

# TIME-MOTION ANALYSIS OF TRAINING AND COMPETITION DEMANDS IN VARYING AGE LEVELS OF ADOLESCENT AUSTRALIAN FOOTBALL

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## Introduction

Little is known about the effect pubertal growth has on performance in team sports. The aims of this study were to investigate the impact chronological and biological age has on running performance during training and competition in adolescent Australian football (AF).

## Methods

Fifty-two healthy male adolescent AF players from five age groups ranging from U11 to U19 were recruited for this study. Pre-testing measures included age, standing height, sitting height, weight, 20 m shuttle beep test score, 20 m sprint time and pubertal physical development. Data relating to running movements during training (1-4 sessions) and competition (1-2 matches) were collected using 5 Hz GPS technology (SPI Pro, GPSports, Australia).

## Results and Discussion

Table 1 shows data for chronological age (mean  $\pm$  SD). All GPS variables had a positive correlation with both chronological and biological age (years from peak height velocity), while differences were more evident between the younger age groups. Match workloads were higher than training workloads for all age groups except U17 and U19.

Table 1: Measures of match running performance for each age group

Age Group	U11	U13	U15	U17	U19
N	10	16	14	7	5
Distance/min (m)	70.4 $\pm$ 20.0*	85.4 $\pm$ 21.2*	100.1 $\pm$ 15.4*	82.3 $\pm$ 19.6	95.8 $\pm$ 19.9
HIR/min (m)	6.2 $\pm$ 4.9*	11.7 $\pm$ 5.8*	18.0 $\pm$ 4.1*	15.3 $\pm$ 7.3	20.2 $\pm$ 5.9
HIE/min	0.4 $\pm$ 0.3*	0.7 $\pm$ 0.3*	1.0 $\pm$ 0.2*	0.9 $\pm$ 0.3	1.1 $\pm$ 0.3
Total Sprints	0.1 $\pm$ 0.2	0.4 $\pm$ 0.7	3.4 $\pm$ 2.8*	4.0 $\pm$ 4.0	5.1 $\pm$ 3.3
Peak Speed (km/h)	22.3 $\pm$ 3.1	24.0 $\pm$ 3.5	28.4 $\pm$ 3.9	28.2 $\pm$ 3.5	26.8 $\pm$ 1.8

HIR = high-intensity running distance (>14.4 km/h), HIE = high-intensity efforts, Total sprints = efforts >23 km/h  
\* denotes a significant difference ( $p < 0.05$ ) between match and training (training data not shown)

## Conclusion

The current study found that training and match workloads increased with chronological and biological age and that match workloads were generally greater than training workloads. It would appear that older and more physically mature adolescent players had an advantage in AF running performance.