

THE CHANGES OF ATHLETES BODY CIRCUMFERENCE PARAMETERS IN THE CONDITIONS OF VARIOUS TRAINING REGIMES IN BODYBUILDING

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Abstract

The results of researches which purpose was a studying of various training regimes influence on increase of bodybuilders body circumference at the stage of a specialized basic training are presented. 60 athletes aged 18-19 years (experience in bodybuilding - 5 years) took part in researches. Research of a training load indicators used by the representatives of all three groups during the training was conducted by method of an index of a training load definition in strength sports. Thus, athletes body circumference parameters and nature of their changes throughout 4 researches in the conditions of certain training regimes application were determined by a method of anthropometry. It is determined that the level of change of athletes body circumference parameters at the stage of a specialized basic training during a long period of bodybuilding training depends on the structure of the training regime (in this research on a ratio of frequency of the basic and isolating exercises performance). It is revealed that regardless of the structure of the training regime and peculiarities of motive activity, parameters of load indicators show almost identical dynamics during 4 months of researches. This fact testifies to almost identical rates of power opportunities increase of an organism of the studied contingent.

Keywords: training regime, stage of a specialized basic training, basic and isolating exercises, body circumference parameters, bodybuilding.

Introduction

The modern system of training in bodybuilding incorporates rather wide range of training activity techniques allowing to solve different problems. However, despite essential distinction in used training programs structure, parameters of volume and intensity of physical activities, the main purpose of the training process is maximum, but at the same time symmetric development of muscle bulk [4, 5]. Thus, the development of power opportunities of athletes organism is only indirect criterion of positive dynamics of efficiency growth and isn't a priority in this kind of sport [1, 7].

Despite a broad popularization of bodybuilding in the world, the analysis of a scientific and sports literature [3, 6, 8] testifies that in the theory and practice of strength sports the problem of training process improvement on account of optimization of physical activity for athletes at the stage of a specialized basic training isn't rather deeply considered. Considering that fact that one of the main task of this stage of a long-term training is a maximum set of "rough" muscle bulk due to work with big volumes of physical activities, most of researchers indicate the need of mainly general power exercises usage [4, 6, 13].

The necessity of solving the problem of a training system optimization in bodybuilding compels trainers, scientists, and also professional athletes to conduct constantly the search of absolutely new, the safest but also effective training techniques which will allow not only to achieve good results for the short period of time, but also to keep the reached fitness level during a long period of competitive activity [12, 13]. However, most experts in bodybuilding try to adhere to standard training techniques using standard schemes of principles, methods and means combination, motivating with that efficiency of their application is proved by many researchers [1, 3, 6, 15].

At the same time, in modern scientific literature [11, 12, 13] experimental techniques of training in bodybuilding are rather extensively presented. However, the analysis of a specialized literature [10, 14] testifies that in the theory and practice of strength sports the problem of a training system optimization on account of optimization of loads for athletes at the stage of a specialized basic training isn't rather deeply considered.

In this regard, there is a need of deeper studying of various training regimes peculiarities, and also efficiency of their influence on increase the body circumference parameters of athletes on account of their muscle bulk growth at this stage of training. Also, insufficiently examined is a problem of necessity and efficiency of experimental complex and specific training regimes usage during power training which differ on the structure and indicators of external load from universally recognized in bodybuilding.

The purpose of research is studying the influence of various training regimes on increase the body circumference parameters of bodybuilders at the stage of a specialized basic training.

Materials and methods of researches. 60 athletes aged 18-19 years (experience in bodybuilding - 5 years) took part in the survey. To achieve the goal this contingent was divided into three research groups:

– the first group of athletes (control) used during 4 months the standard training regime (on each "working" muscle group primarily a series of general exercises, and then a series of isolating exercises were carried out);

– the second group of athletes (first experimental) used during 4 months of training the experimental combined training regime. So, during every month of training in the period of the first 2 micro cycles on each "working" muscle group primarily a series of general exercises, and then a series of isolating exercises were carried out. Herewith, during next 2 weeks of every month of trainings, the priority of basic and isolating exercises changed to the opposite side (the principle of "preliminary exhaustion" was used [1, 8, 10]);

– the third group of athletes (second experimental) used non-standard training regime for the stage of a specialized basic training which is based on the principle of "preliminary exhaustion" (on each "working" muscle group primarily a series of isolating exercises, and then a series of basic exercises were carried out).

