

Improvement of special training of weight-lifters by means of various groove machines in the preparatory period at the stage of preliminary basic preparation

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Purpose: to improve special training of heavyweights of 14–16 years old by means of various groove machines in the preparatory period at the stage of preliminary basic preparation.

Material & Methods: 30 young weight-lifters at the age of 14–16 years were involved to the experiment; all of them had II and III sports categories.

Results: it is revealed that sportsmen of the experimental group, who used nonconventional methods of training on special groove machines such as medicine ball, Sandbag, rubber tube, with the general training loads of classical technique of trainings, which has made 779 raising of the bar, equal to 90 tons, improved power indicators in the sum of double-event on 16,5 kg after the experiment, and also set own records unlike the control group, which trained by the traditional technique and used the loading volume, which has made 910 raising of the bar and 111 tons, and has improved power results on 7,2 kg.

Conclusions: it is established that use of these machines promotes more effective development of high-speed-power and power qualities and consequently, leads to the growth of sports results in weightlifting.

Keywords: training of young weight-lifters, preparatory period, nonconventional methods, high-speed and power preparation, sports results.

Introduction

The modern system of preparation needs the constant improvement of technical preparedness of sportsmen-weight-lifters which is directed to the realization of effective technical actions of young weight-lifters in the conditions of preparation for competitive activity. Strengthening of the competition at competitions demands from coaches and sportsmen of the search of new ways of increase in effectiveness of competitive activity [11].

Weight-lift exercises are very difficult by the technique of performance because the lifts of extreme weight is connected with the maximum muscle tension of trunk and extremities, quick change of the mode of their work, and, above all – preservation of balance in basic phases of the movement of young sportsmen. The method of execution of weight-lift exercises is also influenced by the constitution and typological features of the structure of organism of young weight-lifters [8; 4].

Now exercises of dynamic character, mainly with big encumbrances are mainly used for the development of force in weightlifting. As shown in researches of the famous scientists (Yu. V. Verkhoshanskyi, 2013; Yu. I. Gryshin, 2011; L. S. Dvorkin, 2006), the sportsman carries out draft weighing 130–140 kg at a jerk of 120 kg. In this case the big encumbrance provides the increase in muscular strength generally, but does not promote the development of ability to their quick reduction.

It is considered to be that we increase the power potential of muscles, which is necessary for the development of high speed of the movement by means of big encumbrances. But, as researches of the famous domestic scientists of N. A. La-

putin, 2004; A. S. Medvedev, 1980; V. G. Oleshko, 2011 show, working muscles do not manage to show at most power opportunities in explosive phases to a jerk and snatch (blasting and snatch from breast). It demonstrates that high-speed and power preparation is necessary for the weight-lifter for the achievement of the highest sports results.

It should be noted that the problem of high-speed and power and power training of young weight-lifters is insufficiently reflected in scientifically-methodical literature, as caused the relevance of the chosen research subject.

It is established by many researchers that the development of high-speed and power and power qualities is most effectively carried out at teenage age up to 14 years [5; 7; 6; 13; 14]. On the basis of the experimental data, V. S. Filin (1970) the following conclusions are drawn: the used means and methods of development of high-speed and power qualities at young sportsmen are represented highly-effective at the stage of initial preparation.

The development of high-speed and power and power abilities of the weightlifter begins with mastering the technique of performance of weight-lift exercises. For this purpose, it is necessary to achieve accuracy, profitability of the movements executed at first at slow speed and then – in maximum. The problem of increase in its weight at preservation of speed and accuracy of performance of exercises became in the process of mastering the technique of lifts of a bar [6].

Communication of the research with scientific programs, plans, subjects

The scientific research is executed on the subject of the Built

plan of the research work in the sphere of physical culture and sport for 2011–2015 on the subject 3.7 “Methodological and organizationally-methodical bases of determination of individual norm of physical condition of the person” (number of the state registration is 0111U000192).

The purpose of the research:

the improvement of special training of young weight-lifters of 14 years old by means of different groove machines in the preparatory period.

Material and Methods of the research

Organization of the research: young pupils of sports School “HTZ” participated in this research. 30 young weight-lifters of 14 years old were involved to the experiment, all of them had II and III sports categories. Participants were distributed on sports qualification on two groups – control and experimental. Participants of the experiment trained 4 times for week.

The experiment was made on the educational-training base MI CCYSS “HTZ”.

