

P22-Evolution of anthropometric and performance characteristics of Tunisian elite youth soccer players : a longitudinal study

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INTRODUCTION

In recent times, several professional soccer academies for talented young players have been established in the world. Observation, monitoring and characterization of anthropometric and physiological parameters of young elite players are needed to facilitate talent identification, training program design, and the selection of young players to higher playing levels (Gil et al., 2007; Wong et al. 2009). Therefore, the aim of this study was to evaluate the development of anthropometric characteristics and the evolution of physical performances in elite youth soccer players during two soccer-training seasons. To avoid any effects of maturation process, the same monitoring was made in a control group of the same age.

Key words: Physical fitness – anthropometric parameters – young soccer players.

METHODS

50 young boys (14.4 years in the beginning of the study) participated in this study. 24 soccer players' residents in elite academy and training 8-10 hours/week and having regular competitions were considered as an experimental group (EG) and 26 subjects as a control group (CG). Different anthropometric measurements (height, weight and percentage of fat mass), physiological (Yo-Yo Intermittent Recovery test level 1 (YYIR) and maximal oxygen estimated ($VO_2\text{max}$)) and fitness tests to evaluate anaerobic performance (the counter-movement-jump (CMJ), the squat-jump (SqJ), the five-jump-test (5J) and 5m, 10m, and 30m sprints were realized six times during two soccer-training seasons for the EG (T0: October 2008; T1: February 2009; T2: May 2009; T3: October 2009; T4: February 2010 and T5: May 2010) and four times for the CG (T0: October 2008, T2: May 009, T3:October 2009 and T5: May 2010).

RESULTS

The results showed, for soccer players only, a significant increase of height (T0: 175.6 ± 4.5 , T1: 177.2 ± 4.5 , T2: 178.8 ± 4.1 , T3: 179.5 ± 8.2 , T4: 180.1 ± 5.1 cm $p<0.05$) and $VO_2\text{max}$ estimated from T0: 47.9 ± 1.9 , to T4: 57.1 ± 3.1 ml.kg⁻¹.min⁻¹, $p<0.05$) corresponding to a distance covered during the YYIRT of 960m to 2240m, $p<0.05$ respectively at T0, and T4. The mean power developed during CMJ, SqJ and 5J increase significantly in soccer players ($p<0.01$) during the two soccer seasons. In addition, the 10m-sprint performance increase significantly between T0 and T2 in EG only (1.95 s / 1.91 s, $p<0.05$). No significant changes were observed, for all the measured parameters, in the CG.

DISCUSSION

In summary, regular soccer training allows the improvement of anthropometric parameters and physical performance of young elite soccer players in two seasons compared to age-matched controls. These results suggest that sport promotes growth (Cacciari et al 1990; Juricsky et al 1990) and are consistent with other studies showing that football players are taller (Gil et al 2007) and more mature skeleton (Malina et al 2000) compared to same age non sports. The training program can explain the differences observed between the two groups. Moreover, some of our results provide a typical profile of elite youth soccer players.