

Improvement of the training process of qualified female athletes engaged in bodybuilding in the general preparatory stage of the preparatory period, taking into account the biological cycle

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Purpose: substantiation of the methodology of the training process of qualified female athletes engaged in bodybuilding in the general preparatory stage of the preparatory period, taking into account the biological cycle.

Material & Methods: in the study participated 18 qualified female athletes engaged in bodybuilding, included in the Kharkov region team of bodybuilding.

Results: comparative characteristic of the most frequently used methodology of the training process in bodybuilding are shown. An optimal methodology for qualified female athletes engaged in bodybuilding has been developed and justified, depending on the initial form of the athlete at the beginning of the general preparatory stage of the training. The dependence of the change in the body weight of female athletes from the training process is shown.

Conclusion: on the basis of the study, the author suggests an optimal training methodology depending on the mesocycle of training in the preparatory period in the general preparatory stage.

Keywords: structuring of training, bodybuilding, training process, qualified female athletes, optimal technique, mesocycle.

Introduction

The growth in the popularity of sports aimed at developing basic physical qualities (strength, endurance, etc.), obtaining a beautiful physique is the basis for the growth in the popularity of bodybuilding. This relatively new and non-Olympic sport does not yet have a comprehensive theoretical and methodological justification.

The system of training qualified female athletes in this form is based on a rationally constructed training process taking into account the OMC and in combination with nutrition as a factor providing the necessary material for the growth of muscle mass and the formation of a good proportional build.

Therefore, the methodology of the training process of qualified female athletes engaged in bodybuilding in the preparatory period of the general preparatory phase was developed and justified [1; 2].

In the domestic sport there are very few scientifically based training methods for training qualified female athletes engaged in bodybuilding in the preparatory period of the general preparatory phase. Thus, the practical experience of coaches and athletes has to be typed through trial and error [6; 9].

In bodybuilding the preparatory period of the general preparatory stage lasts 12 weeks. During this period, qualified female athletes of different age groups and all categories try to work

out as much as possible the technique of training exercises, pose and try to reduce the fat layer by training with optimal weights. At the end of each microcycle, the female athlete's form is evaluated by the coach, and adjustments are made to the training process. [3; 15–18].

This problem was dealt with by such outstanding domestic specialists in the field of physical culture and sports as V. M. Platonov, L. S. Dvorkin, A. I. Stetsenko, B. I. Sheiko, V. G. Oleshko, O. I. Kamaev, D. A. Beskorovainy, V. V. Usichenko, V. Y. Dzhym [4–10]. Their research was based on the experience of such foreign specialists in the field as Joe Wader, Ben Wader, E. Connors, T. Kimber, M. McCormick [12–14].

The relationship of research with scientific programs, plans, themes

The scientific research was carried out on the theme of the Consolidated Plan of Research Work in the Sphere of Physical Culture and Sport for 2011–2015. On topic 3.7 "Methodological and organizational-methodological basis for determining the individual rate of a person's physical condition" (state registration number 0111U000192).

The purpose of the research

Substantiation of the methodology of the training process of qualified female athletes engaged in bodybuilding in the general preparatory stage of the preparatory period, taking into account the biological cycle.

Material and Methods of the research

In this study, participated female athletes who were members of the national team of the Kharkiv region. By the experiment, 18 female athletes were involved, bodybuilders, of which 2 – master of sports, 16 – candidate master of sports, aged 18–23 years, the average weight of the athletes body was 55 ± 2 – 65 ± 2 kg. Participants were distributed according to sports qualification into two, control and experimental groups. Participants in the control group's experiment were trained 5–6 times a week, and the participants of the experimental group were trained 4 times a week and took into account the phases of the OMC.

Research methods: theoretical method and generalization of literature, pedagogical observation, pedagogical experiment, method of mathematical statistics.

Results of the research and their discussion

The use of the training process of qualified athletes involved in bodybuilding led to the use of two variants of training methods, differed in the load and volume of training exercises, rest and other components. The assessment was carried out using training diaries, which indicated the number and volume of training work.

The effectiveness of training was assessed using the method of expert assessments, which provides for the application of information on the implementation of the instructions of the coach, the dynamics of power and endurance indicators, as well as subjective qualities (well-being, mood, desire to train, etc.).

