

4. Using the Garmin Forerunner 210HRV system, both in education and training process, and in the competitive one has substantially contributed to increase the efficiency of managing the training process, as well as helping in the process of planning the means of practice, their more effective structuring.

REFERENCES

1. Poplawski J. Nowe tendencje w planowaniu treningu. V: Sport Wyczynowy, 1988, №12, p. 39-45.
2. Коновалов В.Н. Оптимизация управления спортивной тренировкой в видах спорта с преимущественным проявлением выносливости. Дис. д-ра пед. наук: 13.00.04. Москва: РГБ, 2003. 327 с.
3. Кулаков В.Н. Программирование тренировочного процесса высококвалифицированных бегунов на средние, длинные и сверхдлинные дистанции. В: Легкая атлетика, 1991, №6, с. 12-13.
4. Разумовский Е.А. Совершенствование специальной подготовленности спортсменов высшей квалификации. Автореф. дис. ... д-ра пед. наук. Москва, 1993. 79 с.
5. Попов Ю.А. Система специальной подготовки высококвалифицированных бегунов на средние, длинные и сверхдлинные дистанции. Автореф. дис. ... докт. пед. наук. Ярославль, 2007. 45 с.
6. Разумовский Е.А. Совершенствование специальной подготовленности спортсменов высшей квалификации. Автореф. дис. д-ра пед. наук. Москва, 1993. 79 с.
7. Струганов С.М. Рациональное планирование тренировочного процесса на этапе специальной подготовки высококвалифицированных бегунов марафонцев. Автореф. дис. ... канд. пед. наук. Улан-Удэ, 2007. 30 с.

Differentiated Physical Training Within The Framework Of A Yearly Training Cycle Of Young Defenders In Football

Sergei Sîrghi^a, Vasile Stepanov^b

^{a, b} State University of Physical Education and Sport, Republic of Moldova, Chisinau

Abstract

The main aim of this study was to find out the increase level of the differentiated special physical training for different age categories of footballers depending on their positions in the field, especially defenders. A complex test of special physical features has been performed in order to achieve this objective. Reevaluation of the training process of children and juniors practicing football is a complex phenomenon that requires training solutions based on multiple information, experiments, research and studies. It has a number of features, mainly due to the peculiarities that are shown by different periods of their development. That's why the problem of differentiated physical training for 13-14 year-old footballers has been approached. The settled current major scientific issue in this area covers a differentiated approach to the development of the young footballers' specific physical qualities which will further optimize the educational process and enhance its effectiveness. Following the review of literature in the field, teachers' observations during the experiment, and relying on survey data, the following have been prioritized: the development of physical qualities specific to young players depending on their game positions, the ways of their manifestations, determining the specific differentiated physical training level in the course of one-year training cycle, which, in their turn, extend and complement the existing layout in the theory and methodology of sports training in football.

Keywords: football, junior, special physical training, differentiated training, player's field position in the game, defenders, young players

Introduction

The actuality and the importance of the approached problem is that the activity related to football gear during the game depends largely on the level of special physical preparation, which is the base of technical and tactical training manifestation.

In the recent decades, during which continuous improvements in physical training were made, the development of the football game has reached a new conception stage of this sport, which means that the game is organized and conducted on the basis of certain well explained ideas and attitudes ever more specialized and always masterful. In modern football, we can observe a varied content of the different compartments of sports training (physical, technical,

tactical, psychological), it includes unpredictable actions, which can lead to victory, even during the last seconds [1,2,3,4].

The current training system divides the yearly training process in preparation period, competitive and transition, each one has specific targets related to the development of special physical training indices. It should be noted that the development of basic motor skills like speed, speed under resistance, force in the condition of speed derive irregular, because the means and methods used by coaches are chosen according to the targets of sports training periods. In this context, the authors [3,4,5,6] consider that the implementation of tasks, different means and methods has a different impact on increasing the level of physical training, and first of all of the special one.