As model muscle activity of a power training load was used during four months. The examined representatives of all groups performed the physical activity of the following character on every training: the quantity of basic exercises – 2; the quantity of isolating exercises – 2; in each exercise - 4 series of 8 repetitions with a rest interval 1 minute; the rate of exercise performance is average (2/4 – 2 seconds - a concentric phase of the movement and 4 seconds – an eccentric phase); exercises are performed with a full amplitude; the weight burden, in these conditions, is 78-82% of the maximum.

In the process of research the technique of an evaluation of a training load index size by the technique offered by Chernozub A.A. was used. [7]. This technique allows to determine the optimal load size which is adequate to functionality of athletes organism. The calculation of load indicators was made: relative weight burden (W_a), size of power load (W_n). The body circumference parameters of research

groups representatives were determined by the method of anthropometry: thorax, shoulder, hip [2]. The size of the maximum weight burden, while performing power exercises in one training that the person can overcome on account of muscle efforts, was determined by the method of control testing [9, 10].

The control of the studied indicators was made five times in one month interval during four months of trainings.

The materials of researches were exposed to statistical processing with the use of software "SPSS Statistics". Methods of parametrical statistics defining indicators of an arithmetic average, a statistical uncertainty and confidence level were used [9].

Results of the research and their discussion. Values of power load parameters which was used by participants during four months training in the conditions of performance of various training regimes are presented in tab. 1.

The analysis of primary data testifies that controlled indicators show almost identical parameters at representatives of all research groups. This fact specifies that the contingent of participants has almost identical extent of development of an organism power opportunities, as well as fitness level in general.

Table 1

Values of power load parameters of participants in the conditions of the use of various basic and isolating exercises combination in one training during 4 months in bodybuilding, (M±m, n=60)

Indicators	Research groups	The stages of control of power load indicators			
		During one month of training	During two months of training	During three months of training	During four months of training
Wa, kg (relative weight burden)	control	43,58±4,25	47,16±4,34	49,81±7,40	52,00±6,89
	first experimental (B/I.)	45,57±3,89	49,39±5,87	52,76±6,43	55,56±4,89
	first experimental (I/B)	45,18±5,12	48,93±4,78	52,25±4,98	55,13±6,11
	second experimental	45,99±4,88	49,21±6,77	52,12±7,95	54,74±6,89
1 PM, kg (maximum weight burden)	control	64,08±8,32	68,66±9,45	72,53±11,11	75,73±12,22
	first experimental.	66,35±7,34	71,89±11,47	76,77±9,78	81,00±10,23
	second experimental	67,54±6,87	72,28±9,06	76,29±8,95	80,04±11,21
Wn, kg/min (size of power load)	control	657,84±23,21	711,91±25,32	751,76±19,77	784,99±23,47
	first experimental (B/I.)	687,88±30,76	745,61±27,45	796,37±25,44	840,25±22,33
	first experimental (I/B)	681,99±21,56	738,67±25,55	788,84±22,45	832,14±19,49
	second experimental	694,26±24,43	744,26±22,31	786,69±19,58	826,29±24,32

Note: B/I – in the process of training at first basic (B), and then isolating (I) exercises are used during two micro cycles ; I/B - in the process of training at first isolating (I), and then basic (B) exercises are used during next two micro cycles

The controlled indicators of power load being fixed during 4 months of research show the same positive dynamics of increase in parameters (on average from 19 to 22% in comparison with basic data) in representatives of all groups regardless of the training regime they use. The results specify that in these conditions of physical activity, regardless of a combination and frequency of the basic and isolating exercises performance during the training – the dynamics of power load parameters will depend on degree of athletes fitness level.

In fig. 1 quantitative indices of the thorax circumference parameters fixed from the representatives of research groups during 4 months of experiment are graphically displayed. It is established that the most positive dynamics (+6,3% ($p < 0,05$) in comparison with basic data) is received from the representatives of the 2nd experimental group. At the same time, the smallest increase of growth of a controlled indicator during the research (+3,3% ($p < 0,05$)) is received from the representatives of the control group.