The female athletes of the control group were trained for 12 weeks with large percentages and did not take into account the phases of the OMC, while the female athletes of the experimental group were trained in a smooth dynamics with an emphasis on the static load of the muscles and took into account the different phases of the OMC in different mesocycles (Table 1, 2). Before the beginning of the experiment, we carried out a test weighing of both groups, as well as anthropometric measurements, with which we were able to identify the best result in the increase in indicators. To carry out the weighing, we used a device – a body mass analyzer (weights

TANITA BC-545 manufactured by Japan) and a centimeter tape (Table 3).

The difference between the general preparatory stage and the special preparatory stage consists in a smoother transition from one training microcycle to another, and also in the intensity of the training session (Table 1). The increase in training sessions, the reduction of gaps between training days plays a big role in the preparation at this stage. The intensity plays an important role, as can be seen from Table 1, the exercise time significantly decreased, both in positive phases and in negative phases, and most importantly, the pauses between repetitions decreased in the recovery microcycle to 0,5 seconds, and in the preliminary in at all there was no rest between re-doing exercise.

The peculiarities of this stage are a small percentage use of small weights, which amounts to 50–60% in the retracting mesocycle EG, in the CG is 70–80%, which in turn is significantly different from EG, and in basic mesocycles – in EG is 60–80%, in CG – 80–100%, thus in EG is paid more attention to muscle training, and not to weight gain, that at this stage the most main thing.

The data given in Table 2, show that the female athletes of the experimental group were trained with the average loadings of the maximum loads, since in these mesocycles the phases of the OMC were taken into account, control group was trained with a small number of repetitions, but with large burdens and did not take into account the phases of the OMC. So, in the preparatory period at the general preparatory stage, much attention is paid to the muscles of the thigh and lower leg – the number of bar lifts (NBL) for three mesocycles is in EG 915 lifts in the CG – 487,0. In the preparatory period, the basic role is played by basic exercises, but forming exercises in bodybuilding play a major role in the preparation. The maximum number of bar lifts was due to the straight and oblique abdominal muscles and was 2900 in the EG, in the CG – 1,450 NBL (in the CG paid little attention to the abdominal muscles). The total volume in the basic exercises of the NBL is 3,171 in the EG and 1,745 in the CG, and in the forming exercises EG – 7,606 and in CG – 3,803 NBL. Thus, the CG used a more powerful training program and a small number of NBL with large burdens, the EG used a more static training program and used a large number of NBL, due

Table 1

The content of the training program, depending on the burden weight in the preparatory period of the general preparatory stage of qualified female athletes engaged in bodybuilding, control and experimental groups

Indicators of training load	Mesocycles			
	Retracting		Basic	
	CG	EG	CG	EG
Load range as a percentage of the maximum	70–80	50–60	80–100	60–80
Number of training days	5	3	6	4
Number of repetitions	5–7	10–12	3–5	8–10
Number of attempts	5–6	4–5	5–6	6–7
Exercise time, s:				
Positive phase (upward movement)	1	0,5	1,5	0,5
Negative phase (downward motion)	1,5	1	0,5	1
Pauses between repetitions, s	1	0,5	0,8	0,2
Rest between attempts, min				
In the basic exercises	3–4	1,5–2	5	1,2
In forming exercises	3	1–1,2	4	1

Table 2

The total amount of training work performed by qualified female athletes who are engaged in bodybuilding, control and experimental groups in the preparatory period of the general preparatory stage

Muscle groups	Volume, NBL		Volume, thousand kg.	
	CG	EG	CG	EG
Basic exercises on:				
Muscles of the upper extremity belt	256,0	432,0	18,630	17,080
Arm muscles	342,0	614,0	59,140	58,125
Chest muscles	318,0	596,0	60,940	56,445
Back muscles	342,0	614,0	60,200	59,125
Muscles of hip and lower leg	487,0	915,0	100,600	95,700
Total	1,745	3,171	299,510	286,475
Forming exercises on:				
Muscles of the upper extremity belt	214,0	428,0	32,902	38,900
Arm muscles	450,0	900,0	25,280	28,380
Chest muscles	203,0	406,0	11,111	13,560
Back muscles	354,0	708,0	19,425	21,480
Muscles of hip and lower leg	1,132	2,264	160,290	185,840
Muscles of the abdomen are straight and oblique	1,450	2,900	-	-
Total	3,803	7,606	249,009	288,160

Note. NBL – number of bar lifts.