That's why the research of the development of special physical training indices dynamics during an annual cycle of the training process of defenders is an actual problem. Until now, most research in football were directed towards the study of issue of general physical training of defenders of different ages and it was less focused on special physical training [5,6,7].

This requires an appropriate planning and driving training, which would allow them, regardless of the position in the game, to face the situations on the field.

We consider that one of the characteristics of this problem is special physical training and technical training in different periods. From the content of the studied materials, during the preparatory period, the differentiation of players on position in the game, is especially evident in the terms of physical preparation [7,8,9,10].

The individualization of players can be useful for specialization in their field position in the game, but this cannot be achieved through common training.

All these moments indicate the fact, that the football players on the attack line meet an irregular effort. The defenders act in a steady condition requiring from them a higher level of general resistance development.

In this context the special physical training of football players on different game positions must be planned and implemented in accordance with their specialization that is according to the player's field position in the game. However, in the scientific-methodical literature, the problem of training individualization of footballers depending on their game positions is not enough related.

Namely, it has become the reason that we approached the problem of differentiated special physical training of junior defenders in a yearly training cycle, describing in detail the characteristics of morpho-functional and psychological aspects of this period.

Methodology and research organization

The purpose of research is to optimize the structure and the content of the physical training for the 13-14 year-old junior football players, based on differentiated exercise training of defenders in a yearly training cycle.

In the undertaken researches the following methods were used: analysis and generalization of literature data; analysis of the planning documents of the training process; pedagogic observation; questionnaire-based survey; testing method; teaching experiment; statistical and mathematical method of processing and interpretation of data.

The pedagogic experiment was carried out during two stages. The first preliminary stage ascertained factual data acquisition related to the explored theme on a sample of 68 children of the age 13-14, practicing football and playing as defenders. The second stage - the formative experiment included 16 children, a control group (n = 8) and an experimental (n = 8), where the experimental program and methodical route were applied. The control group was made up of players from the same school of the same age and the same level of training.

The activity was organized according to the program, implemented in specialized sports football schools, including football game themes planned for the period of a competitive year. For working in the experimental groups, 580 hours (12 hours per week) were planned under an experimental program developed by us.

In order to determine the level of differentiated special physical training and the level of forming training motor skills specific for defenders in the limits of CTYF "Zimbru" groups, we have applied tests to confirm the utility of the used program.

Throughout the basic pedagogical experiment, the proposed program was carried out on the experimental group. The program includes specific means for the game of defender and means selected according to the established objectives and purpose.

Research results. Analyzing the data and the opinions of experts in the field, it was found that one of the main objectives of the research was to outline the level of the development and differentiated special physical training of footballers of different age groups and specialized as defenders in a yearly training cycle. To achieve this objective we have carried out a complex testing of motor skills specific to the position of defender in number of 16, divided into the experimental group (n = 8) and the control group (n = 8). In the ascertaining experiment, complied with the requirements of CTYF "Zimbru", it was determined the physical growth (height and weight) and there were applied five motor tests.

Table 1. Tests for appreciating the special physical training of young footballers (F.M.F.)

	<i>Test</i>	<i>Measuring factor</i>	<i>Test description</i>
1	Sprint 10 m	The purpose of the test: to determine the start speed	<p><i>Instructions:</i> from the standing position with the front leg placed on the starting line, the player is determined to run as quickly as possible the distance of 10 m. Start time is determined individual by the player.</p> <p><i>Total attempts:</i> three (3), with a break of at least 3 minutes between them.</p> <p><i>Additional materials:</i> photocell barriers, a measuring roulette, cones.</p> <p><i>Evaluation:</i> record the best time of the three attempts on 10 m distance.</p>
2	Sprint 30 m	The purpose of the test: to determine the speed on a distance and the capacity of acceleration	<p><i>Instructions:</i> from the static positions with the front foot placed one meter from the starting line, the player is determined to run as quickly as possible the distance of 30m. Start time is determined individual by the player.</p> <p><i>Total attempts:</i> three (3), with a break of at least 3 minutes between them</p> <p><i>Additional materials:</i> photocell barriers, a measuring roulette.</p> <p><i>Evaluation:</i> record the best time of the three attempts on 30 m distance.</p>
3	Long jump from standing	The purpose of the test: to determine the explosive strength	<p><i>Instructions:</i> from the static position the player is obliged to perform a jump without impetus with both feet in length with maximum force.</p> <p><i>Total attempts:</i> three (3), with a break of at least 3 minutes between them.</p> <p><i>Additional materials:</i> cones, a measuring roulette.</p> <p><i>Evaluation:</i> record the best jump.</p>
4	Alternative speed running on the distance of 180m	The purpose of the test: to determine the special resistance	<p><i>Instructions :</i>the player is determined to travel 180 m as quickly as possible. The player is forced to run after the run, bypassing the cones obligatorily.</p> <p><i>Total attempts:</i> one (1).</p> <p><i>Additional materials:</i> 4 big cones placed at a distance of 10 m, chronometer and a measuring roulette.</p> <p><i>Evaluation:</i> record the best result.</p>