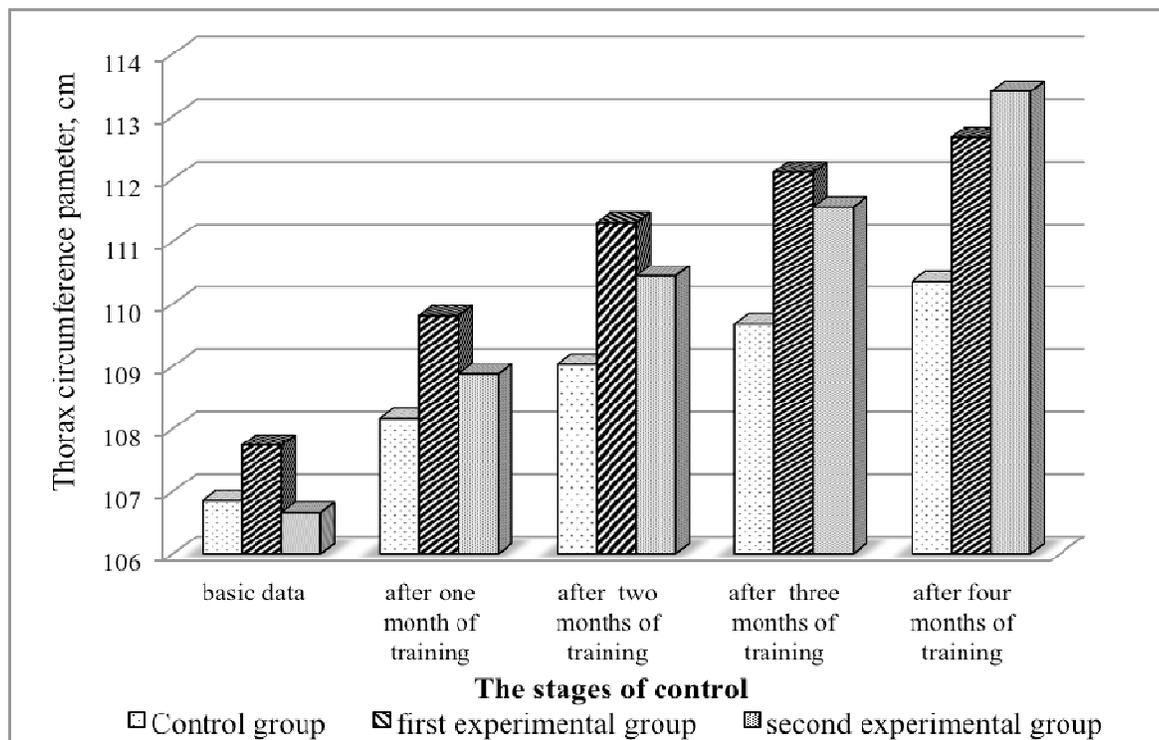


Fig. 1. The dynamics of athletes thorax circumference parameters in the conditions of the use of various basic and isolating exercises combination during 4 months in bodybuilding, n=60

Almost similar dynamics is observed at control of a shoulder circumference parameters of the studied contingent (fig. 2).

