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FEATURES OF CONSTRUCTION OF THE TRAINING PROCESS OF YOUNG FEMALE WEIGHTLIFTERS OF 14-15 YEARS OLD IN BASIC MESOCYCLE OF THE PREPARATORY PERIOD OF THE ANNUAL MACROCYCLE TAKING INTO ACCOUNT SPECIFIC BIOLOGICAL CYCLES

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Purpose: to consider the issue of the peculiarities of construction the training process of young weightlifters 14-15 years old in the basic mesocycle of the preparatory period in the annual macrocycle, taking into account the peculiarities of a specific biological cycle.

Material and methods: the work uses the methods of theoretical analysis and generalization of scientific information, system analysis. The reseach involved young pupils of the Children and Youth Sports School № 16 and Children and Youth Sports School № 8, Kharkov. The experiment involved 24 young female weightlifters 14-15 years old, who were divided into two groups: control and experimental, 12 athletes in each group. The participants in the experiment trained 3-4 times a week in accordance with the developed methodology.

Results: presents modern approaches to the peculiarities of building the training process of young weight-lifters 14-15 years old; provides a detailed structure for constructing the basic mesocycle in the annual macrocycle, taking into account the phases of the ovarian-menstrual cycle. Comparative analysis of indicators of special exercises and general physical fitness of female athletes in the control and

experimental groups at the beginning and at the end of the experiment showed that the level of general physical fitness of athletes in the experimental group significantly increased under the influence of the proposed methodology.

Conclusions: it was determined that among young athletes involved in kettlebell lifting it is necessary in the basic mesocycle of the annual macrocycle to carry out the distribution of loads in accordance with the phases of the ovarian-menstrual cycle. The introduction of the methodology of the training process of young kettlebells 14-15 years old in the basic mesocycle of the annual macrocycle, taking into account the phases of the ovarian-menstrual cycle, contributed to a significant increase in the indicators of general and special-auxiliary exercises in the experimental group.

Keywords: young female athletes, specific biological cycle, phases of the ovarian-menstrual cycle, microcycles, mesocycles.

Introduction

Modern sport is characterized by a steady increase in sports achievements, accompanied by an increase in the volume and intensity of the training load. Such an approach to the training process often leads to overstrain of regulatory systems, depletion of the adaptive reserve and shortening of the performance time of athletes, does not allow achieving high sports results.

The functioning of physiological systems and adaptation processes in the body of women differ from those in men. This is due to one of the main biological characteristics of the female body associated with reproductive function - the cyclic functions of the hypothalamic-pituitary-ovarian-adrenal system. A number of studies (A. G. Radzievsky, 1990; F. A. Iordansky 2012; V. V. Mulik 2001; 2016; L. Ya. - G. Shakhlina, 1995-2014) [3-5; 12-14], including foreign (A. M. Burrows, S. R. Bird, 2005; S. B. da Silva, 2006; A. J. Anderson, M. A. Babcock, 2008), [16-21] devoted to the influence of sex hormones in the system of women's sports training. Experts have established the dependence of the manifestation of the working capacity of athletes of various sports specializations and the reaction of their bodies on changes in the

concentration of sex hormones during the menstrual cycle (V. Mulik, 2001; V.M. Platonov 2004; M.S. Prudnikova, 2009) [4; 9; 10].

The purpose of the reseach is to consider the issue of the peculiarities of the construction of the training process of young female kettlebells 14-15 years old in the basic mesocycle of the preparatory period in the annual macrocycles, taking into account the peculiarities of a specific biological cycle.

Material and methods of research

According to the methodological approach in solving the problem and the set tasks, the research program included a set of research methods: analysis of scientific and methodological literature, determination of special physical readiness using pedagogical testing of young weight lifters, pedagogical testing according to the training process and methods of mathematical statistics.

This reseach involved young pupils of the Children's and Youth Sports School №16 and Children's and Youth Sports School №8, Kharkov. The experiment involved 24 young female weightlifters 14-15 years old, who were divided into two groups: control and experimental, 12 athletes in each group. The participants in the experiment trained 3-4 times a week in accordance with the developed methodology.

