

THE IMPACT OF REGULAR TRAINING PROGRAMME ON THE SPEED AND AGILITY PERFORMANCE OF THE YOUNG FOOTBALL PLAYERS

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Abstract

Training programs for young soccer players have meant the optimal development of relevant performance for the game of football. In recent decades we have evolution of different programs for preparing the players during different time periods of their development. The objective of this research is to prove the impact of the training program on a macro cycle (preparatory period and the period of the championship races) in speed and agility performance of young players. The research was conducted between August and November 2015 with a sample of 22 young soccer players divided into two groups (10 players range 11-13 years and 12 players range 13-15 years). At first have been measured initialised body weight and body height, speed (5m, 10m, and 30m) and agility (5x10m, 20m zigzag with and without ball). Speed and Agility was measured with electronic photocells', with measure of .01 sec. Two groups of players have conducted a regular program of training 3 times a week for a period of 4 months. After completing the regular program of training, participants in both groups underwent final measurements. Results of paired sample t-test analysis have shown that the regular program training have impacted on statistically significant differences between the two tests (initial and final) in the variables of speed and agility of young soccer players (11-13 year old range), but not important statistical values of young soccer players (13-15 year old range). The level of significant is $p < .05$. From the collected results we can conclude this regular training program has an important statistical impact in the speed and agility of the young football players (11-13 year old range) and no important statistical impact on the young football players (13-15 year old range). From this we can conclude that age is 11-13 years of age when speed and agility have a more rapid development.

Key words: soccer young players, training program, speed, agility.

Introduction

Football is a sport that is characterized by numerous and varied complex dynamic kinesiology activities that are characterized by a large number of cyclic and acyclic movements (Bjelica et al. 2012, 2013; Gardasevic et al., 2016; Popovic et al., 2010a, 2010b). The good conditional preparation is the base to execute all the elements techno-tactical and responsible to differentiate between the high and low levels of the football players (Popovic et al., 2013a, 2013b; Popovic et al., 2014). During a football match the players carries out around 1200-1400 different moving activities from which 700-800 of those are movements with change in directions (sprint, jumping's, stopping's, restarting etc.) and only 11% of the total distance of these movements are executed with high intensity and important for the outcome of the match (Reilly & William's, 2005). Researchers have proved that, numerous skills (performance) as motor speed, agility and explosive strength are more responsible to predict player selection and success in the game of football (Molnar et al., 2010a, 2010b; Sermaxhaj, S., & Telai, B. 2014; Milanović et al., 2013; Idrizovic K., 2014; Sermaxhaj et al., 2014). Lots of experimental training programs have been conducted for youth soccer athletes with programs combining strength and speed training, and have showed an enhanced effect on sprint with high-intensity strength and speed training (Jovanovic et al. 2011; Kotzaminidis et al., 2005). Buchheit et al.

(2010) found that a 10 week training program, with one hour per week shuttle sprint and explosive strength training, produced significant improvement in 30m sprint, but no significant improvement in 10 meter sprint in adolescent male soccer players. Hughes et al. (2012) reported enhanced sprint performance in males aged 12 and 15 years, but not in 13 or 14 years, combining speed training and plyometric drills. A program consisting of high speed and plyometric exercises in 13 year old males, significantly improved both 20 m linear running speed, and agility performances (Mathisen, 2014). All movements of the above are closely linked to speed (5, 10, and 30m) (Reilly, Th., & Williams, M. 2005; Little & Williams, 2005) and agility performance (running to change direction with and without ball) and greatly responsible for carrying out these movements affecting the success of the game of football (Popovic et al., 2013; Popovic et al., 2014). So we can suppose that speed and agility performance are responsible to implement these actions. The goal of every training session and every physical exercise to young players is to influence the development of specific motor performance in preventive against injury (CvejanovKezunovic et al., 2011), rapid recovery and optimal development of their anthropological status. Exercise protocols consisting of sport-specific drills have shown positive effect on sprint performance, while most

methods consisting of strength and power training have failed to improve agility performance (Brughelli et al. (2008). The aim of this research was to prove the impact of regular training program (first macro cycle; preparatory period and the period of the championship races), 3 times a week for a period of 4 months, total 48 sessions in the speed and agility performance of the young football players range under the age of U13 and U15.

Materials and method

In order to carry out this research, first of all the whole sample has carried out the medical checkup at the medical sport center in Prishtina and it has been proved that all the football players are healthy to participate in football, and in accordance with the Helsinki declaration, all the participants have been informed with the aim of the testing procedures and regular training program.