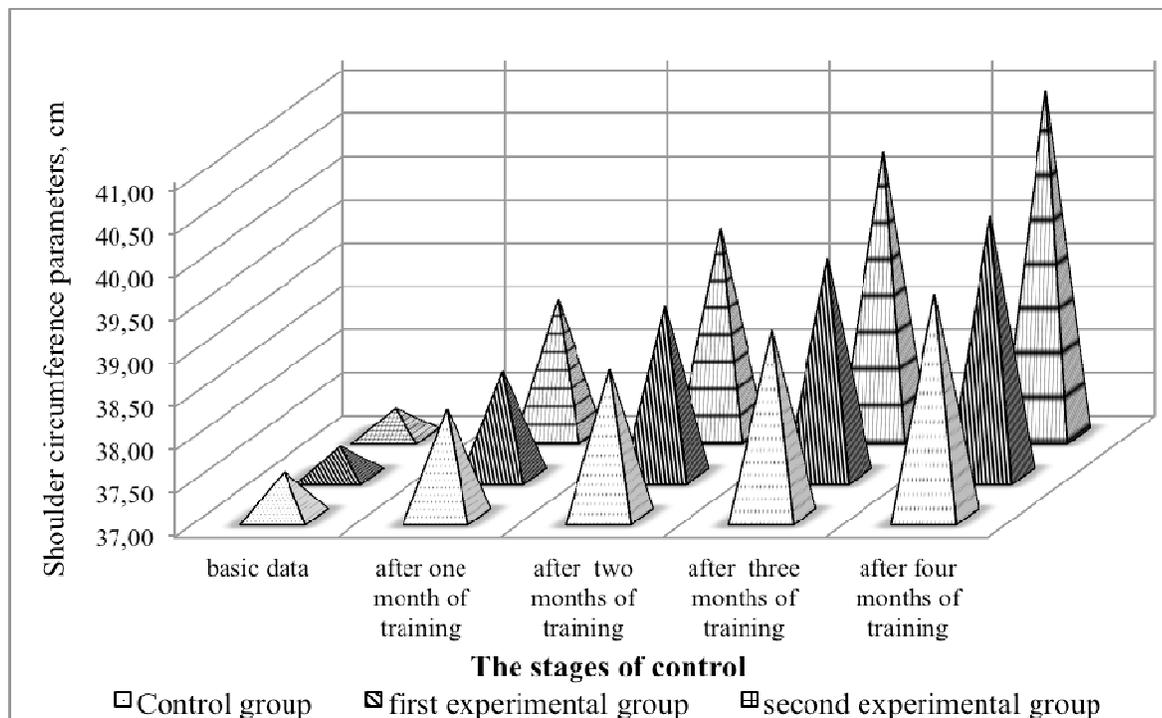


Fig. 2. The dynamics of athletes shoulder circumference parameters in the conditions of the use of various basic and isolating exercises combination during 4 months in bodybuilding, n=60

So, in the group of athletes who during the physical activity use the training regime which is based on the principle of "preliminary exhaustion" (on each "working" muscle group a series of isolating exercise, and then a series of basic exercise was primarily performed) the most essential increase (6,3% ($p < 0,05$)) of the studied indicator is fixed. Thus, the shoulder circumference parameters of control group representatives who used the standard training regime, increased only by 5,5% ($p < 0,05$).

The comparative analysis of dynamics of a hip circumference parameters, shows significant increase in parameters of a controlled indicator (+7,2% ($p < 0,05$)) in comparison with basic data) at representatives of the second experimental group. Thus, the increase of hip circumference parameters was also fixed in control group of athletes (+5,5 ($p < 0,05$)) and in first experimental group(+5,68 ($p < 0,05$)), but with less expressed dynamics (fig. 3).

