

FEATURES OF PHYSIOLOGICAL RESPONSES ON ORGANISM OF FOOTBALL PLAYERS AGED 10-12 YEARS IN EXERCISE USING DIFFERENT TRAINING METHODS

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Annotation. *Purpose:* To evaluate the effect of various special exercises football players' organism in different modes. *Material:* The study involved 24 young players aged 10-12 years. *Results:* There is a large range of load parameters for elite athletes, which necessitates evaluation exercise intensity football for young players. Found that depending on the method chosen football special exercises have different effects on the body force young players. *Conclusions:* It was found that by using the method of competitive gaming and heart rate and energy increases with increasing number of players. The analysis shows the existence of significant differences in terms of heart rate for game and interval method. **Keywords:** heart rate, energy costs, interval, gaming, method.

Introduction

One of main places in football players' training is taken by planning of training process [1, 2, 3]. When planning trainings it is necessary to select such means and methods, which could ensure required intensity of trainings [1, 3]. It is known that with insufficient intensity of load effect of trainings will be lower than potentially possible. On the other hand it is not desirable to exceed intensity of junior, 10-12 years old, football players' trainings. In connection with it, as on to day the problem of selection of effective methodic, which would meet functional abilities of 10-12 years old football players', is considered to be urgent.

In scientific literature there is a lot of publications, devoted to solution of problem of special physical exercises' of different intensity influence on sportsmen's functional state [4, 5, 10]. There were created some training modes for loads of running character or for work on stationary bicycle. As far as football exercises concern, recommendations on dozing were developed, as a rule, for highly qualified football players. Such recommendations were developed as well for other kinds of sports [9, 11, 14]. It permits for us to ground training modes and create methodic recommendations on physical exercises in trainings.

Alongside with it in problems of uncertainty of influences on organism in scientific works there exists wide range in parameters of loads. For example Chamari K., Hachana Y. and other recommend execution of specific load with intensity in range from 60 to 90% from maximal values of heart beats rate (HBR) [10, 13, 19]. G.S. Lalakov considers that load with intensity with HBR from 65 to 87% is the most optimal. Cole to such load is recommended by G.A. Lisenchuk, V.I. Schukin et al. offer to use in training process exercises with intensity of 70-95% form maximal HBR [6, 7, 8, 12, 13, 16, 17, 20]. Thus, scientific-methodic sources point that required threshold of heart beats rate of load, with which training effect occurs, shall be not less than 60% from maximal HBR [5, 11, 15, 18].

The mentioned data dictate demand in evaluation of physiological intensity of football exercises for junior, 10-12 years old football players. It would permit to ground modes of work and res alternating, when fulfilling special football exercise by junior 10-12 years old football players.

The present work has been carried out as per list of priority topic of scientific researches for 2013-2015 of Kharkov academy of physical culture, approved by scientific council of NEE No.8, 2012 by topic 2.3: "Scientific-methodic principles of sportsmen's training perfection in football, considering peculiarities of competition activity" (state registration No. 011U001722) and initiative topic of football and hockey department of Kharkov state academy of physical culture for 2011-2015 by topic 2.6: "Optimization of training process of football players of different qualification" (state registration № 011U003127).

Purpose, tasks of the work, material and methods

The purpose of the research is evaluation of influence of different special football exercises on organism of 10-12 years old football players in different modes.

The tasks of the research:

1. Analysis of existing scientific-methodic literature, devoted to influence of loads of different intensity.
2. Determination of mean heart beat rates and energetic value of football exercises with using of game and interval methods.
3. Compare influence of game and interval methods on heart beats rate response and on energetic value of football exercises.

Material and methods. The research was carried out in September-May 2012-2013 on the base of 10-12 years old football players' team of CJFC "Arsenal", Kharkov.

Within the frames of this research we determined mean indicators of energy consumption in k.cal.per min. and response of cardio-vascular by HBR indicators to football exercises in different modes of execution.