Participants

In this study have participated two groups of young soccer players, first group under the age of U13 (n=10) and the second group under the age of 15 (n=10), from Football Club Ramiz Sadiku from Prishtina which were under direction of a UEFA licensed coaches where they have carried out regular soccer-training sessions and champion competition in the elite league of football of Kosovo, in the first macro cycle (training sessions and competitions) of the autumn season from 1st of August to 1st of December 2015.

Procedures

Participants have been compared in the initial tests and the anthropometrical final ones (height and body weight) and the speed and agility. All participants have undergone the measurement of the body height with Martin's anthropometer, and the body weight with in body 720. Speed test; sprint 5m, 10m and 30m, and Agility; Ajax test 5x10m, and 20m zig-zag test with and without ball (Little T, & Williams AG., 2006; Mirkov, D., et al., 2008; Idrizovic, K. 2014; Grbovič, M. 2013) was measured with New Test, i.e. Power Timer 300 photocells with exact time of 0.01sec. All the tests of speed and agility were completed from a standing start, with the front foot placed 30cm behind the photocell's start line. The photocells were placed at starting position and finish line test. All measurements were performed on the parquet flooring at College Sports "Universi" of Prishtina. The initial testing took place before the beginning of the pre-season while the final testing was performed at the end of the season (after 16 weeks of intervention with regular training sessions and champion competition). Players, after warming up procedure for 10-12 minutes, have undergone the speed and agility test. Participants of this research during the period of August and November 2015 have exercised 3 times a week, in total doing 48 training sessions, under the regular soccer-training session's program of the football school of the RamizSadiku Club in Prishtina. The program of regular soccer training sessions was planned from

the research author based on the recommendations of the authors of this field (Radosav et al., 2003; Bjelica & Popovic, 2012) and relevant institutions in this area (DFB, German Football Federation "Children and youth football - training with concept 2", SVF, Swiss Football Association "Talent Promotion". Training program of regular soccer training sessions for both groups is based in conditional preparation (CO), technical (TE), tactic (TA) and mental (ME). Regular soccer training sessions for U13 was focused on basic and specific training; CO (development of basic and coordinative skills), TE (learning basic technical elements in different forms), TA (recognition of the fundamental duties defense and attack tactics) and ME (fun and socializing through the game). Regular soccer training sessions for U15 was focused on training to build the game; KO (development of coordination, basic endurance, speed and strengthen the muscle mass), TE (training to improve technic situation of the game), TA (learning individual and group tactical elements, improvement of the football game), ME (socializing, motivation, communication, confidence). Protocol of training sessions (general warm up 5-7 min, specific warm up 10-15 min, the main part 35-45 min, cool down 20 min recovery by running and stretching).

Statistical analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS version 21.0). Mean and Standard Deviation (SD) were calculated for both groups range under the age of 13 and 15 (U13 and U15) in initial and final measurement for anthropometric (body height and body weight), speed (5m, 10m and 30m) agility (5x10m, zigzag 20m with and without ball). With T-test were calculated differences between arithmetic means of initial and final measurements before and after regular training program for both groups (U13 and U15). The level of significant is $p < 0.05$.

Results and discussion

The descriptive parameters are displayed in Table 1 for initial and final measures.

Table 1. The variables data of anthropometric (body height and body weight) and motoric performance (speed and agility) at the initial and final measurement of the young football players U13.

Variable	initial (M±SD)	Final (M±SD)	t	Sig.
Age (years)	12.00±0.4	12.4±0.4	-	-
Weight (kg)	38.9±5.5	39.9±5.6	-1.90	.089
Height (cm)	151.4±6.1	153.6±6.2	-7.98	.000
Sprint 5m	1.35± .16	1.21± .08	2.82	.020
Sprint 10m	2.17± .09	2.04± .09	3.25	.010
Sprint 30m	5.37± .29	5.23± .28	3.12	.012
Ajax 5x10m	14.67± .84	13.43± .87	4.07	.003
20m zigzag without ball	6.93± .31	6.58± .44	2.91	.017
20m zigzag with ball	9.17± .66	8.27± .54	2.59	.029

The results of Table 1 show that with paired sample t-test analysis for the mean score and significant value Sig. has been proved there are important statistical differences between the initial and final measures in the anthropometric parameters (body Weight) and all variables of speed and agility performance at the football players under the age of 13.

Table 2. The variables data of anthropometric (body height and weight) and motoric performance (speed and agility) at the initial and final measurement of the young football players U15.

