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ДВАНАДЕСЕТСЕДМИЧНА ПРОГРАМА ЗА РАЗВИТИЕТО НА БЪРЗИНАТА НА МЛАДИ ФУТБОЛИСТИ

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A TWELVE WEEKS EXPERIMENTAL PROGRAMME FOR THE IMPROVEMENT OF SPEED IN YOUNG FOOTBALL PLAYERS

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Abstract: *A twelve weeks experimental training was carried out with the main focus on the improvement of the biomechanical running parameters and mainly speed during the training sessions in youth football players. The participants in this study were 28 young players aged 15.1 ± 0.3 years (control and experimental groups). We evaluated the speed (50m sprint running test, upright starting position) and the anthropometric parameters (weight and height) which were measured for both groups in the beginning (T1) and at the end (T2) of the experiment. The analysis of the results shows that there is a significant difference (p= 0.03) between the groups in the improvement of speed, which is in favor of the experimental group. The training of athletes should continue gradually and carefully, requiring sufficient time and attention, consistent with the main stages of childhood development.*

Key words*: football, youth sport, speed, experimental training*

Introduction

Although various aspects of speed training can be improved through appropriate training, research has suggested that there may be optimal periods for a player's growth and development when it is most appropriate to apply them. Among the different physical qualities needed are the ability to perform straight-line sprint and positive and negative acceleration with rapid changes of directions, often referred to as agility (Muijka et al., 2009). Previous studies have shown a difference in running speed between high-level and the non-elite youth players in those qualities (Mujika et al., 2009; Malina et al., 2007; Gissis et al., 2006), and sprint performance has been reported to be among the most important variables in predicting players' selection (Vescovi, 2012; Gil et al., 2007).

It is possible that if these attributes are not given the right attention, a player may not understand his full potential. Performance in a football match depends on a variety of factors such as skills, tactics, and players' physiological, physical and mental capacities (Stolen et al., 2005). Sprint running constitutes only 11% of the total distance covered during a match, but it represents crucial parts of the game, directly contributing to the possession of the ball, assisting and passing, or scoring a goal (Reilly et al., 2000).

The training of athletes should continue gradually and carefully, requiring sufficient time and attention, consistent with the main stages of childhood development. In fact, combustion of the self-awareness of young athletes to achieve early results has often led to negative consequences for athletes and their careers. It has already been agreed that the growth period is considered delicate and very important in the preparation

of an athlete. In all sports disciplines, speed is displayed actively and specifically and described as movements of shifting athletes in short space and time.

Methods

The 12 weeks training experiment was conducted with the main focus on biomechanical running parameters and mainly on the densities of steps during training sessions. For this purpose, a football association of young players was randomly selected from the associations that conduct coaching in the city of Elbasan, and the selection of teams within the association was made randomly.

The participants in this study were 28 young players divided in a control group and an experimental group. The age of the participants was 15.1 ± 0.3 years. The speed time (50m sprint) was evaluated during the sprint test and anthropometric parameters (weight, height) were also measured in the beginning (T1) and at the end of the experiment (T2).

Body height and body weight were measured using a 402 KL Health O Meter scales. The values were recorded at 0.1 cm closest and 100 g respectively.

Experimental Program (Program protocol)

Some details of the training plan, used during the training sessions of the football team "Pepa" Elbasan, in the period from November 2015 to February 2016. In addition to the team training sessions the experimental training consists in biomechanical running parameters and mainly in the densities of the steps. The intervention of this scientific research was directed at increasing the rhythm and frequency of the steps during the special running exercises. Mainly through the exercise protocol we focused at the end of the training session. Although the team we worked with trained football, we did not get to the part of the various technical elements of football, but the focus was on the technique of running. For 12 weeks the running technique was worked through a specialized training by interfering with increasing the frequency of movements.

Statistical analysis

Descriptive statistics (mean and standard deviation) were calculated for the variables estimated in this study. A specific database was created in the excel file with two measurements taken before (T1) and at the end (T2) of the experiment and then converted to the SPSS database. All variables evaluated in this study were tested for normality and ANOVA test for T2 and T1 comparison of variables measured in this study. Values $p \leq 0.05$ was considered statistically significant. All analyzes were performed using the SPSS 17 statistical system.

Results

The descriptive statistics data for the mean values and the standard deviation values for body height and body weight for both groups participating in the study are displayed in ***Table 1.***

Data shows that the T1 measurement mean values for body weight of the control group are 46. 2 kg (7.4 kg) and for the experimental group they are 45.6 kg (5.9 kg), where the minimal and maximal values for the control group are 32.5 kg and 59 kg and for the experimental group they are 33 kg and 53.5 kg respectively. The values of the T2 measurement of body weight for the control group are 51.6 kg (13.9 kg) and for the experimental group they are 51.7 kg (12.2 kg). T2 minimal and maximal values for the control group are 32.3 kg and 68.8 kg and for the experimental group they are 43.8 kg and 69.6 kg respectively.

Data shows that the T1 measurement mean values for body height of the control group are 158cm (10 cm) and for the experimental group they are 157.6 cm (4.5 cm), where the minimal and maximal values for the control group are 138 cm and 178 cm and for the experimental group they are 147 cm and 161.5 respectively. The values of the T2 measurement of body height for the control group are 162.7 cm (11.5 cm) and for the experimental group they are 164.5 cm (14.8 cm), where the minimal and maximal values for the control group are 142cm and 172.5 cm and for the experimental group they are 163.5 cm and 165.6 cm respectively.