Registration of HBR and energy consumption's indicators was fulfilled with the help of pulse-tach-meter Polar RS 800, which, in automatic mode, counted pulse and energetic value of every exercise.

In the course of the research the players were offered to fulfill a number of football exercises during certain period of time. With it they used two different methodic of training: game and competition. With using of game and

interval methods football players were offered to execute the following exercises: tackling in different quantity of players 1x1, 2x2, 3x3, 4x4, which are considered to be the basic exercises with training and further improvement of tackling technique as well as bending technique.

Results of the research

Results of the researches of mean HBR values and energy losses indicators (kcal), received with game method and special exercises (tackling 1x1», «tackling 2x2», «tackling 3x3» , «tackling 4x4») are given in table 1 (line 3).

Their analysis witnesses about the following: during exercise «tackling 1x1» - HBR, 2 ± 3.1 b.p.m. energy losses - 14.6 ± 2.1 k.cal.p.m. In exercise «tackling 2x2» these results reduced and HBR was 168.1 ± 2.3 b.p.m. and energy losses - 14.6 ± 2.1 k.cal.p.m. The trend to reduction was noticed also in exercise - «tackling 3x3», with HBR indicators 161.5 ± 2.6 b.p.m. and energy losses - 12.6 ± 2.3 k.cal.p.m. In exercise «tackling 4x4» HBR indicators reduced to 159.4 ± 2.8 b.p.m. and energy losses- - to 12.5 ± 2.2 k.cal.p.m. accordingly (see table 1).

Analyzing interval method (see table 1, line 4) we determined that with using interval method in exercise «tackling 1x1» mean value of HBR was - 153.2 ± 1.3 b.p.m. and energy losses- - 11.95 ± 2.3 k.cal.p.m. With increasing of number of players, indicators reduced (see tables 1. 2).

Table 1

Mean indicators of HBR of 10-12 years old football players in football exercises with application of different methods (n=24)

№	Exercise	Game method	Interval method	t- criterion of Stjudent	
		X1±m1	X2±m2	t 1, 2	p 1, 2
1	2	3	4	5	6
1.	Tackling 1x1	177. 2±3. 1	158. 2±2. 2	5. 94	>0. 05
2.	Tackling 2 x 2	168. 1±2. 3	155. 4±2. 2	3. 95	>0. 05
3.	Tackling 3 x 3	161. 5±2. 6	153. 2±1. 3	2. 68	>0. 05
4.	Tackling 4 x 4	159. 4±2. 8	151. 2±1. 7	2. 5	>0. 05

Table 2

Mean indicators energy losses in football exercises with application of different methods (n=24)

№	Exercise	Game method	Interval method	t- criterion of Stjudent	
		X1±m1	X2±m2	t 1, 2	p 1, 2
1	2	3	4	5	6
1.	Tackling 1x1	14. 6±2. 1	11.5±2. 3	0. 85	>0. 05
2.	Tackling 2 x 2	13. 5±2. 8	10. 8±1. 7	0. 82	>0. 05
3.	Tackling 3 x 3	12. 6±2. 3	10. 5±1. 2	0. 80	>0. 05
4.	Tackling 4 x 4	12. 5±2. 2	10. 1±1. 5	0. 90	>0. 05

The conducted analysis witnesses about confident differences between HBR indicators with using of game and interval methods ($p < 0.05$) (see tables 1, 2). In comparative analysis of energy losses- indicators are insignificant and

not confident. For example, in exercise «tackling 1x1» difference between game and interval methods was 24 b.p.m. ($t=5.94$; $p<0.05$), and energy losses- 3.25 k.cal.p.m. accordingly. In exercise «tackling 2x2» difference of HBR is already 10.1 b.p.m. ($t=3.95$; $p<0.05$), and energy losses- 3.9 k.cal.p.m. accordingly. With increasing of number of players up to 3 persons, in exercise «tackling 3x3» difference of HBR was 6.1 b.p.m. ($t=2.68$; $p<0.05$) and energy losses-3.3 k.cal.p.m. In exercise 4x4 HBR was 8.2 b.p.m. ($t=2.5$; $p<0.05$) and energy losses- 3.7 k.cal.p.m. (see figs. 1, 2).