Results of the research

Sports training of young athletes involved in kettlebell lifting provides for the use of means and methods that affect the development of such physical qualities as strength, strength endurance and speed-strength training. Under the influence of training in the body of the athlete, certain changes occur. In the process of adaptation to physical activity, the level of physical performance and fitness of athletes increases. One of the manifestations of the body's adaptation to power manifestations is muscle hypertrophy.

However, in order for the changes in the body of the athletes to have a positive character, the trainer must choose the optimal training regimen, taking into account the ovarian-menstrual cycle and properly selected rest, recovery procedures, contribute to a faster growth of sports skills. At the same time, today there are no

studies on the construction of a one-year macrocycle of training young athletes involved in kettlebell lifting, taking into account the ovarian-menstrual cycle.

At the beginning of the research, young athletes involved in kettlebell lifting were divided into two groups of 12 people each. Female athletes of the experimental group trained according to the developed experimental methodology, which provided for the training process of taking into account loads in the basic mesocycle of the annual macrocycle, taking into account the phases of the ovarian-menstrual cycle.

Taking into account the recommendations of leading experts in the field of building the training process of training athletes (V. Platonov, 2004; V.V. Mulik 2017) [4-5; 8-9], it is reasonable to construct a two-cycle summer training of young athletes involved in kettlebell lifting, taking into account the phases of the OMC during a one-year macrocycle.

In our reseach, the construction of a one-year macrocycle of training young athletes is based on the generally accepted theory of periodization (V.M. Platonov), which provides for the division of the macrostructure into preparatory, competitive and transitional periods, and when menarche appears, we have introduced a developed experimental technique for constructing a basic mesocycle (basic on GPP in June) in the preparatory period, developed taking into account the phases of the ovarian-menstrual cycle (Table 1).

The control group carried out the training process according to the sports school program, which did not take into account the distribution of the load during the biological cycle system. The total volume of loads in the basic mesocycles did not have significant differences between the groups. ($p>0,05$).

Table 1

The structure of the basic mesocycle according to GPP, taking into account the phases of the OMC of weightlifters 14-15 years old

Basic mesocycle																										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Distribution of phases of the menstrual cycle																										
Menstrual					Postmenstrual							Ovulatory			Postovulatory									Premenstrual			
Number of training sessions																										
-	1	1	2	1	1	2	2	1	2	2	1	-	1	1	1	2	1	1	2	2	2	1	-	1	1	2	1
Methods and magnitude of load																										
1 training session																										
-	U	U	U	AL	U	AL	ПО	U	U	AL	U	-	U	AL	U	R	P	ПО	U	U	AL	AL	-	U	U	AL	U
-	S	A	A	S	A	A	SI	S	A	SI	A	-	A	S	A	З	-	A	SI	A	SI	A	-	SI	S	A	A
2 training session																										
-	-	-	AL	-	-	U	U	-	AL	U	U	-	-	-	-	P	-	-	AL	AL	U	-	-	-	-	U	-
-	-	-	S	-	-	S	S	-	A	A	S	-	-	-	S	S	S	-	S	-	-	-	-	-	-	-	-
Distribution of training hours																										
-	2	2	3	1	2	3	4	2	4	2	2	-	2	2	3	3	2	3	3	4	2	1	-	2	4	1	3
-	-	-	1	-	-	1	1	-	1	2	-	-	-	-	-	2	-	-	1	1	1	-	-	-	-	2	-

Remark: U - uniform; AL - alternating; R - repeated; S- small; A - average; SI- significant

The proposed approach to planning in the annual macrocycles of the basic mesocycle for young female kettlebell lifting athletes, taking into account the phases of the ovarian-menstrual cycle, modified from the works of V.V. Mulik (2017). So, table 2 shows the detailed content of the training process in the preparatory period of the basic mesocycle. The proposed experimental training program for the basic mesocycle took into account kettlebell lifting during the ovarian-menstrual cycle and included four anaerobic exercises.