5	Running 6 min	The purpose of the test: To determine the special resistance	<p><i>Instructions:</i> for 6 minutes the player is determined to cover a distance as long as possible on a course set by 300-400 m around the football field.</p> <p><i>Total attempts:</i> one (1).</p> <p><i>Additional materials:</i> cones that separate route, chronometer and a measuring roulette.</p> <p><i>Evaluation:</i> record the result of the attempt.</p>
---	--------------------------	--------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

The research results allow us to conclude that, from the statistical point of view, for both indices of physical growth and of physical training, there is no significant difference between data recorded in the experimental group and those from the control group.

Comparing the effects of applying the experimental program through the report of average results to the final testing between the EG and CG, we can mention that the increase of the results of young footballers playing in different game positions is within the limits of the marks “good” for EG and “medium” for CG.

Table 2. Evaluation dynamic of the level of specific physical training of players specialized as defender (n=8)

Nr. crit.	Indicators	Groups and Statistics	Statistical indicators			
			Initial	Final	t	P
1	Height (cm)	M	163.40±2.54	166.22±2.52	1.30	> 0.05
		E	163.80±2.56	166.84±2.50	1.40	> 0.05
		t	0.11	0.17	—	—
		P	> 0.05	> 0.05	—	—
2	Weight (kg)	M	46.90±1.20	48.48±1.19	1.55	> 0.05
		E	46.54±1.19	48.02±1.15	1.48	> 0.05
		t	0.21	0.28	—	—
		P	> 0.05	> 0.05	—	—
3	Running 10 m (s)	M	1.89±0.04	1.84±0.03	1.67	> 0.05
		E	1.88±0.04	1.82±0.03	2.00	> 0.05
		t	0.17	0.50	—	—
		P	> 0.05	> 0.05	—	—
4	Running 30 m (s)	M	4.76±0.10	4.66±0.09	1.25	> 0.05
		E	4.80±0.11	4.38±0.08	5.25	< 0.001
		t	0.27	2.33	—	—
		P	> 0.05	< 0.05	—	—
5	Running 180 m (s)	M	44.48±0.47	4.08±0.45	1.21	> 0.05
		E	44.40±0.46	42.72±0.43	4.42	< 0.01
		t	0.12	2.19	—	—
		P	> 0.05	< 0.05	—	—
6	Long jump from standing (cm)	M	194.90±3.73	198.67±3.71	1.18	> 0.05
		E	195.80±3.75	211.26±3.68	4.84	< 0.001
		t	0.17	2.41	—	—
		P	> 0.05	< 0.05	—	—
7	Running 6 min (m)	M	1271.55±17.35	1286.11±17.29	0.98	> 0.05
		E	1275.20±17.12	1338.23±16.99	4.31	< 0.01
		t	0.15	2.75	—	—
		P	> 0.05	< 0.05	—	—

Note: E –experimental group, C –control group
n= 8; P - 0.05; 0.01; 0.001 r = 0.707
f = 14; t = 2.145 3.977 4.140
f = 7; t = 2.365 3.499 5.408

Knowing that height is the most important indicator to highlight the child's growth and development, we can mention that during one competitive year the height's parameters of young footballers playing as defenders from both EG and CG showed a non-uniform increase. This increase is probably due to the physiological effect of age, because the parameters have changed irregularly for young players on this game position.