Such results determine purpose and tasks of training cycle for junior football players. In our opinion game exercises should be used oftener in competition and preparatory periods (pre-competition stage) for junior 10-12 years old football players. Application of interval method would be rational in preparatory period (general preparatory period) and in transitive period.

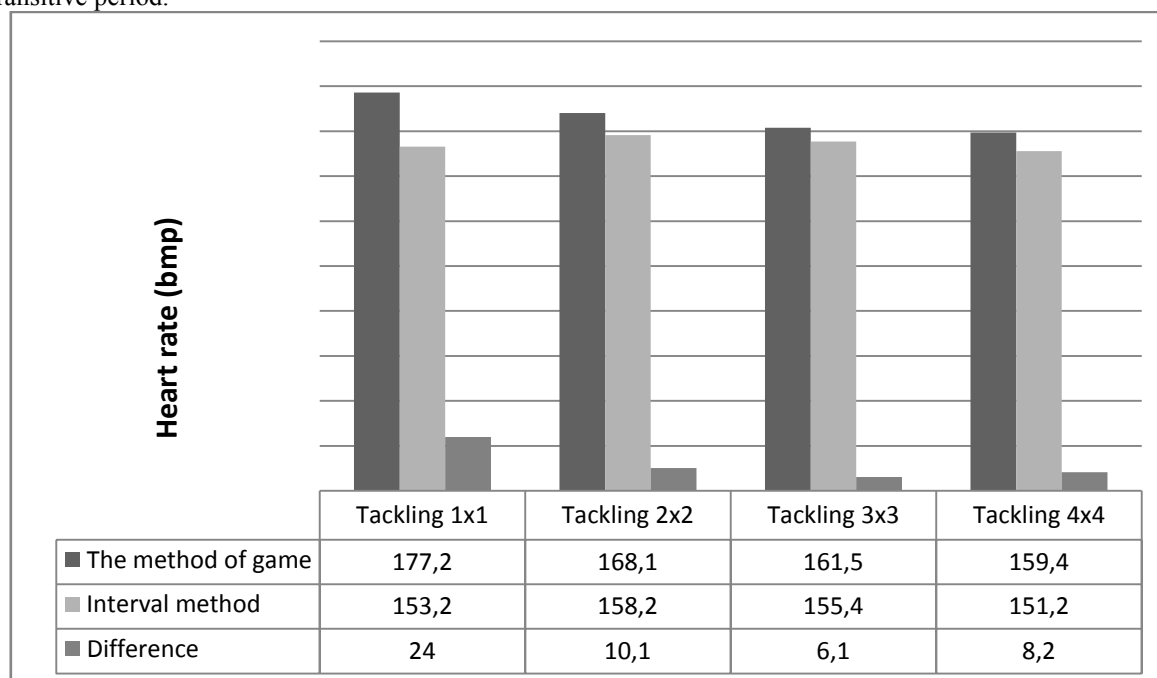


Fig.1. Dynamic of HBR with fulfillment of tackling by different methods (b.p.m.)

Heart rate (b.p.m.) –heart beats rate (HBR)