Table 2

The content of the training program of young weightlifters 14-15 years old from the experimental group in the basic mesocycle for general physical training, taking into account the ovarian-mental cycle

Day	Start time of lesson	Duration of the lesson, min	Training aids	Load direction	Load value	The main method of performing exercises
1	11-00	60	Exercises for snatching weights and barbell rows, squats with kettlebells	Anaerobic	L	Interval
	19-00	20	Exercises using different modes of work. Use of exercise equipment	Mixed	S	Interval
2	11-00	60	Exercises for pushing weights and deadlifts for the number of times, squats with a barbell Use of exercise equipment	Anaerobic	A	Interval
3	11-00	60	Exercises for weightlifting and barbell pulling, squats with dumbbells	Anaerobic	L	Interval
	19-00	30	Exercises using different modes of operation and exercise equipment to improve physical qualities	Mixed	A	Interval
4	Day off		Restorative means	Recovery of female athletes body		
5	11-00	60	Exercises for snatching weights and barbell rows, squats with kettlebells	Anaerobic	A	Interval
	19-00	30	Exercises using different modes of work. Use of exercise equipment	Mixed	Si	Interval
6	11-00	60	Exercises for snatching weights and barbell rows, squats with kettlebells	Anaerobic	L	Interval
	19-00	20	Cross training	Aerobic	S	Continuous
7	Day off		Restorative means	Recovery of female athletes body		

Load: S- small; A - average; *Si - significant L. - large.*

As a result of the use of the author's methodology for constructing the training process among 14-15 years old girls-kettlebells in the basic GPP mesocycle of the preparatory period of the annual macrocycle, taking into account the specific biological cycle, significantly better results of the test indicators of young weights in the experimental group (Table 3).

Table 3

Indicators of general physical training of weightlifters of control (CG, n_1 = 12) and experimental (EG, n_2 = 12) groups at the beginning and at the end of the experiment, $\overline{X} \pm m$

Indicators		Groups of athletes		t	p
		CG	EG		
Running for 30 m, s	before	5,6±0,4	5,7±0,7	0,12	>0,05
	after	4,6±0,2	3,9±0,2	**2,47**	**<0,05**
Running for 60 m, s	before	10,6±0,4	10,3±0,7	0,37	>0,05
	after	9,1±0,5	7,8±0,3	**2,22**	**<0,05**
Standing long jump, cm	before	168,8±6,5	167,5±5,8	0,14	>0,05
	after	196,6±7,3	214,7±4,2	**2,14**	**<0,05**
Pull-ups, number of times	before	6,4±1,3	6,2±2,2	0,07	>0,05
	after	13,1±1,5	17,3±0,7	**2,53**	**<0,05**
Push-ups, number of times	before	10,5±3,0	11,2±2,5	0,17	>0,05
	after	20,4±2,5	26,6±1,4	**2,16**	**<0,05**
Hanging on the bar 1.5 cm wide, s	before	11,7±2,7	11,5±2,0	0,06	>0,05
	after	26,0±3,2	34,5±2,1	**2,22**	**<0,05**
Hanging on the bar on one hand, s	before	16,7±1,8	16,9±1,7	0,08	>0,05
	after	24,1±1,9	29,4±1,5	**2,18**	**<0,05**
Hanging on the bar on bent arms, s	before	20,8±2,1	20,3±2,5	0,15	>0,05
	after	34,5±2,8	41,9±1,3	**2,39**	**<0,05**
Raising legs to the crossbar, number of times	before	8,4±2,1	8,0±2,5	0,12	>0,05
	after	17,4±2,4	23,8±1,7	**2,17**	**<0,05**
Pull-ups on the bar 1.5 cm wide, number of times	before	3,5±1,0	3,1±1,3	0,24	>0,05
	after	8,3±1,2	12,3±1,3	**2,26**	**<0,05**

