

Comparisons between male and female Performance characteristics in youth aged 13-15 years



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Wintec, Hamilton, New Zealand 2018



Introduction

- Performance characteristics including speed, agility and power capabilities in youth athletes has been extensively researched.
- Limited research has made comparisons between performance characteristics in youth males and females with regards to biological maturation.
- Biological maturation is defined as the process of change in bodily tissue, organs and systems towards adulthood (1).
- Peak height velocity (PHV) is the period where maximum velocity of growth occurs during maturation and is often used as a reference marker of maturation status (2).
- The purpose of this study was to compare performance characteristics in male and female youth aged 13-15 years, while considering biological maturation.

Methods

- Thirty (M= 17, F= 13) year 9 and 10 secondary school students participated in the study.
- All participants completed a 5m sprint, 10m sprint, modified 5-0-5 change of direction (COD) and vertical jump test.
- Two trials were completed for each test with approximately 1-2min of rest between trials.
- Anthropometric measurements of height, weight and seated height were taken to determine maturation status in relation to PHV.
- Comparisons were made between male and female data using the methods of Hopkins. These analyses allowed for significant differences ($P \leq 0.05$), Cohen effect sizes, 90% confidence intervals, and qualitative inferences to be presented (3).

Results

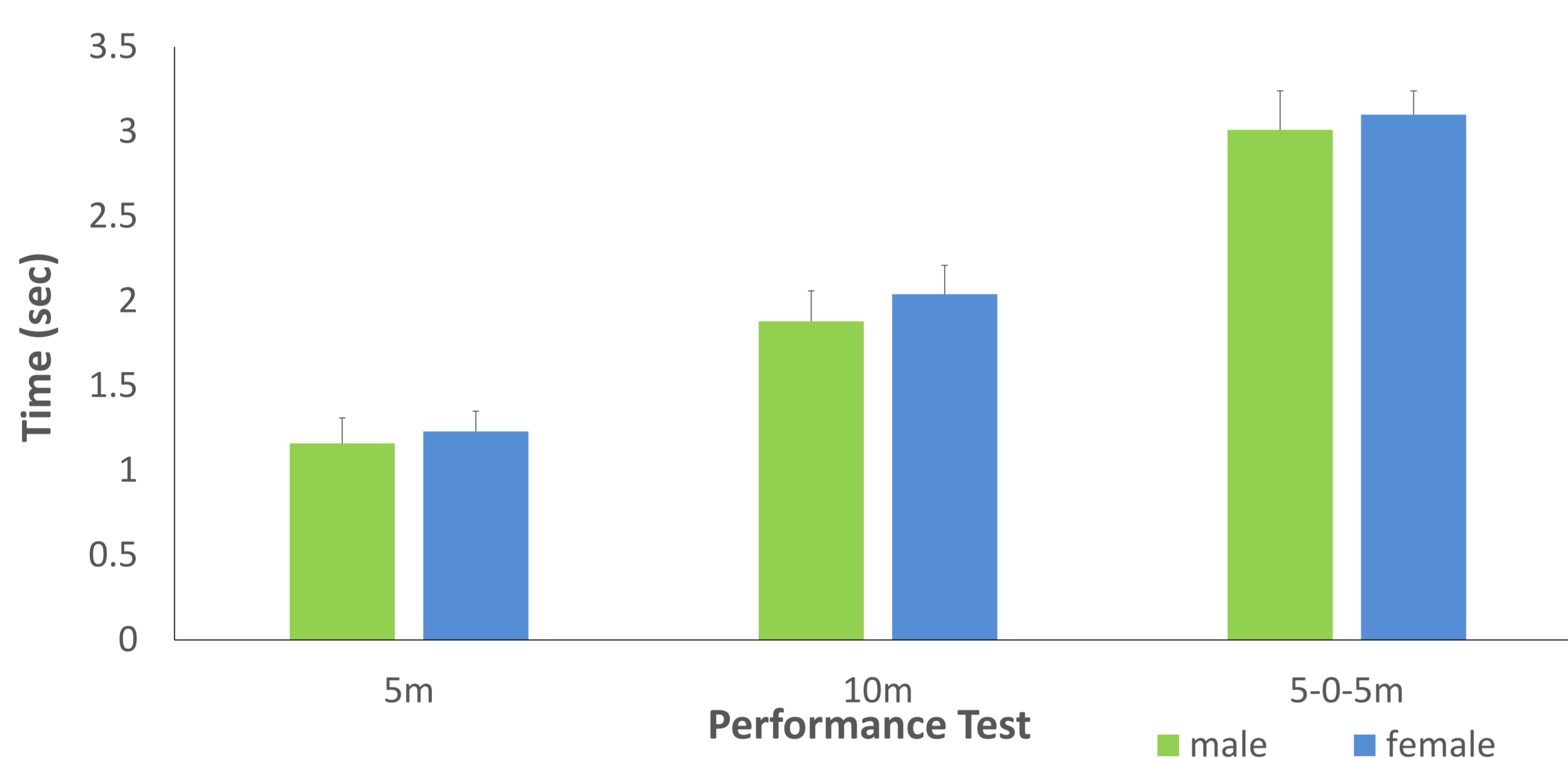


Fig. 1 Comparison between male and female performance times

- Results from the study found that males were significantly ($p = 0.024$) faster than females over 10m.
- Although this finding was not significant ($p = 0.062$), there was a moderate (18.4%) difference in vertical jump heights between genders with males jumping higher.
- Despite being insignificant, trends indicated small differences with males being faster and more agile than females in the 5m and modified 505 COD tests ($p = 0.145$, $p = 0.179$).
