The effects of detraining on lower force and maximum aerobic power in pre-pubescent football athletes

J. Brito, J. Jacinto, R. Fernandes, H. Louro and A. Conceição
Sports Sciences Research Laboratory, Sport School of Rio Maior, Polytechnic Institute of Santarém, Portugal

OBJECTIVE Detraining results in the loss of cardiovascular and metabolic characteristics and consequently results in the reduction of VO_{2max} and muscular strength (Coyle, 1994, Evangelista & Brum, 1999). For most researchers the VO_{2max} is an indicator of greater fidelity in the characterization of aerobic power of an individual, as well as their level of fitness (1,2,3,4,5,6). Because detraining in young athletes has received little attention, is important to discuss this area. In adults, training-induced increases in muscle strength and VO_{2max} appear to decline during detraining about and in the same rate as they increase during training. To date, only one study (Blimkie et al., 1989) looked at the effects of 8 weeks of detraining in prepubertal boys following 20 weeks of resistance training. The training-induced strength gains regressed towards the growth-adjusted control level during the detraining period, suggesting that alike with adults, training adaptations are reversible (Blimkie et al., 1989). The aim of this study was to know the effect of detraining in a period of 34 days on the Maximum Aerobic Power (MAP) and Lower Force (LF), in pre-pubescent children football players.
METHODS Eight pre-pubescent male football players (age 12.75 ± 0.71years; weight 41.46 ± 6.66 kg; height 1,51 ± 0.06 cm; BMI 19,30 ± 3,59) were assessed before and after 5 weeks of a detraining period. A Modified Balke maximal protocol using ergo-spirometry procedures (Cosmed® K4b2) was selected to determine VO_{2max} and the Ventilatory Anaerobic Threshold (VAT) as estimates for the aerobic capacity. To access the LF a Coutermovement Jump (CMJ) was made in the Ergojump®. Data comparisons were set to determine the relationships between the parameters resulting from testing.
RESULTS The MAP (VO_2max/kg) show a significant difference from the pre vs post detraining period (69,27 ± 5,41 ml.kg.min^{-1} vs 63,22 ± 4,95 ml.kg.min-1, p=0,002) however the LF doesn't report significant changes.
DISCUSSION & CONCLUSION The results suggest that 5 weeks of detraining decrease the MAP (VO2max/kg) of pre-pubescent football players although not significant changes were report on the LS parameter.
Keywords Detraining; prepubescent children; football; maximum aerobic power, lower strength

Relationship between kicking ball velocity and explosive strength in physical students of both genders

Ricardo Ferraz [1], Roland van den Tillaar [2], Daniel A. Marinho [1] and M¨¢rio C. Marques [1]
[1] Department of Sports Sciences, University of Beira interior, Covilhã, Portugal, CIDESD, [2] Department of Teacher Education and Sports of Sogn and Fjordane University College, Norway, CIDESD

OBJECTIVE Soccer kicking, due to its relevance in the soccer game, continually raises the curiosity of researchers and can be seen from different perspectives. The purpose of this study was to evaluate explosive strength of lower limbs and its relationship with ball velocity in kicking performance in male and female sport students
METHODS 32 (16 men and women) students of Sport and Physical Education participated in the study. A radar gun (Sports Radar 3300, Sports Electronics Inc., with ¡À 0.03 m/s accuracy within a field of 10 degrees from the gun) was used to assess ball speed during soccer kicking performance. The height of a countermovement jump with arm (CMAJ) and without arm (CMJ) was measured in order to calculate the explosive strength of lower limbs. The vertical height was measured using a trigonometric carpet (Ergo jump Digitime 1000, Digest Finland).
RESULTS In all tests the men always showed better results than the women (ball velocity: 26.6 vs. 18 m/s; CMJ: 0.36m vs. 0.27m; CMAJ: 0.42m vs. 0.29m). However, no significant correlation was found between ball velocity and explosive strength for neither gender ($r < .30$).
DISCUSSION & CONCLUSION This study indicates that explosive strength of the lower limb, measured by countermovement jumps, is not of major importance for the ball kicking performance. This shows that there may be other factors, possibly in the coordinative control (technique of kicking), acting in complementarily, in a similar kicking to the tested with positive or negative influence at the final outcome. Furthermore, although there are studies that relate the CMJ with the force produced by the lower limbs, may be necessary in this case, the use of more specific tests.
KEY WORDS Soccer, explosive strength, ball speed, kicking