THE DEVELOPMENT OF RUNNING SPEED AND AGILITY OF COLLEGE SOCCER PLAYERS, THROUGH SPECIFIC PHYSICAL TRAINING

Dezvoltarea vitezei de alergare şi agilităţii la jucătorii de fotbal din mediul universitar, prin intermediul unui program de pregătire specific

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Abstract

Within the theory and methodology of the soccer game there is a permanent concern for identifying those efficient ways, means and methodologies, which ensure the accomplishment of the instructive-educational objectives and tasks specific to each echelon.

Involvement of children, young people and adults in the educational process specific to soccer discipline, essentially contributes to solving the priority tasks of physical education at national level. Therefore, soccer is considered a foreground program, provided at the level of school curricula of all degrees.

Soccer players must have exceptional speed and quickness levels that must be consistently trained. Agility training is used to improve acceleration, foot speed, quickness, switching gears, cutting, starting/stopping, change of direction, and reaction, but it also aids in preventing injuries by improving body control through proper movement mechanics.

Through its content and approach, this research aims to demonstrate the influence of a specific physical training program on speed and agility of college soccer players. Furthermore, the study emphasizes the importance of proper evaluation of these aspects, by using modern and effective tools, which contributes to a better understanding and completion of soccer training tasks.

Keywords: running speed and agility, specific physical training, college soccer players

Introduction

Within the theory and methodology of the soccer game there is a permanent concern for identifying those efficient ways, means and methodologies, which ensure the accomplishment of the instructive-educational objectives and tasks specific to each echelon.

Involvement of children, young people and adults in the educational process specific to soccer discipline, essentially contributes to solving the priority tasks of physical education at national level. Therefore, soccer is considered a foreground program, provided at the level of school curricula of all degrees.

Regardless of the actual way of doing it, soccer requires players to perform numerous actions that require strength, power, speed, agility, balance, stability, flexibility and endurance (Bloomfield et al., 2007; Gorostiaga et al., 2004; Helgerud et al., 2001) suggesting that the physical conditioning of players is a complex process (Milanovic Z., Sporis G., Trajkovic N., James N., Samija K., 2013).

In a 1996 study, V. Gambetta states that high-speed actions in soccer have been categorized as requiring acceleration, maximal speed or agility skills, whilst others described speed in soccer as consisting of running speed, reaction speed and acceleration speed during the first steps - referred to as quickness (Chapman et al., 2008). Both of these categorizations imply that speed, agility and quickness training method should be a useful component of fitness training in soccer (Pearson, 2001).

Soccer players must have exceptional speed and quickness levels that must be consistently trained. A 30 meter straight ahead sprint is not the only way to assess an athlete's speed. There is a difference between quick and fast.

The best athletes have a combination of both quick and fast characteristics and both elements must be trained (http://www.soccer-training-info.com/agility_training.asp). Lateral speed and agility work lays the foundation for an athlete in any sport. Agility training is used to improve foot speed, quickness, acceleration, switching gears, cutting, starting/stopping, change of direction, and reaction, but it also aids in preventing injuries by improving body control through proper movement mechanics.True soccer game speed means linear speed and agility. Whether it's the quickness exhibted with fast footwork and dynamic moves, or rapid changes of direction, you can't be lacking.

These are skills that can be trained through better movement mechanics and by improving the right physical qualities (http://www.stack.com/a/soccer-agility).

Purpose

Through its content and approach, this research aims to demonstrate the influence of a specific physical training program on speed and agility of college soccer players. Furthermore, the study highlights the importance of proper evaluation of these aspects, by using modern and effective tools, which contributes to a better understanding and completion of soccer training tasks.

Hypothesis

The use of a specific physical training program during the college soccer players'lessons will improve the level of performance in running speed and agility component.

Methods

The experiment took place from October, 9th 2017 until December, 19th 2017, during the first semester of the 2017-2018 academic year. 50 college students from 1st year of study were selected to participate in this research experiment, all being enrolled and taking part in soccer lessons.
The specific physical training program was applied at the beginning of each soccer session, during 45-60 minutes and it consist in the following three categories of exercises:

1) Cone drills:

The cons are distributed as shown in the image below (figure 1). The distance between each cone is 5 meters. The player starts on the first cone on the left and he must describe an M and an N letter as fast as he can, using forward, backward and lateral movements and fast changing of direction.