Table 1. Descriptive statistics for body height and weight of the control and experimental groups

Group		Minimum	Maximum	Mean	Std. Deviation
	Weight kg T1	32.5	59.0	46.238	7.4507
	Weight kg T2	32.3	68.8	51.650	13.9375
Control	Height cm T1	138.0	175.0	158.092	10.0570
	Height cm T2	142.0	172.5	162.667	11.5138
	Weight kg T1	33.0	53.5	45.600	5.9791
	Weight kg T2	43.8	69.6	51.725	12.2058
Experimental	Height cm T1	147.0	161.5	157.633	4.5398
	Height cm T2	163.5	165.6	164.550	1.4849

Descriptive statistics for speed during the 50 meters run test is shown in ***Table 2*** for both groups of participants. The mean values of speed (50m) for the control group in the beginning of the experiment (T1 measurement) are 7.7 seconds (SD 0.6, min 6.9 and max 8.9 s) and at the end of the experiment (T2) 7.3 seconds (SD 0.5, min 6.7 and max 8.1 seconds). T1 values for the experimental group are 7.6 seconds (SD 0.2, min 7.1 and max 8 seconds) and T2 values at the end of the experiment are 7.3 seconds (SD 0.2, min 7.1 and max 7.5 seconds).

Table 2. Descriptive statistics for speed (50 m) for control and intervention groups

Group		Minimum	Maximum	Mean	Std. Deviation
	Speed 50m T1	6.9	8.9	7.733	.5990
Control	Speed 50m T2	6.7	8.1	7.272	.4711
	Speed 50m T1	7.1	8.0	7.648	.2497
Experimental	Speed 50m T2	7.1	7.5	7.278	.1501

Table 3 shows statistical analysis data for T1 and T2 measurements of body weight, height, and speed. There is a difference in mean values (***Table 3***) when comparing the variables of T1 and T2 measurements as follows: for weight from T1 to T2 there is an increase by 5.1 kg (SD 8.5 kg; $t = -1.8$, $p = 0.09$), for height from T1 to T2 there is an increase by 3.7 cm (SD 0.7 cm; $t = -15.1$, $p = 0.00$), for speed from T1 to T2 there is an improvement by 0.3 seconds (SD 0.2 seconds; $t = 5.3$ $p = 0.00$).

Table 3. Paired differences samples test for T1 and T2 measurements of body weight, height, and speed

	Paired Differences					
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
				Lower	t	Sig. (2-tailed)
Weight T1 –Weight T2	-5.0500	8.5041	2.6892	-11.1335	-1.878	.093
Height T1 – Height T2	-3.7000	.6928	.2449	-4.2792	-15.105	.000
Speed 50mT1 –Speed 50m T2	.2482	.1548	.0467	.1442	5.318	.000

Data from the analysis by groups participating in the study show that there is an improvement (***Table 4***) in mean values of the speed test from T1 to T2 as follows: for speed of the control group from T1 to T2 there is an improvement by 0.2 seconds (SD 0.2 seconds; t = 2.7 p = 0.04) while for the experimental group there is an improvement by 0.4 seconds (SD 0.1 seconds; t = 8.6 p = 0.001).

Table 4. Paired samples test by group for the speed test

Group		Paired Differences					t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Control	Speed 50mT1-Speed 50m T2	0.16	0.15	.0598	.0079	.3154	2.703	0.043
Experimental	Speed 50mT1-Speed 50mT2	0.35	0.09	.0409	.2384	.4656	8.603	0.001

Data on ***Table 5*** shows the comparative analysis for difference between the improvement of speed of the control and experimental groups. There is a significant difference (p = 0.03) between the improvement of the experimental group and the control group in favor of the improvement of the experimental group.

Table 5. Comparison for the difference between groups in speed test

ANOVA					
Diff T1_T2					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	**.099**	**1**	**.099**	**6.317**	**.033**
Within Groups	**.141**	**9**	**.016**		
Total	**.240**	**10**			

Discussion

The final results of this research study show that there is an improvement in the mean values for the speed test from T1 to T2 as follows: for speed of the control group from T1 to T2 there is an improvement by 0.2 seconds (SD 0.2 seconds; $t = 2.7$ $p = 0.04$) while for the experimental group there is an improvement by 0.4 seconds (SD 0.1 seconds; $t = 8.6$ $p = 0.001$). Since football involves frequent changes of direction, we would say that agility would be highly related to muscle strength. However, they only had a small correlation ($r = - 0.29$). For one, this could be due to the maturity stage of young players, which affects coordination, important in agility (Sheppard and Young, 2006), but not strength or power performance. Indeed, a significant gain in strength and power occurs during the later stages of puberty (Malina et al., 2004).

The analysis of the group results shows that there is a significant difference ($p = 0.03$) between the improvement of the experimental group and the control group in favor of the improvement of the experimental group. Training of athletes needs to continue progressively and carefully, it requires ample time and respect for the fundamental stages since childhood. Wong et al. (2009) reported that speed during childhood and adolescence is related to height and body mass. They studied a group of soccer players under the age of 14 and found a significant relationship between body mass and time to run a 30 m sprint ($r = -0.54$).

This research suggests that it is important to develop speed in youth football players to improve their movement and agility. However, we must be careful to take into consideration anthropometric characteristics in relation to growth and maturation when youth football players are concerned since they correlate well with both speed and muscle strength.

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