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IMPACT OF BODY FITNESS (BODYBUILDING) CLASSES ON THE MANIFESTATION OF THE PHYSICAL QUALITIES OF ATHLETES FOR 15-17 YEARS

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Purpose: to establish the dependence on the influence of 15-17 year old female athletes involved in body fitness (bodybuilding) on the manifestation of physical qualities during the annual macrocycle at the stage of preliminary basic training.

Material and methods: the research was carried out in fitness clubs: «Tetra», «Record», «Misto», «Ford» of Kharkov, with athletes 15-17 years old, engaged in body fitness (bodybuilding) during an annual macrocycle in the amount of 20 people. All athletes trained according to the classic program designed for body fitness (bodybuilding). The following methods of research were used: analysis of literary sources and testing of the level of motor qualities in certain age categories.

Results: presented pedagogical testing to determine the level of motor abilities of young athletes 15-17 years old, engaged in body fitness (bodybuilding). Exercises were identified that are advisable to use at these stages of preparation: burpe (number of times in 30 s); jumping rope (number of times in 30 s); raising the body from a supine position (number of times in 40 s); jumping lunges (number of times in 30 s);

running 30 m (s); flexion and extension of the arms (wringing) in the TRX simulator (number of times in 40 s); bending forward from a sitting position (sm).

Conclusions: as a result of testing motor qualities using nonspecific exercises for body fitness (bodybuilding), it was found that indicators improve every year in all exercises (p> 0,05), especially in the exercise of raising the trunk. lying on his back, the number of times in 40 s, which significantly increased in the age range from 15 to 17 years. The speed-strength abilities of young athletes of 15-17 years old, engaged in body fitness (bodybuilding), were manifested to a greater extent in the age interval from 16 to 17 years.

Key words: testing, physical qualities, bodyfitness (bodybuilding), athletes

Introduction

The popularity of bodybuilding as a new sport, which began to develop in Ukraine, is constantly growing among different segments of the population (V.G. Oleshko, 2011; V.Yu. Jim, 2013) [4; 9]. Methods for the formation of a good sports physique in bodybuilding have found wide application in various fitness technologies and contributed to their development (V.D. Zverev, 2003; V.V. Usichenko, 2010; V.Yu. Jim, 2015; A.A. 2019) [5; 6; 12; 13]. The creation of sports clubs and federations for bodybuilding and fitness contributes to the improvement of the population and practically confirms that strength and physical beauty are a symbol of the harmonious development of a person, one of the components of personality formation..

The division of the structure of training athletes into relatively independent types allows to a large extent to systematize the control system of the training process and the development of special training programs based on the specifics of any kind of sport (V.M. Platonov, M.M. Bulatova, 1995; V.V. Mulik, L.M. Taran, 1999; Yu.V. Verkhoshansky, 2005, etc.) [3; 5; 8; 10].

The main tasks of training at the age of 15-17 years is the versatile development of physical qualities, health promotion, elimination of deficiencies at

the level of physical development and physical fitness, the creation of motor potential, which will ensure the assimilation of various motor skills (including those corresponding to the specifics of future sports specialization). Particular attention is paid to the formation of a sustainable interest of young athletes to purposeful long-term sports improvement. Versatile training at this stage with a small amount of special exercises is favorable for further sports development. The desire to increase the volume of specially preparatory exercises and fulfill the bit standards in individual numbers of programs lead to a rapid increase in results. At this stage, to a greater extent than at the previous one, technical improvement is carried out on the basis of the chosen kind of sport.

Analysis of recent research and publications. Analysis of domestic and foreign special literature has shown that many works are devoted to training programs that allow you to increase muscle mass and reduce the fat component (V.Yu. Jim, 2013, 2015; V.M. Platonov, 2015; O. Tikhorsky, E. Jim, R. Ponomarenko, I. Petrenko, L. Kanunova, 2021) [4; 5; 11; 14; 15]. But it should be noted that the problem of the training process in bodyfitness (bodybuilding) during the annual macrocycle has not been sufficiently covered, which determined the relevance of the chosen research topic.

To date, the scientific concept of long-term training of athletes has been formed: from beginners to masters of sports of international class as a single process obeying certain patterns of a complex specific training system with its inherent characteristics and development paths (Yu.V. Verkhoshansky, 2005; V.M. Platonov, 2015) [3; 11].