Table 3

Indicators of the increase in the average anthropometric data of qualified female athletes engaged in bodybuilding control and experimental groups at the end of the general preparatory stage of the preparatory period ($n_1=n_2=9$)

Indicators	CG	EG	t	P
	$\bar{X}_1 \pm m_1$	$\bar{X}_2 \pm m_2$		
Body weight, kg	2,59±0,25	1,66±0,20	2,32	<0,01
Neck circumference, cm	0,77±0,17	0,64±0,07	0,55	>0,05
Circumference of the chest (inhalation), cm	2,00±0,21	2,34±0,17	1,0	>0,05
Circumference of the chest (exhale), cm	1,79±0,21	2,00±0,16	1,0	>0,05
Circle of biceps, cm	0,74±0,07	0,67±0,09	1,19	<0,05
Waist circumference, cm	2,58±0,14	1,75±0,10	9,5	<0,01
Hip circumference, cm	1,84±0,13	1,00±0,12	0,81	>0,05
Sciatica circumference, cm	0,51±0,01	0,37±0,06	1,18	>0,05
Circumference of the forearm, cm	0,26±0,06	0,66±0,13	1,68	<0,01

to which the volume of kilograms was high.

The total volume in the counted kilograms in the basic exercises in the EG is 286,475, in the CG – 299,510, performing the formative exercises, the total amount was EG – 288,160 kilograms, in CG – 249,009. One can conclude that female athletes of the experimental group trained at this stage with an average of kilograms and paid great attention to the muscles of the abdomen and leg muscles, in turn, the female athletes of the CG paid more attention to basic exercises and strength indicators than the formative exercises.

Before the experiment, measurements of anthropometric indices of female athletes engaged in bodybuilding. Thus, the coefficients of variation of all the major anthropometric indices separately for the control and experimental groups did not practically exceed the total initial level.

Anthropometric examination was carried out at the end of the general preparatory stage (Table 3).

At the end of the general preparatory stage, the weight increase in the control group was 2,59 kg, whereas in the experimental – 1,66 kg; ($t=2,32$; $P<0,01$). Differences are also likely to be found between changes in the circumference of

the biceps muscle of the shoulder (biceps) and waist. The average increase in the circumference of the biceps arm muscle (biceps) in the control group was 0,74 cm; in the experimental – 0,67 cm ($t=1,19$; $P<0,05$). Average increase in the waist circumference in the control group – 2,58 cm in the experimental – 1,75 cm ($t=9,5$; $P<0,01$).

Differences in the growth of other indicators are unreliable ($P>0,05$).

Conclusions

Thus, improving the training process of qualified female athletes engaged in bodybuilding, we can assume that the effect in EG was more pronounced, and the level of preparedness can be evaluated as the most optimal. Dynamics of the load in this group significantly reduces the likelihood of the formation of unfavorable shifts in the functional condition of athletes (overexertion, overtraining, trauma), allows you to achieve the required level of athletic form without overstressing the adaptation-compensatory mechanisms. According to the construction of the training process, in the EG the training methodology more contributes to the task - increasing the muscle mass of the body not with the fat layer and subcutaneous water, but due to only the muscles, it was reliably proven, in the

general preparatory stage, the body weight gain in the control group was 2,59 kg, whereas in the experimental – 1,66 kg; ($t=2,32$; $P<0,01$). Differences are also likely to be found between changes in the circumference of the biceps muscle of the shoulder (biceps) and waist. The average increase in the circumference of the biceps arm muscle (biceps) in the control group was 0,74 cm; in the experimental – 0,67 cm ($t=1,19$; $P<0,05$). Average increase in the waist circumference in the control group – 2,58 cm in the experimental – 1,75 cm ($t=9,5$; $P<0,01$).

Features of the training methodology for qualified female ath-

letes engaged in bodybuilding in the preparatory period of the general preparatory stage, taking into account the phases of OMC, can be recommended for the training of female athletes, while observing the requirements of sports and medical control, ensuring an effective and qualitative recovery in the transition period.

Further research should include the development and justification of the training process in the competitive period for qualified female athletes who specialize in bodybuilding, taking into account the OMC.

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