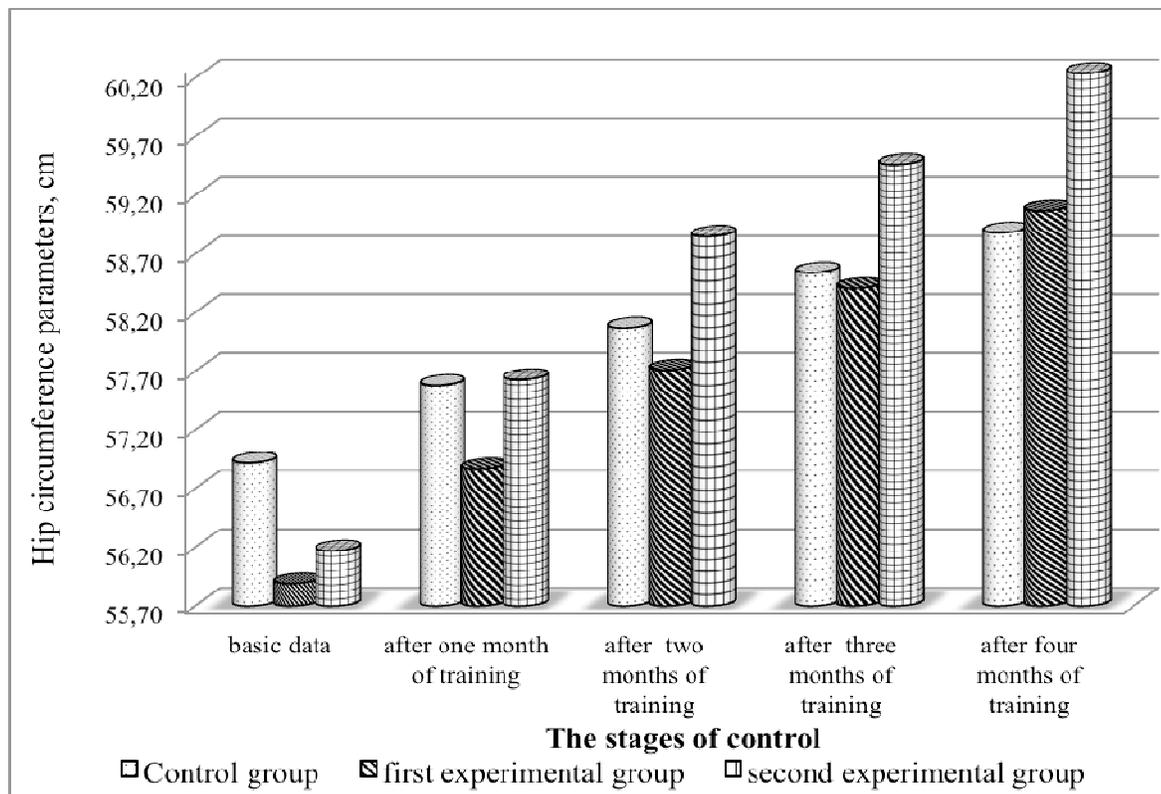


Fig. 3. The dynamics of athletes hip circumference parameters in the conditions of the use of various basic and isolating exercises combination during 4 months in bodybuilding, n=60

Thus, the received results testify that at the stage of a specialized basic training the standard training regime in bodybuilding (on each "working" muscle group primarily a series of general exercise, and then a series of isolating exercise was carried out) is less effective in comparison with the offered experimental regimes of physical activity (especially in the conditions of the principle of "preliminary exhaustion" use).

Conclusions:

1. It is determined that the level of change of athletes body circumference parameters at the stage of a specialized basic training during a long period of bodybuilding training depends on the structure of the training regime (in this research on a ratio of frequency of the basic and isolating exercises performance).

2. It is revealed that regardless of the structure of the training regime and peculiarities of motive activity, parameters of load indicators show almost identical dynamics during 4 months of researches. This fact testifies to almost identical rates of power opportunities increase of an organism of the studied contingent.

Prospects of further researches are connected with the search of new ways of training process optimization in bodybuilding at the stage of a specialized basic training on account of correction of training regime structure, especially particularity of application of various variability of basic and isolating exercises periodical use. Thus, in future it is necessary to study and reveal regularities of morphometric body indicators change, power opportunities of athletes depending on conditions of multidirectional specific training activity.

Literature

1. Weider J. The system of bodybuilding / J. Weider. – M.: FiS, 1991. – 112 p.
2. Bondarchuk A.P. The management of training process for top athletes / A.P. Bondarchuk– M.: Olimpiia Press, 2007. – 272 p.
3. Vorobjov A.N. Anatomy of strength / A.N. Vorobjov, Yu.K. Sorokin. – M.: FiS, 1980. – 178 p.
4. Vorobjov A.N. Training, capacity for work, rehabilitation /A.N. Vorobjov. – M.: FiS, 1989. – 272 p.
5. Matveiev L.P. The essential principles of sport theory and system of athletes training / L.P. Matveiev. – K.: Olimpiiskaia literatura, 1999. – 320p.
6. Oleshko V.H. Athletes training in strength sports / V.H. Oleshko. – K.: DIA, 2011. – 443 p.
7. Pat. UA 76705 U, **MIIK** A61B 5/22 (2006.01) The method of determining the index of training load in athleticism. / Chernozub A.A. - № u201208376; Decl. 07.07.2012; Publ. 10.01.2013, Bull. №1. – 3 p.
8. Platonov V.N. The training system of athletes in Olympic sport. General theory and its practical applications / V. N. Platonov. – Kiev: Olimpiiskaia literatura, 2004. – 808 p.
9. Rebrova O.Yu. Statistical analysis of medical data. The use of an application programs package STATISTICA / O.Yu. Rebrova. — M.: Media Sfera, 2002. — 312 p.
10. Khartman Yu. Modern power training / Yu. Khartman, Kh. Tiunnemann. – Berlin: Shtortferlah, 1988. – 335 p.
11. Chernozub A.A. Methodological aspects of physical activity determination. // A.A. Chernozub / Pedagogics, psychology and medical-biological problems of physical education and sport: The Digest of scient. works by. S.S.Yermakov. – Kharkiv: XXIII, 2012. – № 8. – p. 114 – 120.
12. Chernozub A.A. Peculiarities of cortisol level changes in the blood of athletes and untrained boys in response to heavy power training loads // A.A. Chernozub / European International Journal of Science and Technology. Vol: 2, № 9 November, 2013. — P.52 – 57.
13. Hatfield F.C. Bodybuilding a scientific approach Chicago: Contemporary book, 1984. – 272 p.
14. Hatfield F.C. Hardcore Bodybuilding. Scientific Approach: McGraw-Hill., 1993. – 448 p.
15. Tesch P.A. Training for Bodybuilding. Strength and power in Sport. Blackwell Scientific Publications, 1991. P. 370 – 381

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