Connection of research with scientific programs, plans, themes. The study was carried out in accordance with the Consolidated plan of research work of the Kharkov State Academy of Physical Culture for 2016-2020. on the topic "Methodological and organizational-methodological foundations for determining the individual norm of a person's physical condition" (state registration number 0111U000192).

Purpose of the study is to establish the dependence of the influence of body

fitness (bodybuilding) on the manifestation of physical qualities of athletes aged 15-17.

Material and Methods of research

The study was carried out on the basis of fitness clubs: "Tetra", "Record", "Gorod", "Ford" in Kharkov with athletes 15-17 years old in the amount of 20 people involved in body fitness (bodybuilding). All athletes trained according to the classic body fitness program. The following methods of research were used: analysis of literary sources and testing of the level of motor qualities in certain age categories.

Results of the research

Our research was aimed at identifying the level of physical readiness of female athletes of 15-17 years old, engaged in body fitness (bodybuilding), representing the process of developing power qualities that contribute to the manifestation of the level of sportsmanship of female athletes.

As a pedagogical test to determine the level of power capabilities of 15-17 year old female athletes involved in body fitness (bodybuilding), we have selected exercises that are advisable to use at these stages of training.

Table 1

Dynamics of indicators of general physical fitness of female athletes 15-17 years old, going in for body fitness (bodybuilding) (n=20)

Indicators	15 years	16 years	17 years
	$\overline{X}_1 \pm m_1$	$\overline{X}_2 \pm m_2$	$\overline{X}_3 \pm m_3$
Burpee, number of times in 30 s	5,1±0,63	5,8±0,61	8,1±0,55
Jumping rope, number of times in 30 s	44,8±0,69	46,6±0,62	52,2±0,45
Raising the body from a supine position, number of times in 40 s	17,8±0,53	19,3±0,56	21,8±0,49
Jumping lunges, number of times in 30 s	14,8±0,71	15,6±0,68	16,7±0,44
Running at 30 m, s	8,7±0,78	7,9±0,69	6,8±0,39
Flexion and extension of the arms (push-ups) on the TRX simulator, number of times in 40 s	14,3±0,66	15,9±0,68	17,8±0,58
Leaning forward from a sitting position, cm	16,2±0,34	16,8±0,32	17,2±0,33

Testing of strength qualities in the training process was carried out with the use of general preparatory exercises: burpe, number of times in 30 s; jumping rope, number of times in 30 s; raising the body from a supine position, number of times in

40 s; jumping lunges, number of times in 30 s; running 30 m, in s; flexion and extension of the arms (wringing) in the TRX simulator, number of times in 40 s; bending forward from a sitting position, see (Table 1)

The manifestation of speed-strength qualities in girls in the period from 15-16 years old did not significantly change (p>0,05), at the same time, the changes revealed in the age intervals of 16-17 and 15-17 years, significantly improved (p<0,05-0,001) (Table 2).

Table 2

Matrix of reliability of the difference in burpees and jumping rope among athletes 15-17 years old engaged in body fitness (bodybuilding) (n=20)

Age	16 years	17 years
15 years	t = 1,55;>0,05	t = 3,82; <0,01
	t =1,94;>0,05	t = 2,91; <0,01
16 years		t = 2,2; <0,05
		t = 0,78;>0,05

Note: in the numerator – burpee, number of times in 30 s; in the denominator – jumping rope, number of times in 30 s

In the course of the study, the speed-strength qualities of girls aged 15-16 did not change significantly (p>0,05) (Table 2). However, in the period from 16 to 17 years, the burpee indices increased significantly for 30 s (p<0,05) (Table 2). Testing for the manifestation of speed did not show significant changes: jumping rope, number of times in 30 s (p>0,05) (Table 2). Significant changes in the development of speed-strength qualities are observed in the period from 15-17 years old (p<0,05-0,01) (Table 2).

The results of testing raising the body from a supine position for 40 s increased in the age intervals from 15 to 17 years (p<0,05-0,001), while in girls from 15 to 16 years old, as well as from 16 to 17 years old, there were changes not reliable (p>0,05) (Table 3)

The results of the number of lifting of the trunk from the supine position in 40 s increased significantly in the period from 15 to 17 years (p<0,001) (Table 3), while in girls from 15 to 16 years of age they were unreliable (p>0,05) (Table 3). Testing of

speed-strength qualities using the number of lunges in a jump in 30 s did not reveal reliability in the period from 15 to 16 years old (p>0,05), however, significant changes occurred in the period from 15-17 years old (p<0,05) (Table 3).