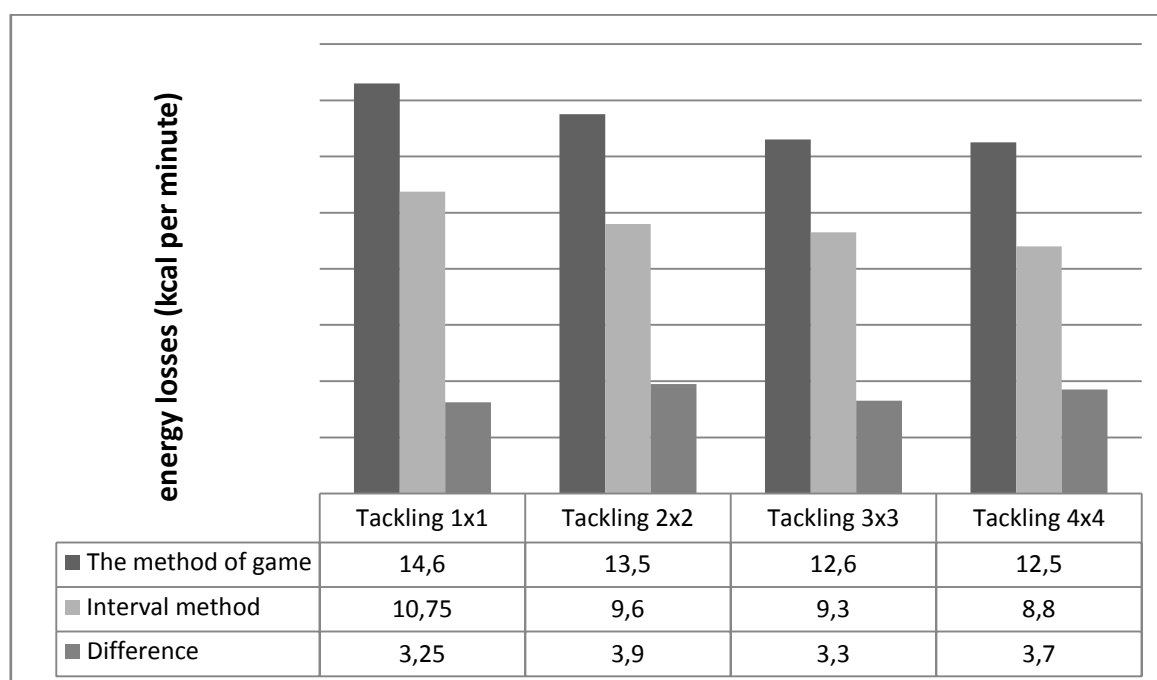


Fig.2. Dynamic of energy consumption with fulfillment of tackling by different methods (k.cal.p.m.)

Conclusions:

1. We determined that in scientific-methodic publications there exists wide range in loads' parameters for highly qualified sportsmen that dictate demand in evaluation of exercises' intensity for junior 10-12 years old football players.

2. Analysis of materials of the fulfilled researches witness about different influence of special football exercises on organism of junior 10-12 years old football players, depending on the chosen method for exercises' fulfillment.

3. It was stated that application of game method heart beats rate (HBR) and energy losses were: in exercise «tackling 1x1» - HBR was 177.2 ± 3.1 b.p.m. and energy losses – 14.6 ± 2.1 k.cal.p.m.) in «tackling 2x2» HBR- 168.1 ± 2.3 b.p.m. and energy losses – 14.6 ± 2.1 k.cal.p.m., «tackling 3x3» heart beats rate (HBR) – 161.5 ± 2.6 b.p.m. and – 12.6 ± 2.3 k.cal.p.m., «tackling 4x4» - HBR – 159.4 ± 2.8 b.p.m. and energy losses up to 12.5 ± 2.2 k.cal.p.m.

With application of interval method HBR and energy losses were: in exercise «tackling 1x1» - HBR was 158.2 ± 2.2 b.p.m. and energy supply – 11.95 ± 2.3 k.cal.p.m., «tackling 2x2» HBR – 155.4 ± 2.2 b.p.m. and energy supply – 10.8 ± 1.7 k.cal.p.m., «tackling 3x3» HBR – 153.2 minus 1.3 b.p.m. and energy losses – 10.5 ± 1.2 k.cal.p.m., «tackling 4x4» HBR – 151.2 ± 1.7 b.p.m. and energy losses up to 10.1 ± 1.5 k.cal.p.m.

The prospects of further researches imply development of complexes of special football exercises, considering their pulse and energetic value for players of different game roles.

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