Optimization of Football Resistance Capacity in Juniors at High School Sports Program in Galaţi

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Abstract

The novelty and the trends in the football game are highlighted by a series of specialists (Motroc, 1994, Manoloche, 2005, Dragan, 2006) who appreciate that football is currently evolving increasingly towards a game of force speed, forgetting in some cases the technique-based football.

Better training methods, innovations by coaches, players, and interdisciplinary specialists on sports training factors, and even changes in regulation have made changes in the dynamics of football play (Dragan, 2006).

High performance football through its individual and collective expression is a phenomenal "art", but training in training must be done scientifically, based on precise rules that support the continued growth of game quality (Manolache, 2005). Through the chosen theme, the work aims at: highlighting the main causes that lead to poor results in testing the effort / resistance capacity of 17-18 year olds; selecting and proposing appropriate means to increase the value of motor skills and in particular the resistance indicators of 17-18 years old footballers from (LPS) High School Sports Program) Galati.

For the investigated group, several experimental action systems specific to the football game were selected and applied to increase the aerobic effort of the junior footballers. The footballers involved in this experimental study practice football for at least 8 years and have participated in specialized competitions for their age. Lesson duration was 90-120 minutes, 5 times a week. The results of the initial test of the Cooper test and the "20-meter resistive climb test" with 1 minute ranges indicate that the LPS Galati, players tested had an average aerobic effort capacity, with real chances to increase performance If suitable means are used to prepare them to optimize the resistance of junior footballers. At the same time, the analysis of the results resulted in the formulation of the working hypothesis and the selection and application of specific actuation systems that contribute to the increase of the resistance indicators of the investigated sample.

Following the application of the drive systems specific to the development of resistance capacity, the results of the athletes included in this experimental study were evaluated and received very good marks, both in terms of the distance traveled and the maximum volume of O2 consumed in effort.

Keywords: sports training, soccer, football players, strength, effort

Introduction

The football game requires different types of effort from the players, determined mainly by the meaning of the game's actions characterized by: different speeds, changes of direction, rhythm, turns, jumps, rollovers, drops all happening from unexpected situations (Dragnea, 1996).

It is also characterized by the appearance during the specific effort of some violent contacts with the field, the ball, but especially with the opponents. Hence the need for the player's lower train to be developed with flexible and mobile articulation and musculoskeletal structures to achieve high-precision and robust technical manoeuvres to resist forced asymmetric movements and game-induced shocks (Dragan, 2009).

Football requires great efforts from the body, the nervous system, all aspects of the psychological and physiological activity of the players. The structure of the football effort indicates that the efforts of high intensity and short duration alternate with those of low intensity and longer duration (Ionescu, 1995).

The movement on the ground is discontinuous and acyclic, with players making sudden shifts, varying in distance, direction and rhythm, all of which engender a large muscle mass, which also requires high energy consumption (Bompa, 2001).

During training and games that take place in difficult climatic conditions (cold, snow), muscular overload and energy consumption are added to the game. Compared to other ball games, footballers have achieved a higher level of cardio-respiratory capacity development (Alexe, 1993).

In general, the effort put on by footballers is increasing due to the technical evolution and complexity of the game from a tactical point of view. Efforts in footballers fall into the category of large and very large efforts, characterized by the acyclic sequence of aerobic and anaerobic phases (Dragan, 1989).

Objectives

Documenting and reporting on causes that cause mediocre outcomes to test the effort of 17-18 year old players; selection and application of actuation systems that contribute to the increase of the value of the resistance indices of the 17-18 year old footballers from LPS Galati.

At the basis of the working hypothesis formulation, it is assumed that if in the training of 17-18 year-old adolescents, football players are carefully selected and applied specific training systems in preparation, it will be emphasized the optimization of the players' ability to resist LPS Galati.

Means and materials

Research protocol

The experimental study was carried out on 16 athletes aged 17-18 years, from High School Sports Program in Galaţi, from January 10, 2017 to May 15, 2017, in the training sessions of LPS Galați.

The footballers involved in this experimental study practice football for at least 8 years and have participated in specialized competitions for their age. Lesson duration was 90-120 minutes, 5 times a week.

Evaluation tests

Tests to determine strength/aerobic capacity: Cooper (TC) and Shuttle test (TN) Drive systems used to increase the resistance of footballers from LPS Galati - Table 1.