Research methods: the program of researches included complex of methods of research according to the methodological approach in solution and the put tasks: analysis of scientific-literature, definition of special physical fitness by means of pedagogical testing of young weight-lifters, pedagogical experiment and methods of mathematical statistics.

Results of the research and their discussion

The experiment was organized according to the traditional scheme for the control group, and the experimental group

trained with use of different special groove machines, such as: medicine ball (medical ball), Sandbag (bag with sand) and rubber tube (rubber plait). All tested competed at control competitions (their results were taken by us for the initial level of sports skill) before the experiment (tab. 1). Results of competitions were considered as the main criterion of efficiency of experimental training.

All sportsmen trained according to the classical scheme before the beginning of experiment to which only traditional competitive exercises and special auxiliary exercises belonged.

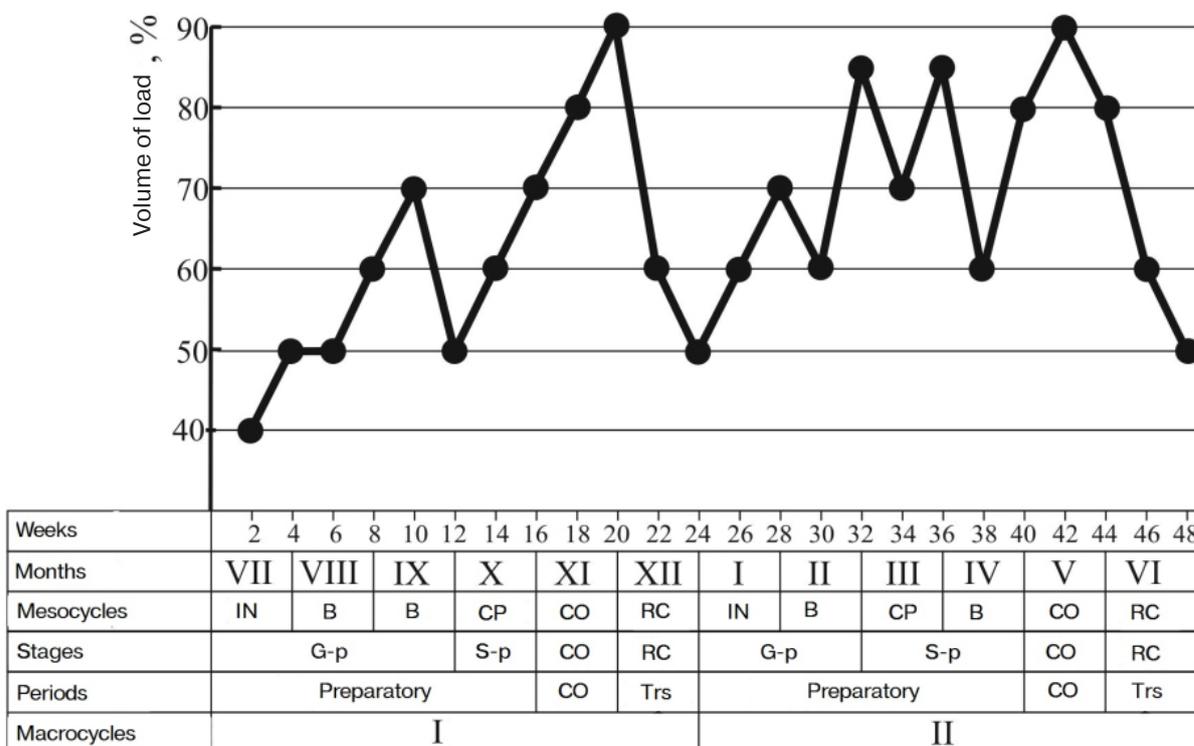
The control group trained by the standard technique, the volume of load made 910 lifts of bar (NLB) and 111 tones.

The total amount of work was reduced due to squats with a bar on shoulders and made 779 lifts of a bar, 90th tone in the experimental group. The difference of the training program of the experimental group was in use of different special groove machines, such as:

Medicine Ball Clean – soft, big and pillow-similar ball which weight varies from 1,8–12,7 kg.

Sandbag (bag with sand) – big oblong bag with handles in the middle of which as encumbrance use sacks with sand. The weight of bag can fluctuate from 2 to 60 kg.

