



LEEDS  
BECKETT  
UNIVERSITY

---

Citation:

Read, D and Till, K and Dalton-Barron, N and Beasley, G and Jones, B (2018) A comparison of the maximum locomotor intensities in age-grade international and academy rugby union. In: 23rd Annual Congress of European College of Sports Science, 04 July 2018 - 07 July 2018, Dublin, Ireland. (Unpublished)

Link to Leeds Beckett Repository record:

<https://eprints.leedsbeckett.ac.uk/id/eprint/5280/>

Document Version:

Conference or Workshop Item (Accepted Version)

---

Presentation abstract

The aim of the Leeds Beckett Repository is to provide open access to our research, as required by funder policies and permitted by publishers and copyright law.

The Leeds Beckett repository holds a wide range of publications, each of which has been checked for copyright and the relevant embargo period has been applied by the Research Services team.

We operate on a standard take-down policy. If you are the author or publisher of an output and you would like it removed from the repository, please [contact us](#) and we will investigate on a case-by-case basis.

Each thesis in the repository has been cleared where necessary by the author for third party copyright. If you would like a thesis to be removed from the repository or believe there is an issue with copyright, please contact us on [openaccess@leedsbeckett.ac.uk](mailto:openaccess@leedsbeckett.ac.uk) and we will investigate on a case-by-case basis.

## A comparison of the maximum locomotor intensities in age-grade international and academy rugby union

Dale Read<sup>1,2</sup>, Kevin Till<sup>1,2</sup>, Nicholas Dalton-Barron<sup>1,3</sup>, Grant Beasley<sup>4</sup> & Ben Jones<sup>1,2,5</sup>

<sup>1</sup>Leeds Beckett University, Leeds, UK

<sup>2</sup>Yorkshire Carnegie RUFC, Leeds, UK

<sup>3</sup>Catapult Sports, Melbourne, Australia

<sup>4</sup>Rugby Football Union, Twickenham, UK

<sup>5</sup>Rugby Football League, Leeds, UK

### Introduction

Age-grade (e.g., U18) rugby union players play in multiple playing levels across a season, including international and academy competition. One method for quantifying the physical characteristics of different playing levels is to calculate the maximum locomotor intensity using relative distance ( $\text{m}\cdot\text{min}^{-1}$ ) and high-speed ( $>5.5 \text{ m}\cdot\text{s}^{-1}$ ) relative distance ( $\text{HSm}\cdot\text{min}^{-1}$ ). The aims of the study were to quantify the maximum locomotor intensities from match-play and compare between U18 international and academy levels.

### Methods

In total, 142 U18 male rugby union players provided 232 observations. During match-play each player wore a micro-technology device (S5 Optimeye, Catapult Sports) that contained a global positioning system. Using the raw instantaneous speed ( $\text{m}\cdot\text{s}^{-1}$ ) downloaded at 10 Hz, variables were calculated through the use of a 0.1 s rolling mean for time durations (15, 30 s and 1, 2, 2.5, 3, 4, 5, 10 min) relevant to age-grade rugby union. Players were split into four positional groups of: front row, back five, scrum-halves, and inside and outside backs. A linear mixed model was used to account for the repeated measurements of players and then results were interpreted with effect sizes (ES)  $\pm 90\%$  confidence intervals and classified as *trivial* (0.00-0.19); *small* (0.20-0.59); *moderate* (0.60-1.19) and *large* (1.20-1.99). Ethics approval was granted from Leeds Beckett University.

### Results

Differences between levels in relative distance were *trivial* or *small* for all time durations and positions, with the relative distance ranging from  $148 \pm 16$  to  $189 \pm 17 \text{ m}\cdot\text{min}^{-1}$  in the one-minute duration. High-speed relative distance for one-minute ranged from  $26 \pm 11$  to  $71 \pm 24 \text{ HSm}\cdot\text{min}^{-1}$  and throughout all comparisons were greater in international players. The differences in high-speed relative distance were *moderate* to *large* (ES =  $1.17 \pm 0.64$  to  $1.59 \pm 0.64$ ) in front row players. The differences between the back five positional groups were *small* (ES =  $0.31 \pm 0.52$  to  $0.45 \pm 0.57$ ) for high-speed relative distance. There were *small* differences between the groups of scrum halves in the 15 s, 30 s and 1 min durations (ES =  $0.56 \pm 0.79$  to  $0.59 \pm 0.78$ ), with *moderate* to *large* differences in time durations  $\geq 2$  min (ES =  $0.82 \pm 0.87$  to  $1.24 \pm 0.93$ ). The differences in high-speed relative distance were *trivial* to *small* (ES =  $0.02 \pm 0.51$  to  $0.39 \pm 0.58$ ) in the inside and outside backs comparison.

**Conclusion**

Relative distance was similar between playing levels but appears to be comparable to data from senior international rugby union match-play in previous studies. There is a greater amount of high-speed relative distance per minute completed during U18 international matches compared to U18 academy matches. Coaches working with rugby players can use this information to appropriately overload the intensity of running, specific to time durations and positions.