Analyzing the results of junior defenders, we see that the final results for testing the speed are significantly higher compared with the initial results ($P < 0, 05$).

After processing the results of pedagogical experiment for testing force-speed, both the experimental group and the control group achieved significantly better results compared with the initial ones.

Finally, for testing the defenders' resistance, we could notice essential improvement of the final results compared with the results of the initial test. The reason is that defenders are those players who carry a heavy workload on the field and it requests an appropriate motor resistance.

Consequently, the application of the experimental program during the formative experiment, focusing on differentiated motor training of young footballers, has clearly demonstrated its effectiveness through the achieved results in most registered tested indicators and parameters. We refer primarily to the increase of development level of motor parameters: defenders from the experimental group have improved significantly their performance in the majority of tests submitted to pedagogical research.

Conclusion

1. The review of the literature in the field shows clearly that during the football game there are many game situations which require a corresponding physical training of footballers for each game position. In the same time, there are no bibliographic sources which treat the problem of differentiated physical training of junior defenders during a yearly training cycle.

2. Through the study we have carried out and after the statistical processing of the final experiment results, it was established that the level of general and special physical training of young defenders is quite modest, which highlights once again that at present there is no a coherent approach towards the differentiated physical training of junior football players.

3. After applying the experimental program in the frame of the formative experiment, it has been clearly demonstrated that statistically the experimental group showed a significant superiority at all final motor tests that have been applied ($P < 0.05$ and $P < 0.01$). The defenders registered the most striking results with significant increases at final results for testing general and specific resistance ($P < 0.05$ and $P < 0.01$).

4. Differentiated physical training according to the player's field position in the game had a positive impact on the technical training department of juniors, who at the end of the experiment improved significantly their play quality indices, that is technical parameters related to the basic technical elements and methods of a football game.

References

1. Ciocănescu, Daniel, *Pregătirea fizică în jocul de fotbal* - Craiova: Universitaria, 2012. -168 p.
2. Cojocar V., *Fotbal de la 6 la 18 ani. Metodica pregătirii*. - Editura A.N.E.F.S., București, 2002. – 189 p.
3. Cojocar, V., *Strategia pregătirii juniorilor pentru fotbalul de înaltă performanță*, București, Ed. AXIS MUNDI, 2000.-188 p.
4. Mănescu, C. *Optimizarea metodelor de dezvoltare a aptitudinilor motrice favorizante jucătorilor de fotbal pe posturi la junior I*, Teză de doctorat 2008, p. 44-62
5. Melenco I. *Pregătirea fizică diferențiată în jocul de fotbal/-* Constanța: Ovidius Universiti PRESS, 2007. 214p.
6. Motroc I. *Fotbal de la teorie la practică*. - Editura Rodos, București, 1994. 186 p.
7. Sîrghi S., Carp I. *Evaluarea nivelului pregătirii fizice specifice diferențiate a fotbaliștilor de diferite vârste și posturi de joc*. Conferință Științifică Internațională "Cultura fizică și sportul într-o societate bazată pe cunoaștere". Chișinău, 2015, p. 281-287.
8. Sîrghi S., Aspecte tehnico-tactice specifice jocului fundașilor laterali în jocul de fotbal actual. Materialele congresului științific internațional „Probleme actuale ale metodologiei pregătirii sportivilor de performanță”. Chișinău, 2010, p.92-96.
9. Sîrghi S., Ciobanu M. *Metode și mijloace de pregătire fizică a tinerilor fotbaliști*. În: Teoria și arta educației fizice în școală, Nr. 3, Chișinău, 2009, p. 33-36.
10. Голомазов С.В., Чирва Б.Г. Теория и методика футбола. Техника игры. – М.: «СпортАкдемПресс», 2002. – 472 с.