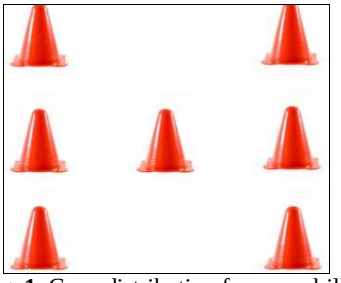

Fig. 1: Cone distribution for cone drills

2) Hurdle drills:

Using a 30 cm hurdles, five in a row, parallel to each other, the soccer player steps over them using different movements combinations: high and laterally steps. At the end of each exercise, the player carry out a 5 meters sprint.

3) Ladder drills:

For this exercises we used a standard speed and agility ladder (4m long, 0,5 m wide, 8 rungs, distance between rungs 40cm) and the following exercises:

- high-knee march forward;
- one foot in each box;
- two feet in each box;
- one foot in each box – lateral;
- two feet in each box lateral.

At the end of each exercise, the player carry out a 5 meters sprint. Each categorized exercise was completed three times/session, with a 30seconds up to a minute break between the drills.

The evaluation of the results obtained at the end of the semester has been established from January 4th, 2018 until January 20th, 2018, during the evaluation session and consisted in the application of running speed ang agility subtest of the Bruininks-Oseretsky Test, Second Edition. Activities in this subtest include:

Item 1: Shuttle Run
Item 2: Stepping Sideways over a Balance Beam
Item 3: One-Legged Stationary Hop
Item 4: One-Legged Side Hop
Item 5: Two-Legged Side Hop

Results

Statistical processing of the research results was accomplished using the BOT-2 ASSIST™, Scoring and Reporting System (software belonging to the Bruininks-Oseretsky Test, Second Edition) and EXCEL 2003 Software of Microsoft Company. The BOT-2 ASSIST™ converts total scores obtained by subjects after applying the Bruininks-Oseretsky Test, Second Edition into derived scores, which shows a common significance in terms of their interpretation from a subtest to another and from one age group to the other.

As part of our scientific approach, interpretation of the results was based on scale score, wich tells how far an examinees' point score is from the mean point score of examinees of the same age, taking into account the standard deviation of point scores in the population sampled.

Table 1*: Scale Score Mean - Initial and Final Testing Running Speed and Agility*

Testing	Mean	Median	Standard Deviation	Mode	Min.	Max.	Amplitude	Coefficient of variation
Initial	14.64	15.00	2.17	15	11	21	10	14.8%
Final	15.24	15.00	1.70	15	13	21	8	11.1%

Table 2*: t Dependent Bilateral Test*

Mean Testing Difference	Statistic Indicators Differences						Size effect
	Mean	Median	Standard Deviation	t critical	t calculated	P	
Final-Initial	0.60	0.00	0.73	2.010	5.824	< 0.001	0.82

The average scores for the *Running Speed and Agility* parameter are equal to 14.64 at the initial test, respectively 15.24 units at the final test. In both tests the dispersion of data around the mean is homogeneous. The magnitude of the effect (0.82) indicates large differences between the two average scores. The graphical representation of averages and scores recorded at Running Speed and Agility are shown in figures below:

