.00. A regression analysis compared the non-sanctioned rates over time.

Results: In total, 12 216 tackles were coded, of which less than 1% (n = 113) were 'illegal'. The majority of the 113 illegal tackles were front-on (75%), high tackles (72%) and occurred in the 2nd/4th quarters (29% each). Of the illegal tackles, only 59% were sanctioned. The proportions of illegal tackles and sanctioning of these illegal tackles to all tackles improved by 0.2% per year from 2011–2015 (p < 0.05).

Conclusions: In these youth community rugby players, 59% of illegal tackles were not sanctioned appropriately. This was better than a previous study in elite adult rugby, where only 7% of illegal tackles were penalised. Moreover, the rates of illegal tackles and non-sanctioned illegal tackles both improved over time. However, it is critical that referees consistently enforce all laws to enhance injury prevention efforts. Further studies should investigate the reasons for non-sanctioning.

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1. Introduction

Rugby union ('rugby') is one of the most popular sports in the world.¹ However, rugby is also associated with a higher injury risk, which has led to a dearth of epidemiological research on this popular sport.¹ To mitigate this risk, a number of injury prevention programmes have been developed for rugby including *RugbySmart*, *Smart Rugby*, *Rugby Ready* and *BokSmart*.² Although these programmes differ in emphasis, all of them target the tackle event as a key area of prevention.^{3–5} *RugbySmart* and *BokSmart* direct their interventions at coach and referee education, as these role players

have a large influence on player behaviour.⁶ Specifically, coaches can reduce tackle injury risk through coaching better technique,⁷ and referees through penalising dangerous tackles.⁸ World Rugby's *Laws of the Game* (section 10.4) state that 'A player must not tackle an opponent early, late or dangerously'.⁹ "Dangerously" includes tackling a player "high" (above the line of the shoulders), with a "stiff-arm", without the ball or while his/her feet are off the ground.⁹ The *minimum* sanction for all of these infringements is a penalty kick to the opposition.⁹

Despite these laws being in place for safety reasons, an earlier study in professional English rugby found that only a minority of illegal/dangerous tackles were penalised correctly, as recommended by the laws of the game.⁸ Indeed, only 6% (14 out of 238) of high tackles (to the head/neck region of ball carriers) were penalised in this study.⁸ This is of notable concern, as the 'ille-

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gal tackle' forms one of only a few 'modifiable' risk factors for the dynamic tackle area.¹⁰ Theoretically, non-sanctioned rates might be even higher at less professional levels of the game, as these would generally have less qualified, less capable referees.

Therefore, the primary aim of this study was to investigate the rate of sanctioning of illegal tackles in non-professional youth rugby.

2. Methods

Televised video recordings of 99 matches from the South African Rugby Union (SA RUGBY) under-18 Coca-Cola Craven Week tournament during the period 2011–2015 were used for this study. Ethical approval (SU-HSD-001220) was obtained from the Research Ethics Committee: Human Research of the Stellenbosch University. The video recordings were supplied by the Division of Exercise Science and Sports Medicine video analysis department, University of Cape Town and the South African Rugby Union. All 99 matches were analysed by a single coder using the EncodePro[®] video analysis software package (South Africa, 2016). Prior to coding, a 'gold standard' was set by an international referee, using the World Rugby law book definitions and twenty randomly selected clips of both legal and illegal tackles.⁹ Thereafter, a single coder analysed the matches, which included all tackles made, direction of the tackle, sanctioning (or not) of illegal tackles, and tackle-type. Illegal tackle types were informed by World Rugby Laws of the Game (Section 10.4: "Dangerous play and misconduct"). These codes included "high" (above the line of shoulders), "tip" (tackler actively lifts the ball-carrier and drops them), "late" (tackle occurred after ball carrier has passed the ball), "ball carrier in the air" (feet of opponent off the ground), "charging" (ball carrier hit by opponent without attempt to grasp that player), "stiff-arm" (stiff arm used to strike ball-carrier), "early" (tackle occurs to a player before he/she has received the ball). In addition, tackles were also coded per match quarter: quarter 1: 0–17.5 min; quarter 2: 17.5–35 min; quarter 3: 35–52.5 min and quarter 4: 52.5–70 min. The coder was at liberty to pause, rewind and watch the tackle footage in slow motion before making a decision.

The reliability of the coded tackles was tested using an Interclass Correlation Coefficient (ICC) for intra- and inter-rater reliability. Intra-rater reliability was assessed by re-coding 25 randomly selected matches after the coding had been completed. For inter-rater reliability, two national panel referees coded 25 randomly selected matches after the coder had completed all matches. During the coding the referees were at liberty to pause, rewind and watch the tackle footage in slow motion. The subsequently calculated ICC's showed the agreement between all the variables were almost perfect (>0.95) and thus considered as very reliable.