Exercise structure for resistance development	Technical execution in resistance regime	Tactical actions in resistance mode
A. Running's in uniform temples of ¼ or 2/4 **- Running for 3-4 '** **- Run on flat or varied terrain (400-800 or 1200 m)** **B. Variable Temp Trends:** **- 20 m 2/4 - 20 m ¾ - 20 m 2/4, pause 1 ';** **- 10 m 3/4 - 30 m 2/4 - 10 m 1/4, 10 m 4/4 pause 1 ';** **- 30 m 2/4 - 30 m ¾ - 20 m 2/4 - 10 m 4/4, 2 'pause. A. Running's in uniform temples of ¼ or 2/4** **- Running for 3-4 '** **- Run on flat or varied terrain (400-800 or 1200 m)** **B. Variable Temp Trends:** **- 20 m 2/4 - 20 m ¾ - 20 m 2/4, pause 1 ';** **C. Running speed development:** **- 10 m 3/4 - 10 m 4/4 - 10 m 3/4, pause 1 'and repeat once again the 3 portions;** **- 10 m 4/4 - 10 m 4/4 - 10 m 4/4, pause 2 'and repeat the three portions again;** **- 20 m 2/4 - 30 m 4/4 - 10 m 1/4, 15 m 4/4;** **- 25 m 2/4, pause 2 'and repeat once more.** **D. Repeated jump (free or over-string):** **- Jumping with the ball in 4 strokes and performing a maximum separation (during 3) (runs 5 times 4 times, pause 1 ', then repeat once again;** **- 6-8 jumping with knees to the chest, 30 "pause, then repeated again;** **E. Team, stack and game group games involving the joining of the above elements without the full distance of the course exceeding 100 m (generally between 60-80 m).**	**Repeating the same technical execution or a chain of action characteristic of football:** **- 10 plunge on the right and 10 on the left, for the goalkeepers;** **- 30 rounds with the right and 10 with the left;** **- 20 rebounds from the gate;** **- 60 free kicks at the goal (40 with the right, 20 with the left);** **- 200 wall passes made in 5 ';** **- 20 jump to the head with beating on both legs (hanging balls);** **- 10 plonjonne on the right and 1 'jumping over the string;** **- 30 shots on the goalie ball, 10 jumping imitation head strokes, 10 m sprint ended with two rolls;** **- driving 15 m, feint, driving 5 m, shooting at the gate or launching, centering, opening, etc. Repeating groups of 2-3 players with tactical combinations:** **- repeating 3-4 times an action closing the extreme launch, centering, passing and firing at the gate;** **- 3-4 times repetition of the action, which includes passages between the side and the central defender, attacking the lateral defender, taking over the passes sent by the central defender, centering;**	**- repeating 3-4 times an action closing the extreme launch, centering, passing and firing at the gate;** **- 3-4 times repetition of the action, which includes passages between the side and the central defender, attacking the lateral defender, taking over the passes sent by the central defender, centering;** **- Repeating 4-5 times the doubling between the central defender and the two sides in actions initiated by three advertised attackers, etc.**

Table 2 Assessment of the Cooper test results

Qualification	Very Good	Good	Average	Under Medium	Low
Dist. Parc. (m)	3000 m +	2700-3000 m	2500-2699	2300-2499	2300 m -
VO_2 (ml/kg/min)	58±1.5	54±1.5	50±1.5	46±1.5	42±1.5

Following the application of the drive systems specific to the development of the resistance capacity, the results of the athletes included in this experimental study are evaluated with very good qualities, both in terms of the distance travelled and the maximum volume of O2 consumed in the exercise - Table 3.

Table 2 Dynamics of the Cooper test results

Nr. crt. / Ind. statist.	Testate	Distance parcels (m)	VO_2 max (ml/min)	Testate	Distance parsers (m)	VO_2 max (ml/min)
1.	INITIAL	2680	48.63	FINAL	3180	59.81
2.		2750	50.19		3050	56.9
3.		2700	49.07		3100	58.02
4.		2800	51.31		3100	58.02
5.		2800	51.31		3170	59.58
6.		2600	46.84		3170	59.58
7.		2780	50.86		3200	60.25
8.		2750	50.19		3150	59.13
9.		2620	47.29		3100	58.02
10.		2640	47.73		3200	60.25
11.		2680	48.63		3180	59.81
12.		2700	49.07		3300	62.49
13.		2830	51.98		3280	62.04
14.		2770	50.64		3200	60.25
15.		2700	49,07		3150	59.13
16.		2680	48.63		3150	59,13
x		2717	49.46		3167	59.52
P	+ 450 m			+10,06 ml/O_2		
± *S*		±6.86	±1.52		±6.43	±1.43
C_V%		2.5	3.0		2.03	2.41

In the case of the "20-meter resistance craft with 1-minute ranges", after applying the drive systems selected for the development of resistance, the results of the LPS Galați junior footballers indicate an average of 11.06 1-minute walks on distances of 20 m, and the maximum volume of O2 consumed is around the average of 55.78 ml / O2.

