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Citation:

Till, K and Jones, B and McKenna, J and Whitaker, L and Backhouse, SH (2015) The search for size: a doping risk factor in adolescent rugby? *British journal of sports medicine*, 50 (4). 203 - 204. ISSN 0306-3674 DOI: <https://doi.org/10.1136/bjsports-2015-094737>

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## The Search for Size: A Doping Risk Factor in Adolescent Rugby?

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Key words: Rugby, adolescent, doping, supplements, prevention



Institute for  
Sport, Physical  
Activity & Leisure

Rugby Union is currently under the spotlight with 18 individuals from the UK currently banned from the sport for committing an anti-doping rule violation(s). Notably, the vast majority of these cases arise from the amateur and/or schoolboy game [1]. Beyond the UK, 12 of 52 South African schoolboy rugby players recently returned positive tests for using anabolic androgenic steroids (AAS) [2]. The drive for players becoming bigger, stronger and faster may be a powerful determinant of these worrisome developments. With this motivation in mind, is it entirely coincidental that such concerns accompany evidence of increased doping that yields these biological changes?

The emphasis on physical attributes within rugby tracks its evolution. For example, the match demands (e.g., number of collisions) have increased since professionalisation of the game in the 1990s, accompanied by progressive increases in the size and physical attributes of players [3]. A French study [4] highlighted the importance of body size (height and body mass) in discriminating between successful and less successful teams in the rugby union World Cups, 1987 and 2007. This suggests that body size is of vast importance for rugby success and ‘the maximization of builds and the quest for super-sizes’ ([4], p. 582) paramount for international rugby union. Thus, young players aspiring to reach that level – and before that, to secure a professional contract - may observe the size of players and seek to emulate their role models.

Accepting that ‘size matters’ in both the professional and international game, it is perhaps unsurprising that some schoolboy rugby players are misguidedly turning to muscle-building substances, such as AAS, to modify their bodies. Indeed, selection advantages exist for older, bigger and earlier maturing adolescent rugby players [5]. The irony is that many of these size-based benefits can equalize in adulthood. However, if well-meaning coaches deselect small players at an early age, individuals with high athletic potential may drop out prematurely.

Importantly in rugby, peak athletic performance is rarely achieved during adolescence (i.e., 12 to 19 years of age) even though size optimisation often begins in this time period. Instead, the idiosyncratic maturation process - with its highly varied timing and tempo of progress towards the mature adult state - represents a key transitional phase of physical and psychological development where the outcomes are unclear.

The importance of adolescent body size for long-term success has also been questioned within rugby league. For example, neither body size nor maturation impacted upon achieving a Super League professional contract in 13 to 15 year olds selected to a talent development programme in England [6]. Longitudinal research also showed the physical development of these rugby players took place over four or more years [7].

This long-term perspective might not translate into coaching practice. If a winning culture is prioritised, the focus will be on short-term outcomes (i.e., games won) during these formative years. Within this climate, selection will favour larger boys because it may well bring immediate success. Training practices might also replicate those embedded within the adult game. Yet, the emerging evidence shows that prioritizing body size, especially during a key period of physical and psychological change, may be naive and counterproductive for handling the complex and dynamic nature of rugby.

The evidence notwithstanding, if players feel a need to 'bulk up' during their adolescent years to succeed in the game, further maladaptive behaviours might easily ensue. Field and colleagues [8] found that nutritional supplement use was common amongst adolescent athletes who were regular weight trainers. Further, these athletes were more at risk of using human growth hormone and AAS. Similarly, in the US the risk of using AAS was 3.7 times greater for adolescents involved in sports that emphasize body mass compared to those who report

participation in other sports [9]. These risks, along with the optimal development of adolescent rugby union players, are now being systematically studied through research partnerships involving academics from Leeds Beckett University, the Rugby Football Union and Yorkshire Carnegie Rugby Union club.

To conclude, research findings such as those published in BJSM [4] call into question the long-term catch cry of rugby union that it is a game that can be played by individuals of all shapes and sizes. Moreover, the findings might legitimise coach or support staff decisions to emphasize – and reward - body size in the training environment. However, given adolescence is a time of significant change and rugby is a complex sport, we contend that a long-term multi-dimensional player development approach is more appropriate. In addition, it makes more sense to monitor player progression to ensure long-term success rather than pursuing short-term match outcomes. This approach is likely to foster an ethos of positive player development and lessen the likelihood of maladaptive behaviours that threaten both the health and well-being of the player and the sport.

**Funding:** Susan Backhouse, Jim McKenna and Lisa Whitaker have received funding from the Rugby Football Union to examine schoolboy use of performance and image enhancing substances. Kevin Till and Ben Jones have received financial assistance from Yorkshire Carnegie Rugby Union Club to support the development of junior rugby players in Yorkshire.

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