Three *a priori* proportions were decided upon as proxies of referee/player behaviour.

Referee behaviour: proportion of (a) non-sanctioned illegal tackles out of all illegal tackles, and (b) non-sanctioned illegal tackles out of all tackles (legal and illegal combined).

Player behaviour: proportion of (c) illegal tackles out of all tackles (legal and illegal combined).

Thereafter, regression analysis was performed on these proportions to compare changes over time (2011–2015), and also over game quarter (1st–4th). All statistical analyses were performed using Stata, version 12 (Stat Corp, College Station, Texas, USA).

3. Results

A total of 12 216 tackles occurred over the five years (2011–2015) under study, at an average of 123 ± 17 tackles per match. The majority of these tackles (99%, $n = 12\ 103$) were legal

Table 1

Total number of tackles coded, presented as both percentage (%) and number (n), for legal and illegal tackles, and various descriptive factors.

Tackle	Legal: 99% (n = 12 103)	Illegal: 1% (n = 113)
Year		
2011	98% (n = 1836)	2% (n = 38)
2012	99% (n = 2852)	1% (n = 25)
2013	100% (n = 2549)	0% (n = 12)
2014	99% (n = 2177)	1% (n = 11)
2015	99% (n = 2689)	1% (n = 27)
Quarter		
1	99% (n = 3061)	1% (n = 24)
2	99% (n = 2974)	1% (n = 33)
3	99% (n = 2867)	1% (n = 23)
4	99% (n = 3201)	1% (n = 33)
Tackle Direction		
Front-on (65% of tackles)	99% (n = 7892)	1% (n = 75)
Side-on (24% of tackles)	99% (n = 2921)	1% (n = 18)
Behind (11% of tackles)	98% (n = 1290)	2% (n = 20)
Number of tacklers		
1 tackler	99% (n = 7968)	1% (n = 103)
≥2 tacklers	100% (n = 4135)	0% (n = 10)

and the proportions were similar for all factors including years, quarter, tackle direction and number of tacklers (Table 1).

Of the 113 illegal tackles, the majority were "high" (72%, $n = 81$). The remaining illegal tackle types were: "tip" (11%, $n = 12$), late (6%, $n = 7$), "ball carrier in the air" (4%, $n = 5$), "charging" (3%, $n = 3$), "stiff-arm" (3%, $n = 3$) and "early" (2%, $n = 2$).

Of all illegal tackles, 59% (67 out of 113) were not sanctioned by the on-field referee at the time ("non-sanctioned"). This non-sanctioned illegal tackle percentage ranged between 33% in 2013 (1 in 3 illegal tackles) and 84% (5 in 6 illegal tackles) in 2012 and 2014 (Fig. 1A). However, when exploring the impact of this non-sanctioned percentage further on the overall game management of the referee, and representing this as a percentage of all tackles, or the total number of tackles recorded including both legal and illegal tackles (Fig. 1B), this non-sanctioned percentage ranged between 0.2% (1 in 640 tackles) in 2013 and 1.2% (1 in 85 tackles in 2011) of all tackles. Similarly, when comparing illegal tackles regardless of whether sanctioned or not sanctioned, as a percentage of all tackles (Fig. 1B), this percentage ranged between 0.5% in 2013 and 2014 (1 in 212, and 1 in 198 tackles respectively) to 2% (1 in 48 tackles) in 2011.

Between 2011 and 2015, there was no average linear change in the rate of non-sanctioned illegal tackles, as a fraction of all illegal tackles (Fig. 1A: year coefficient = -0.041 , $p = 0.367$). In contrast, both the rate of all illegal tackles (95% confidence interval: $[-0.004]$ to $[-0.001]$; $p = 0.019$) and non-sanctioned illegal tackles (95% confidence interval: $[-0.003]$ to $[-0.001]$; $p = 0.006$), as a fraction of all tackles, reduced significantly from 2011–2015 (Fig. 1B and Table 2). On average, both rates reduced by 0.2% per year (Table 2).

The non-sanctioned rate was not different between the four quarters of the game (data not shown).

4. Discussion

The main finding of this study was that, on average, almost 60% of illegal tackles were not sanctioned by the referees at this non-professional youth level of rugby in South Africa. Even though this can and must improve, this is substantially better than the only other comparable study, conducted in professional senior rugby, where 94% of high tackles were not penalised.⁸ It might be due to the increased focus on player safety since Fuller et al.'s paper,⁸ especially around the prevention and management of dangerous tackles, that increased knowledge and awareness has led to this noticeable difference reported in our study. In addition, the rate of

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