The results of 30 m running in the experimental group were 3.9 s, which is 0.7 s better than in the control ($t = 2,47$; $p < 0,05$) 60 m run – 1,3 s ($t = 2,22$; $p < 0,05$) standing long jump - by 18,1 cm ($t = 2,14$; $p < 0.05$) pull-up on the crossbar - by 4,2 times ($t = 2,53$; $p < 0.05$) flexion and extension of the arms in an emphasis lying on the floor – by 6.2 times ($t = 2,18$; $p < 0.05$) hanging on a bar 1,5 cm wide - by 8,5 s ($t = 2,22$; $p < 0,05$) hanging on the bar on one hand - by 5.3 s ($t=2,18$; $p<0,05$); hanging on the bar on bent arms - by 7,4 s ($t = 2,39$; $p < 0,05$) lifting the legs up in the hang on

the bar - by 6.4 times ($t = 2,17$; $p < 0,05$) and pulling up on a plank with a width of 1,5 cm – by 5,0 times ($t = 2,26$; $p < 0,05$). While no significant difference was found at the start of the study.

Thus, a comparative analysis of the indicators of special exercises and general physical fitness of female athletes in the control and experimental groups at the beginning and at the end of the experiment showed that the level of general physical fitness of athletes in the experimental group significantly increased under the influence of the proposed methodology, in which the developed exercise complexes were used in the basic mesocycle of the preparatory period taking into account the ovarian-menstrual cycle.

Conclusions / Discussion

An analysis of the scientific literature shows isolated studies in weightlifting. In recent years, scientists have conducted research on the content and methods of the training process of young female weight-lifters of 14-15 years old with various methods of motor skills and strength qualities (Yu.V. Verkhoshanskiy 2013), planning the training process during a one-year macrocycle of athletes aged 14-15 (V. Platonov, 2014, 2015) and the influence of the training process of young female weight-lifters 14-15 years old on the manifestations of physical qualities M.S. Ipolitov. However, the influence on the working capacity of the physical loads of young female kettlebells athletes 12-13 years old at the first stage of training in long-term training was studied, which prompted the construction of the training process of young female kettlebell lifters 12-13 years old during a one-year macrocycle, taking into account the ovarian-menstrual phases.

The conducted research confirmed the results of other authors [1, 2] about the need to take into account the influence of training on the physical indicators of female athletes aged 14-15 at the stage of initial training. Also, the data of domestic [4-5; 8; nine; 11] and foreign [16-21] authors on the issues of increasing the level of the most significant indicators of physical qualities on the body of young athletes involved in kettlebell lifting.

Today, there are a number of scientific studies that consider the issues of the peculiarities of building the training process of female athletes based on taking into account the working capacity in different periods (phases) of a specific biological cycle. The works of A.R. Radzievsky, Yu.T. Poholenchuk, N.V. Svechnikov, B.P. Pangelova, T.A. Lozy, S.K. Fomina, A. Ya. Kvale, Yu.A. Karp, L.Ya.-G. Shakhlin, who determined the functional state of female athletes during a specific biological cycle. The issues of building the training process of young athletes have been studied to a lesser extent, especially during the formation of a specific biological cycle.

The experimental training program, which was developed for female athletes of kettlebells 14-15 years old, taking into account the phases of the ovarian-menstrual cycle, provided for the features of the training process in the basic mesocycle of the annual macrocycle.

Competitive and competitive-auxiliary exercises were used as training means, which were applied differentially depending on the phases of the ovarian-menstrual cycle in accordance with the developed training program in the basic mesocycle in annual macrocycles.

The introduction of the methodology of the training process of 14-15-year-old female kettlebells in the basic mesocycle of the annual macrocycle, taking into account the phases of the ovarian-menstrual cycle, contributed to a significant increase in the indicators of general and special-auxiliary exercises in the experimental group.

Prospects for further research provides for the definition of the construction of the training process of young kettlebells 14-15 years old in separate mesocycles, taking into account the phases of the CMC during a one-year macrocycle.

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