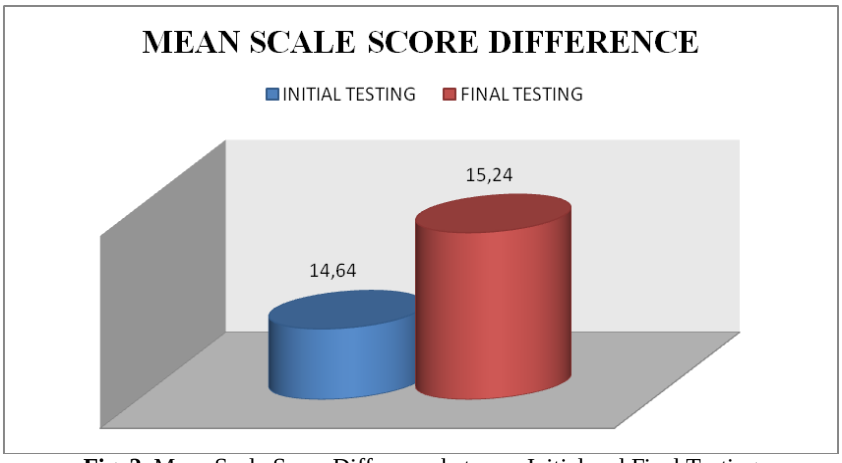

Fig. 2: Mean Scale Score Difference between Initial and Final Testing

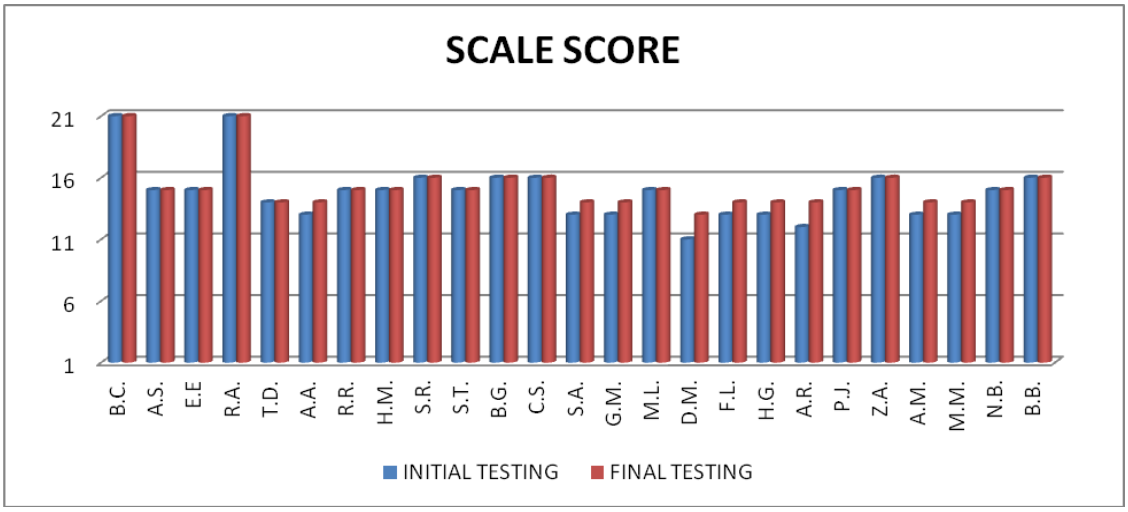

Fig. 3: Scale Scores - Initial and Final Testing

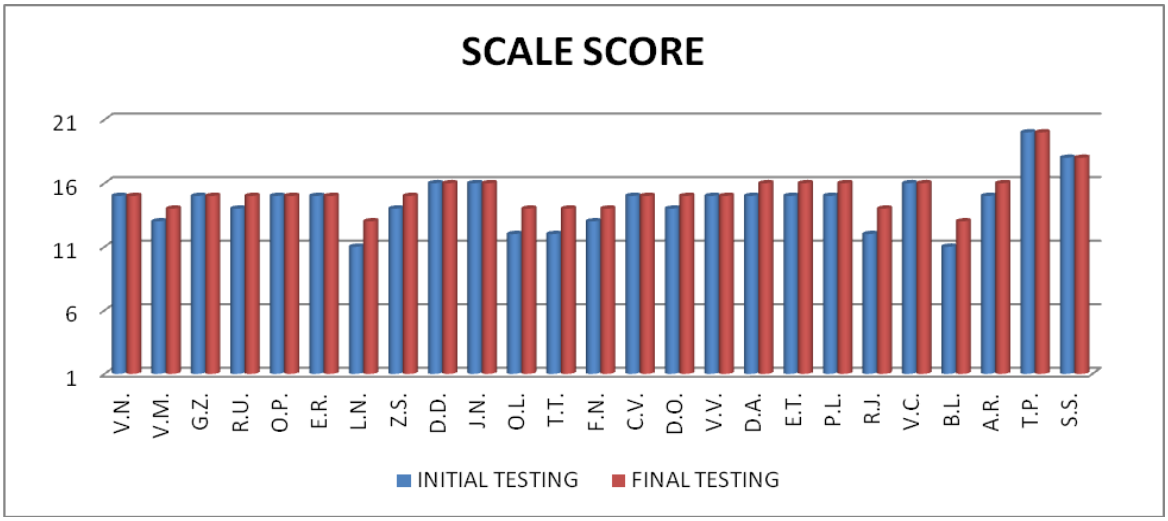

Fig. 4: Scale Scores - Initial and Final Testing

Conclusions

The results of the bilateral t-test show that $p < 0.001 < 0.05$. The difference between the mean scores in the two tests is statistically significant, the mean final test score being 0.60 units, which allows us to assert that the research hypothesis is accepted.

The results of the present study highlight the importance of implementing the proposed specific physical training program in order to develop and optimize the running speed and agility component, seen as an important vector in the training process of college soccer players.

Moreover, the objective evaluation of the recorded performances, by modern means, creates the premises of a complex approach of the instructive-educational process, with major influences on the progress registered by the students.

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*** http://www.soccer-training-info.com/agility_training.asp

*** http://www.stack.com/a/soccer-agility