Rubber tube (rubber plait) – this simple apparatus for training muscles of body can be used practically by all people, irrespective of their physical fitness. All devices were used during the preparatory period which consisted of four mesocycles: involving, and two basic and control-preparatory, as it is visible in pic. 1.



Pic. 1. Two-cyclic creation of the training process of young weight-lifters of the experimental group on the previously-basic stage

Table 1

Distribution of volume of load – in NLB, in percentages of different groups of exercises during the preparatory period for sportsmen of the experimental group

Group exercises	Load in mesocycle			
	Involving	Basic	Basic	Control-preparatory
Main load				
Jerk classical (%)	5	30	35	30
Jerk in medium crouch (%)	10	30	40	20
Snatch classical (%)	10	20	30	40
Snatch from stands (from behind the head) (%)	10	30	40	20
Lifts of a bar on breast in medium crouch (%)	15	30	40	15
Jerk draft (%)	10	30	30	30
Snatch draft (%)	10	30	30	30
Squats with a bar on shoulders (breast) (%)	20	35	40	5
Pressed load (%)	30	30	30	10
Auxiliary load				
Medicine ball (%)	20	35	35	10
Sandbag (%)	20	35	40	5
Rubber tube (%)	20	30	30	10
NLB on mesocycles (times)	756	806	951	775

Note. NLB – the number of lifts of a bar.

Features of training process of experimental group were that during four mesocycles: involving, and two basic and control-preparatory was small load special exercises and at the expense of auxiliary load, we executed the necessary volume of the general NLB, as it is visible in tab. 1.

The example of the training process of the experimental group in basic mesocycle, impact microcycle of the preparatory period.

No. 1

1. Press by jerk grip from behind the head + squat (3 presses + 2 squats) x 3 (A.L.);
2. Jerk in medium crouch 60% x 6, 70% x 4, (80% x 2) x 2;
3. Jerk draft 90% x 4, (100% x 2) x 4;
4. Jerk leaves (70% x 2) x 2, (80% x 2) x 2;
5. Squat with a bar on breast 55% x 4, (75% x 3) x 4;
6. Exercises with medicine ball 15 times x 5;
7. Exercises with rubber tube 12 times x 6.

No. 2

1. Jerk in medium crouch from starting position signature stamp is lower than knees 65% x 4, (75% x 2) x 2;
2. Jerk classical (80% x 2) x 2, (90% x 1) x 4;
3. Jerk draft from starting position signature stamp is lower than knees (90% x 3) x 3, (100% x 2) x 3;
4. Squat on shoulders 60% x 4, (80% x 4) x 3;
5. Incline with a bar on straight legs 4 incl. x 3 times (A. L.);
6. Jumps with a bar up from starting position signature stamp are higher than knees, jerk grip 50% weight from jerk classical, 4 jumps x 4 times (A. L.);
7. Exercises with rubber tube of 12 times x 6;
8. Exercises with sandbag 15 x 5.

No. 3

1. Lifts of a bar on breast from starting position signature stamp are lower than knees (70% x 4) x 3;
2. Snatch classical (80% x 2) x 4;
3. Snatch from stands 80% x 2, (90% x 2) x 3;
4. Snatch drafts of starting position signature stamp are lower than knees (80% x 4) x 4;
5. Squat with a bar on shoulders 60% x 3, 80% x 3, (90% x 3) x 2;

6. Exercises with medicine ball 15 times x 5;
7. Exercises with rubber tube 12 times x 6.

No. 4

1. Press jerk grip from behind the head + squat (3 presses + 2 squats) x 3 (A. L.);
2. Jerk leaves 70% x 2, 80% x 2, (90% x 2) x 3;
3. Incline with bar on straight legs 4 incl. x 4 times (A. L.);
4. Exercises with medicine ball 15times x 5;
5. Exercises with rubber tube 12 times x 6;
6. Exercises with sandbag 15 x 5.

We developed complexes of additional load by means of different special groove machines, such as: medicine ball (medical ball), sandbag (bag with sand) and rubber tube (rubber plait) give the specific training effect directed to physiologic mechanisms which are responsible for the speed and power of inclusion of muscles in work also by means of the complexes developed by us sportsmen of the experimental group increased power indicators, high-speed and power and indicators of endurance.