Referring to the Leger and Lambert (1984) table - Table 4.

Table 4 The Leger and Lambert Table (1984)

TEST	SURFACE NAVIGATION COURSE	
Palier (min)	Speed (km/min)	Split time (sec)
1	8	9.000
2	9	8.000
3	9,5	7.579
4	10	7.200
5	10,5	6.858
6	11	6.545
7	11,5	6.261
8	12	6.000
9	12,5	5.760
10	13	5.538
11	13,5	5.333
12	14	5.143
13	14,5	4.966
14	15	4.800
15	15,5	4.645
16	16	4.500
17	16,5	4.364
18	17	4.235
19	17,5	4.114
20	18	4.000
21/23	18,5	3.892

The results recorded by the athletes included in the experimental study show superior values for final testing, highlighting the average distance of the 11.6-mile average test at a speed of about 14 km / min, averaging About 5.555 seconds. The mean value of 55.78 ml of O2 maximum consumption during the 20 m buoyancy test with a level test indicates good O2 air consumption - Table 5.

Table 5 Dynamics of the 20 m crash test scores

Nr. crt. / Ind. statist.	Test	Paler	VO_2 max (ml/min)	Test	Paler	VO_2 max (ml/min)
1.	INIȚIAL	9	50.3	FINAL	10	53.1
2.		9	50.3		10	53.1
3.		9	50.3		11	56
4.		10	53.1		11	56
5.		11	56		12	58.8
6.		10	53.1		11	56
7.		10	53.1		11	56
8.		8	47.4		10	53.1
9.		8	47.4		10	53.1
10.		9	50.3		11	53.1
11.		10	53.1		11	53.1

12.		**11**	**56**		**13**	**61.6**
13.		**11**	**56**		**13**	**61.6**
14.		**10**	**53.1**		**11**	**56**
15.		**9**	**50.3**		**11**	**56**
16.		**10**	**53.1**		**11**	**56**
x		**9.62**	**52.05**		**11.06**	**55.78**
P	**+ 1.44**			**+ 3,73 ml/O_2**		
± *S*		**±0.95**	**±2.73**		**±0.92**	**±2.83**
C_V%		**9.94**	**5.24**		**8.39**	**5.07**

Following the analysis and interpretation of the data from this experimental study, the following conclusions can be drawn:

1. The study has verified that in the sport training process aimed at improving the resistance indicators of junior footballers it is indicated the use of carefully selected actuation systems in order to match the age specifics and athletes training level.
2. The working hypothesis was checked so that the means used were judiciously selected, so they led to an increase in the level of resistance indices of the athletes included in the study.
3. The objectives of the research have been fulfilled because good documentation has been carried out, adequate control samples have been set up, tests have been carried out and statistical and mathematical calculations and interpretations have been carried out.
4. The area of the specific means used has contributed to increasing the luggage of skills and motor skills specific to the game of football embodied in skills.
5. The mentioned means were used in the thematic links of the lessons and they were constituted in units of learning.
6. The control samples and tests used were good because the recorded results gave us the correct picture of the progress achieved.
7. Through the study, but also through the practical activity, the players can be identified and applied, attractive and stimulating means to increase the aerobic effort capacity, implicitly the general resistance of the athletes.

Proposals:

* Correct and efficient administration of the actuation systems in the training programs for the development of the aerobic effort capacity at the level of the juniors in order to achieve higher performances corresponding to the requirements of the modern football;

* Developing combined resistance quality, in all its forms of expression, to provide players with a general physical training in accordance with the requirements of the footballer and the game;

* The development of resistance can lead to the efficiency of the game, in the game ends through individual and collective achievements;

* For the development of resistance it is useful to use a methodical line (methods and means) adapted and individualized on groups of players, focusing on intensity - duration - pause.

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