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Peak running intensities in rugby union match-play: Comparisons to whole match data

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1.0 – Introduction

- Coaches and researchers typically present data from global positioning systems (GPS) as an average from the whole-match.¹
- However, team sports are intermittent in nature and whole-match data is unlikely to reveal the most demanding periods of play.²
- The purpose of this study was establish the peak running intensities of rugby union and secondly, to make comparisons between the peak intensities and a whole-match average.

2.0 – Methods

- 125 male players were recruited from six English academies (age: 17.6 ± 0.6 years; stature: 182.3 ± 12.2 cm; body mass: 92.6 ± 12.9 kg) and split into forwards and backs.
- One game from each academy was assessed with all players wearing a 10 Hz GPS unit (S5 Optimeye, Catapult Sports).
- Instantaneous speed was used to calculate relative distance (m·min⁻¹) using a 0.1 s rolling average for several time durations (1, 5, 10 min) with the zoo package for R (version 3.3.1, R Foundation for Statistical Computing).³
- Data were analysed using Cohen's *d* effect sizes (ES) and classified as *trivial* (<0.20); *small* (0.20-0.59); *moderate* (0.60-1.19); *large* (1.20-1.99); *very large* (2.00-3.99) and *extremely large* (>4.00).

3.0 – Results

Table 1. Peak running intensities (m·min⁻¹) for whole-match, 1 min, 5 min and 10 min in forwards and backs

		Whole-Match	1 min	5 min	10 min
Forwards (n = 70)	Mean ± SD	73 ± 8	157 ± 18	99 ± 15	85 ± 12
	Max	102	198	131	105
Backs (n = 55)	Mean ± SD	80 ± 11	175 ± 24	109 ± 14	95 ± 12
	Max	110	231	130	118



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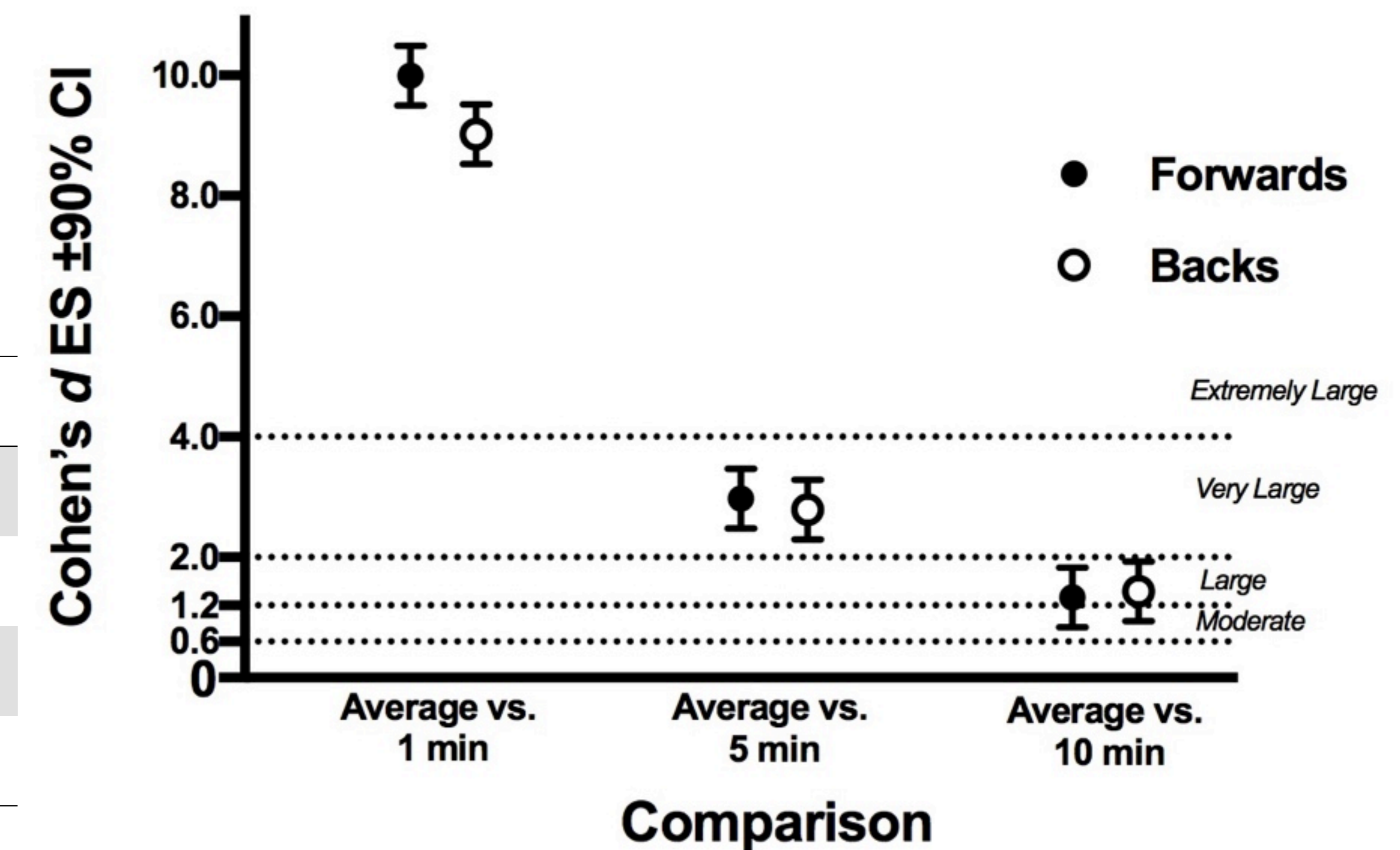


Figure 1. Comparison of whole-match average vs. 1, 5 and 10 min peak running intensities.

4.0 – Conclusions

- This study highlights that peak running intensities are substantially higher than match averages.
- Additionally, the peak intensity of running decreases as the duration of time increases.
- It provides sport and position specific intensities that players should be exposed to during training for a range of durations.

5.0 – Practical Applications

- Coaches should establish the peak running intensities of match-play for their sport.
- The peak running intensities allows coaches to prescribe high-intensity running drills during training, which can prepare athletes for the most demanding phases of play.

6.0 – References

¹Read et al. (2017). The physical characteristics of match-play in English schoolboy and academy rugby union. *JSS*
²Varley et al. (2012). Current match-analysis techniques' underestimation of intense periods of high-velocity running. *IJSP*
³Delaney et al. (2016). Peak running intensity of international rugby: Implications for training prescription. *IJSP*



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