Variable	initial (M±SD)	Final (M±SD)	t	Sig.
Age (years)	13.8±0.5	14.2±0.5	-	-
Weight (kg)	53.4±8.4	56.3±8.3	-4.77	.001
Height (cm)	167.8±7.6	169.7±7.1	-5.74	.000
Sprint 5m	1.22±.12	1.20±.15	-.23	.820
Sprint 10m	2.12±.15	2.04±.15	-1.15	.271
Sprint 30m	4.91±.39	4.90±.31	.05	.954
Ajax 5x10m	13.71±.46	13.33±.61	2.15	.054
20m zigzag without ball	6.89±.36	6.66±.43	1.49	.162
20m zigzag with ball	8.47±.55	8.35±.77	.66	.517

The results of Table 2. show that with paired sample t-test analysis for the mean score and significant value Sig. proved that there are important statistical differences between the initial and final measures in the anthropometric parameters, but unimportant statistical differences in the variables of speed and agility performance at the football players under the age of 15.

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Discussion and conclusions

Although a great number of studies have focused on the evaluation conditional performance of soccer players, most of them were focused only on changes of speed and agility performance after a training program applied during the season (Sporiš, G. 2007; Markovic et al., 2007; Milanović et al., 2013). We proved that regular soccer training sessions applied 3 times a week, in a duration of 16 weeks have important statistical effect in the speed and agility at the young soccer players under the age of 13, that means that the age period 11-13 years old is a sensitive period for speed and agility improvement for soccer players. In this research it was proved that regular soccer training sessions applied 3 times a week in a duration of 16 weeks did not have any important statistical effect in testing of speed and agility of football players.

We can conclude that the applied regular soccer training sessions for U15 have not any impact on speed and agility of young soccer players. We conclude that the aforementioned training program is not enough to improve speed and agility of soccer players aged 13-15. We recommend investigating the specificity of different age groups and application of special session for the purpose of further improvement of speed and agility. Results show that 11-13 year-olds are the most sensitive period of 13-15 year-olds to develop speed and agility. These results can be used as an incentive to research the impact of regular soccer training and other characteristics of the anthropologic status.

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UTJECAJ REDOVITOG PROGRAMA OBUKE U PERFORMANSI BRZINE I AGILNOSTI MLADIH NOGOMETASA

Sažetak

Programi treninga za mlade nogometaše imaju za cilj optimalni razvoj relevantnih performansi za igru nogometa. U posljednjih nekoliko desetljeća postoji evoluciju različitih programa za pripremu igrača u različitom vremenskom razdoblju njihova razvoja. Cilj ovog istraživanja je utvrditi utjecaj programa obuke u tijeku makro ciklusa (pripremni period i razdoblje utrke prvenstva) u performansi brzine i agilnosti mladih nogometaša. Istraživanje je provedeno u razdoblju između kolovoza i studenog 2015. godine na uzorku od 22 mladih nogometaša podijeljenih u dvije skupine (10 igrača u rasponu 11-13 godina i 12 igrača u rasponu 13-15 godina). Prva su mjerenja tjelesne težine i visine tijela, brzine (5m, 10m, 30m) i agilnosti (5x10m, 20m cik-cak sa i bez lopte), izvedena su prije početka obuke. Brzina i agilnost mjerene su s elektroničkim fotočelijama, s preciznošću (.01) sek. Obje skupine igrača imale su redoviti program treninga 3 puta tjedno u trajanju od 4 mjeseca. Nakon završetka redovitog programa obuke, sudionici obje skupine podvrgnuti su konačnim mjerenjima. Rezultati t-test analize (za zavisne uzorke) pokazali su da je program redovitog treninga doveo da za statistički značajnih razlika između dvaju mjerenja (početnog i završnog) u varijablama brzine i agilnosti mladih nogometaša skupine u dobi (11-13) godina. Statistička značajnost je bila na razini $p < 0,05$. U drugoj skupini mladih nogometaša u dobi (13 - 15) godina razlike nisu bile statistički značajne. Na temelju dobivenih rezultata može se zaključiti da program redovitog treninga ima statistički značajan utjecaj u performansi brzine i agilnosti mladih nogometaša u dobi (11-13 godina), ali ne i za skupinu nogometaša u dobi (13 - 15) godina starosti. Iz toga se može zaključiti da je dob od (11-13) godina senzitivnija za brzi razvoj brzine i agilnosti mladih nogometaša.

Ključne riječi: nogomet mladih igrača, obrazovni program, brzina, agilnost.

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