IS THE RELATIVE AGE EFFECT INFLUENCED BY ANTHROPOMETRIC AND PHYSICAL FITNESS IN YOUTH ACADEMY SOCCER PLAYERS?

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Keywords: relative age effect, football, youth sports academy

Introduction

The relative age effect (RAE) is an uneven distribution of birth date favoring subjects born in the initial months of the selection year. Our first aim was to determine if a RAE is present in our high-performance soccer academy and secondly to determine if anthropometric and/or physical characteristics vary according to birth data distribution across 2 age groups (Under 13 (U13) and Under 17 (U17)).

Methods

Two hundred and forty one highly-trained young soccer players were divided into their respective birth quarters (Q) and grouped accordingly (U13 and U17). Differences between observed and expected birth-date distributions were tested using a chi-square goodness of fit statistic ($p < 0.05$). Standard anthropometric, neuromuscular (counter movement jump (CMJ), maximal sprinting speed (MSS)) and cardiovascular (maximal aerobic speed (MAS)) fitness tests were used to assess players at the beginning of the season.

Results & Discussion

A biased birth date distribution were significant in the two age groups (U13, $\chi^2_3=9.125$, $P<0.05$; U17, $\chi^2_3=10.13$, $P<0.05$). No significant differences were observed across any of the anthropometrical and fitness measures (Table 1). U13 players born in the last quarter were more advanced in somatic maturation (i.e., lower estimated age at peak height velocity (PHV)).

Table 1. Fitness and anthropometric characteristics of U13 and U17 elite youth soccer players according to birth date distribution (mean±SD)

	U13				U17				ANOVA
Variable	1ST Q	2ND Q	3RD Q	4TH Q	1ST Q	2ND Q	3RD Q	4TH Q	
APHV (yrs)	14.4±0.4	14.3±0.4	14.3±0.3	14.0±0.3	14.9±0.5	14.6±0.5	14.9±0.7	14.6±0.3	Q1-4 U13*
Height (m)	1.49±0.06	1.49±0.06	1.45±0.05	1.48±0.06	1.70±0.07	1.72±0.06	1.68±0.08	1.69±0.02	
Body Mass (kg)	38.0±5.8	37.5±5.5	35.1±3.8	39.1±4.1	58.8±8.7	59.6±8.8	54.3±8.5	55.7±3.0	
CMJ (cm)	26.8±2.7	27.6±3.3	26.4±3.8	26.8±3.0	41.0±3.1	39.9±5.0	37.9±3.5	41.7±7.3	
40m Sprint (s)	6.48±0.29	6.44±0.34	6.56±0.35	6.50±0.21	5.43±0.21	5.43±0.20	5.56±0.23	5.59±0.20	
MAS ($km.h^{-1}$)	14.5±1.0	14.1 ±1.3	14.3±1.0	14.3±1.0	17.1±0.7	16.8 ±1.0	17.0±0.7	16.6±1.2	

* P<0.05

Conclusion

Our results confirmed previous observations that players selected to join the present soccer academy demonstrated an uneven birth distribution (Carling et al., 2009). However, the relative age of the player did not seem to provide a significant advantage in terms of physical ability (Carling 2009; Malina 2007).

References

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