- Maturation statistics indicated that females were significantly younger than males during PHV ($p = 0.000$) and had a significantly greater maturity offset ($p = 0.001$) compared to males.

Table 1. Difference in anthropometric and performance characteristics between genders

	Male		Female		P-Value	% Diff	90% Confidence Limit	Effect Size (ES)	ES Inference
	Mean \pm SD	SD	Mean \pm SD	SD					
5m Sprint (s)	1.16 \pm 0.15	0.15	1.23 \pm 0.12	0.12	0.145	-5.6,	\pm 6.8	-0.53	Small
10m Sprint (s)	1.88 \pm 0.18	0.18	2.04 \pm 0.17	0.17	0.024	-7.8,	\pm 5.9	-0.85	Moderate
5-0-5 CoD (s)	3.01 \pm 0.23	0.23	3.10 \pm 0.14	0.14	0.179	-3.1,	\pm 3.9	-0.48	Small
Vertical Jump (cm)	42.2 \pm 10.1	10.1	35.5 \pm 7.0	7.0	0.062	18.4,	\pm 15.9	0.70	Moderate
Height (cm)	167.4 \pm 9.5	9.5	160.1 \pm 5.1	5.1	0.014	4.4,	\pm 2.8	0.91	Moderate
Weight (kg)	58.8 \pm 16.9	16.9	54.7 \pm 7.4	7.4	0.581	4.5,	\pm 14.4	0.19	Trivial
Age (yrs)	14.2 \pm 0.7	0.7	14.1 \pm 0.6	0.6	0.839	0.3,	\pm 2.8	0.07	Trivial
Age @ PHV (yrs)	13.7 \pm 0.7	0.7	12.4 \pm 0.4	0.4	0.000	10.3,	\pm 2.9	2.09	Very large
Maturity Offset (yrs)	0.5 \pm 1.1	1.1	1.7 \pm 0.5	0.5	0.001	-1.2	\pm 0.5	-1.38	Large

Findings

- Overall the study found that in youth aged 13-15 years, males were faster, more agile and had greater lower body power capabilities than females.
- These findings correspond with research that suggests males experience greater increases in speed, agility, strength and power development during PHV due to the increase in hormonal activity and testosterone secretion (1).
- The results also show that females were more biologically mature than males despite being the same chronological age. This coincides with research that suggests females will experience PHV at a significantly younger age (11.4-12.4 years) than males (13.4-14.4 years) (2).

Take home message

In youth aged 13-15 years, males exhibited greater performance capabilities in speed, agility and power tests despite being the same chronological age and less biologically mature than females. Coaches should consider individualised programming when training different genders of this age group.

References

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