Table 3

Matrix of reliability of the difference in the indicators of torso lifting from a supine position and lunges in a jump of athletes 15-17 years old, engaged in body fitness (bodybuilding) (n=20)

Age	16 years	17 years
15 years	t = 1,95>0,05	t = 5,5; <0,001
	t =0,81;>0,05	t = 2,28; <0,05
16 years		t = 3,36; <0,05
		t = 1,36;>0,05

Note: in the numerator - lifting the body from a supine position, number of times in 40 s; in the denominator - lunges in a jump, number of times in 30 s

In the manifestation of speed qualities in running on 30 meters, insignificant changes were determined in the period from 15-17 years old (p<0,05). However, in the period from 15 to 16, from 16 to 17, no differences were found (p>0,05). There was a statistically significant increase in the results of the strength indicators of the muscles of the upper extremities in the amount of flexion and extension of the arms on the TRX simulator for 40 s, in girls from 15 to 17 years old (p<0,05-0,001) (Table 4).

Table 4

Matrix of the reliability of the difference in the indicators of 30 m running (in s) and flexion and extension of arms on the TRX simulator for 40 s of athletes 15-17 years old engaged in body fitness (bodybuilding) (n=20)

Age	16 years	17 years
15 years	t =0,75; >0,05	t = 2,11; <0,05
	t = 1,69; >0,05	t = 3,98; <0,001
16 years		t = 1,39; >0,05
		t = 2,13; >0,05

Note: in the numerator - 30 m run; in the denominator - flexion and extension of the arms on the TRX simulator, number of times in 40 s

As can be seen from Table 4, the results of running on 30 m in girls from 15 to 16 years old and from 16 to 17 years old are absent (p> 0.05). Nevertheless, the flexion and extension of the arms on the TRX simulator have a statistically significant difference in the period from 15 to 17 years (p<0,05-0,001).

Flexibility testing did not reveal the reliability of the results in the period from 15 to 17 years old (p>0,05) (Table 5)

Table 5

Age	16 years	17 years
15 years	t = 1,29;>0,05	t = 2,11;>0,05
16 years		t = 0,87;>0,05

Conclusions / Discussion

The analysis of scientific and methodological literature indicates that the training process is one of the complex and multifunctional systems in the training of young bodybuilders. The stability of the results of the training process in body fitness depends on the training methodology.

Currently, power sports and body fitness (bodybuilding) in particular are rapidly developing in Ukraine. The analysis of scientific and methodological literature has shown that in bodybuilding the number of works devoted to this sport is constantly increasing. The founders of the theory of training in bodybuilding were the brothers Ben and Joe Weider - the trainers of many champions, including the famous Arnold Schwarzenegger. Schwarzenegger supplemented and improved the methodology of the Weider brothers. The problems of bodybuilding have also been disclosed by such domestic scientists as: V. Usicheno, 2006; V.G. Oleshko, 2011; V.Yu. Jim, 2013, 2015; O.A. Tikhorsky [4; 5; 9; 12; 13; 14; 15].

At the same time, bodybuilding research was mostly sporadic. In recent years, scientists have conducted research on the content and methods of the training process of highly qualified bodybuilders with different methods of developing endurance and strength qualities. However, the question of the influence of aerobic and strength training in body fitness (bodybuilding) in the competitive period has not been

considered, which prompted research on these issues. The research carried out has supplemented the theoretical and practical foundations of bodybuilding training, which can be used in the preparation of young athletes.

The material presented in this publication shows that the general physical fitness of athletes 15-17 years old, training in the fitness clubs "Tetra", "Record", "Gorod", "Ford" in Kharkov, in most of the indicators correspond to the peers who are engaged in various strength sports.

As a result of the testing of motor qualities with the use of nonspecific body fitness (bodybuilding) exercises, it was found that the indicators improve every year in all exercises ($p < 0.05$-0.001). The speed-strength abilities of athletes involved in body fitness (bodybuilding) were more pronounced in the age range from 15 to 17 years.

Prospects for further research suggest determining the influence of bodyfitness (bodybuilding) on the functional state of 15-17 year old female athletes engaged in bodyfitness (bodybuilding) during the annual macrocycle.

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