Results of the experiment were expressed:

The divergences are doubtful at the beginning of the preparatory period: in jerk classical (control – 47,5 kg, experimental – 48,5 kg; $P>0,05$); snatch classical (respectively – 67,1 kg, 67,5 kg; $P>0,05$); the sum of lifts (respectively – 114,6 kg, 116,0 kg; $P>0,05$); squat with a bar (respectively – 90,1 kg, 88,7 kg; $P>0,05$); bench press (respectively – 56,1 kg, 60,1 kg; $P>0,05$) and class draft (respectively – 96,5 kg, 99,9 kg; $P<0,05$).

Coefficients of variation of all main indicators of special exercises separately for control and experimental groups practically did not exceed the general initial level at the beginning of the experiment. For example, it made $V=13,7\%$ for jerk classical of the control group, for the experimental – $V=14,0\%$. Respectively, coefficients of variation made the following values for control and experimental groups: snatch of classical $V=9,4\%$, $V=7,7\%$; sum of lifts– $V=11,0\%$, $V=9,8\%$; squat with

Table 2

Average value of results of competitive and specially-preparatory exercises of weight-lifters of control and experimental groups at the beginning of the preparatory period (n1=n2=15)

Indicators	CG		EG		T	P
	$\bar{X}_1 \pm m_1$	V, %	$\bar{X}_2 \pm m_2$	V, %		
Jerk classical, kg	47,5±1,7	13,7	48,5±1,8	14,0	0,4	>0,05
Snatch classical, kg	67,1±1,6	9,4	67,5±1,3	7,7	0,2	>0,05
Sum of lifts, kg	114,6±3,3	11,0	116,0±2,9	9,8	0,3	>0,05
Squat with a bar, kg	90,1±1,8	7,5	88,7±1,2	5,4	0,7	>0,05
Bench press, kg	56,1±1,8	12,6	60,1±1,5	9,8	1,7	>0,05
Class draft, kg	96,5±2,1	8,6	99,9±1,9	7,6	1,2	>0,05

Table 3

Average value of gain of results of competitive and specially-preparatory exercises of weight-lifters of control and experimental groups at the end of the preparatory period (n1=n2=15)

Indicators	CG	EG	T	P
	$\bar{X}_1 \pm m_1$	$\bar{X}_2 \pm m_2$	2,5	<0,05
Jerk classical, kg	50,5±1,7	56,5±1,6	2,2	<0,05
Snatch classical, kg	71,3±1,7	76,0±1,3	2,5	<0,05
Sum of lifts, kg	121,8±3,3	132,5±2,7	2,5	<0,05
Squat with a bar, kg	99,8±1,6	105,3±1,5	2,5	<0,05
Bench press, kg	61,0±1,8	67,1±1,4	2,5	<0,05
Class draft, kg	106,3±1,9	118,2±1,8	4,6	<0,05

a bar – V=90,1%, V=88,7%; bench press – V=12,6%, V=9,8% and class draft – V=8,6%, V=7,6%.

Sportsmen of the experimental group showed the highest results unlike control which trained by the technique accepted in general at the end of the preparatory period. And 10 of them set personal records in the sum of lifts and in separate specially-training exercises (tab. 3)

So, the difference between indicators was reliable at the end of the preparatory period: jerk classical (control – 50,5 kg, experimental – 56,5 kg (t=2,5; p<0,05); snatch classical (respectively – 71,3 kg, 76,0 kg (t=2,5; p<0,05); sum of lifts (respectively – 121,1 kg, 132,5 kg (t=2,5; p<0,05); squat with a bar (respectively – 99,8 kg, 105,3 kg (t=2,5; p<0,05); bench press (respectively – 61,0 kg, 67,1 kg (t=2,5; p<0,05) and class draft (respectively – 106,3 kg, 118,2 kg (t=4,6; p<0,05).

Conclusions

Therefore, it is possible to draw conclusion that use of devices by the experimental group (medicine ball, sandbag, rubber tube) promotes the development of high-speed and power and power qualities and consequently, leads to the growth of sports results in weightlifting. The difference between indicators was reliable at the experimental group at the end of the preparatory period: in jerk classical (t=2,5; P<0,05); snatch classical (t=2,5; P<0,05); sum of lifts (t=2,5; P<0,05); squat with a bar (t=2,5; P<0,05); bench press (t=2,5; P<0,05) and class draft (t=4,6; P<0,05).

The subsequent researches are planned to be directed to development and foundation of training process of weight-lifters in the competitive period of preparation.

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