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Table 1 - Mean, Standard Deviation of CR and FR

	Left		Right	
	G_1 [x ± SD]	G_2 [x ± SD]	G_1 [x ± SD]	G_2 [x ± SD]
CR	0.47 ± 0.02	0.62 ± 0.07	0.45 ± 0.02	0.57 ± 0.07
FR	0.64 ± 0.13	0.76 ± 0.09	0.66 ± 0.08	0.78 ± 0.15

injury risk and FR could be a more valid one.

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Effectiveness of a Neuromuscular and Proprioceptive Combination Training Program in Preventing Injuries in Youth Soccer Players

PauloMOURÃO,DavidMARTINS,FranciscoGONÇALVES, Eduardo ABADE, Alberto CARVALHO, João VIANA.

Introduction: Soccer is associated with a relatively high injury rate. [1] Given that most soccer injuries occur in the lower extremities,[2] many preventive programs have been focused on proprioceptive and neuromuscular training with balance boards.[3] However, when such equipment is not available, professionals have to seek other solutions. Therefore, the aim of this study was to evaluate the effectiveness of a neuromuscular and proprioceptive training program in preventing lower extremities injuries in youth soccer players.

Methods: Twelve male soccer players (18.7 ± 0.5 yrs; 177.8 ± 6.5 cm; 71.8 ± 6.1 kg) participated in this study over the entire season; during the first half of the season subjects performed their usual training program (control) while during the second half of the season subjects additionally performed an experimental injury prevention training program without unstable boards every weekday (4 sets of 15 seconds of balance training and 4 sets of 10 reps of specific neuromuscular training, which consisted of front-back and left-right quick hops). Injury incidence and length of injury absence were recorded during both periods and differences were examined using Wilcoxon signed-rank tests.

Results: Injury incidence tended to be lower during the experimental period in comparison to the control period (2.6 ± 6.1 vs. 11.4 ± 20.1 injuries per 1000 hours; $P = 0.050$). Length of injury absence was also lower during the experimental period (0.8 ± 1.9 vs. 12.7 ± 20.1 days; $P = 0.024$).

Conclusion: These findings suggest that a neuromuscular and proprioceptive training program without balance boards may be an effective injury prevention strategy in youth soccer players.

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The Role of Growth Factors in Skeletal Muscles Regeneration

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Introduction: The growth factors play a key role in regeneration and reorganization of injured skeletal muscles. They are released from muscles, motor nerves, endothelial and immune cells in response to hydrogen peroxide (H_2O_2) and nitric oxide (NO) generation during exercise and/or recovery phase (Zembron-Lacny et al. 2012). The study was designed to observe the effect of regular exercise on growth factors level and relation to skeletal muscle damage and body composition.

Methods: Sixteen elite Greco-Roman wrestlers in preparatory period (pre-season, January) as well as twenty healthy untrained men participated in the study. In blood samples, H_2O_2, NO, hepatocyte growth factor (HGF), insulin-like growth factor (IGF-I), platelet-derived growth factor (PDGF-BB) and brain-derived neurotrophic factor (BDNF) were determined. Total creatine kinase (CK) activity was used as a marker of muscle damage and it was measured at 3 *consecutive days* of training. Body composition was estimated using a bioelectrical impedance (Tanita®).

Results: H_2O_2 concentration was significantly decreased whereas NO, IGF-I, PDGF-BB and BDNF were increased in wrestlers compared to non-athletes. NO strongly correlated with BDNF concentration (r= 0.641 $P < 0.001$). CK activity was 4-9-fold elevated in wrestlers. The decline in CK activity after intense training was faster in athletes with high values of IGF-I, PDGF-BB and BDNF. Between %CK changes and IGF-I concentration the negative correlation (r = -0.755 $P < 0.001$) was observed. Free fat mass (FFM) was higher in wrestlers than non-athletes but not correlated with