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Phibbs, P, Read, D , Till, K, Atkinson, M, Williams, S, Stokes, K, Kemp, S and Jones, B (2019) Bigger, stronger, faster: The differences in physical qualities between player development group and England academy players in youth rugby union. In: The 9th World Congress on Science and Football (WCSF), 04 June 2019 - 07 June 2019, Melbourne, VIC, Australia.

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Bigger, stronger, faster: The differences in physical qualities between player development group and England academy players in youth rugby union

**Padraic J. Phibbs** - Leeds Beckett University, **Dale Read** - Leeds Beckett University, **Cameron Owen** - Leeds Beckett University, **Kevin Till** - Leeds Beckett University, **Mark Atkinson** - University of Bath, **Sean Williams** - University of Bath, **Keith A. Stokes** - University of Bath, **Simon P.T. Kemp** - Rugby Football Union, **Ben Jones** - Leeds Beckett University

## Introduction

In England, within rugby union academies players are classified as either Player Development Group (PDG; lower standard) or England Academy Players (EAP; higher standard). This is typically based on coaches' perceptions of a player's future potential. The physical differences between these groups are yet to be quantified, and therefore, the aims of this study were to compare physical qualities between age-matched PDG and EAP groups.

## Methods

Under-18 male rugby union players (n=178) were recruited from 5 regional academies and were categorised by talent classification and positional group (PDG forwards, n=81; PDG backs, n=56; EAP forwards, n=24; EAP backs, n=17). Players underwent a standardised physical testing battery to quantify body size (stature and body mass), strength (isometric mid-thigh pull), power (countermovement jump (CMJ)), speed (maximal sprint speed, and 10m momentum), and high-intensity running ability (30-15 intermittent fitness test (IFT)). The practical significance of differences between groups were assessed using magnitude-based inferences.

## Results

EAP forwards were *almost certainly* taller ( $186 \pm 4$  vs  $183 \pm 7$  cm), *very likely* heavier ( $102 \pm 12$  vs  $95 \pm 12$  kg), with *very likely* greater 10m momentum ( $560 \pm 53$  vs  $524 \pm 57$  kg.m.s<sup>-1</sup>), and *likely* stronger ( $1973 \pm 252$  vs  $1865 \pm 219$  N) compared to PDG forwards. EAP backs were *likely* taller ( $181 \pm 6$  vs  $178 \pm 6$  cm), heavier ( $86 \pm 12$  vs  $79 \pm 8$  kg), stronger ( $1764 \pm 276$  vs  $1664 \pm 250$  N), and faster ( $8.8 \pm 0.3$  vs  $8.6 \pm 0.4$  m.s<sup>-1</sup>), with *likely* greater 10m momentum ( $486 \pm 67$  vs  $454 \pm 44$  kg.m.s<sup>-1</sup>) compared to PDG backs. There were *unclear* differences between groups for CMJ and 30-15 IFT.

## Discussion

This is the first study to compare the physical qualities between standards of players classified by talent level within English rugby union academies. The findings show that there were substantial differences between age-matched PDG and EAP groups. The EAP groups had superior stature, body mass, strength, and momentum in both positions, whilst the EAP backs also had superior speed.

## Conclusions

Body size, momentum, and strength characteristics differentiate between talent classifications in rugby union players within the same academy squads. The challenges for elite academies are to develop the physical qualities that differentiate between playing standards for all players and to ensure that the long-term potential of highly skilled players with inferior physical qualities is tracked appropriately.