OPTIMIZATION OF TRAINING LOAD AMONG WEIGHTLIFTERS DURING PRE-BASIC TRAINING

Orlov A.A.
Zaporizhzhya National University

Annotation. *Purpose*: develop and experimentally based methods of individualization of the training process weightlifters during pre-basic training for groups of first year students. *Material*: The study involved 20 weightlifters aged 12-13 years. To assess the level of special physical preparation of athletes were used control tests which are recommended curriculum in weightlifting. *Results*: Appropriateness optimize training load of athletes in the group of first year students in the preparatory and competitive period. Recommends the following training load: number of workouts in a week microcycle - 5; the ratio of general and special physical training is 55: 45%. Necessary to exclude training loads in classical exercises with intensity of 90%, 90%, and not to use the various drafts. *Conclusions*: It was found that the optimization of the training load weightlifters during pre-basic training, can significantly improve the competitive outcome athletes improve the technique of classical exercises, raise special physical preparedness and reduce injuries.
Keywords: load, weightlifter, mesocycle, stage, competition, program.

Introduction[1]

Popularity of women's weight lifting as new Olympic kind of sports grows at rapid rate and it is proved by the fact that more than 100 countries take part in international competitions. In Ukraine women's weight lifting is also rather popular: combined team of Ukraine is in ten of the strongest world teams [5,8].

The largest problem of women's weight lifting in Ukraine is training of highly qualified sportswomen for combined team, who would be able to demonstrate results of international level. One of urgent directions, which have practical significance, is working out of training methodic for weight lifters, considering specificities of woman's organism, starting from groups of ini6ial training. In spite of separate works, devoted to some problems of training process, this direction has not been sufficiently worked out in our country (V.G. Oleshko, O.I. Putsev, S.O. Putsev) [8, 10].

In initial weight lifting program for CJSS, SCJSS and SHS there were worked out standard of training of girls-weight lifters at different stages of many years preparation. But they were created without consideration of specificities of woman's organism. According to these programs age of starting of trainings for boys is 10 years and for girls 12 years [8]. But, as it was noted by scientists N.Zh. Bulgakova (1999), S.A. Levenets (1979), L.G. Shakhlina (1997), W. Mathew (2002), R. M. Malina (1998) girls are able to demonstrate high results 2-3 years earlier than boys; in our opinion these age peculiarities shall be considered in building of sport training's structure [1, 6, 12, 14, 15]. Also they do not consider modern state of world women's weight lifting and the fact that championship of Ukraine is conducted for juniors of age up to 1`3 years and European championship – for juniors of 13-15 years old.

In works of advanced specialists – L.V. Volkov (2002), A.N.. Vorobyov, L.S. Dvorkin (1981), V.V. Yust (2003) attention is attracted to the fact that alongside with improvement of organizational, material bases of trainings and competitions the character of sport trainings also changes [2, 4, 11, 13].

There is practically absent scientifically worked out methodic of training of girls-weight lifters. Scientific special literature only declares that sport weigh lifting training of women shall be constructed in different form trainings for men way, but it gives no recommendations concerning what shall be such differences.

Thus, determination and realization of ways for improvement of junior girls-weight lifters' training process at stage of initial basic training, in groups of first year training it would be urgent, because it would permit to effectively prepare women-weight lifters of international class. Exactly this fact is the base of our researches.

The research has been fulfilled in compliance with plan of scientific-research works of department of physical education and sports theory and practice of Zaporozhye national university, by topic "Theoretical nd methodic principles of training process's improvement as well as improvement of sportsmen's competition functioning in different kinds of sports" (state registration number 0114U001797).

Purpose, tasks of the work, material and methods

The purpose of the research is working out and experimental proving of methodic of training process's individualization for girls-weight lifters at initial basic stage of first year training.

The task of the researches is optimization of training loads of girls-weight lifters in training and competition periods at initial basic stage.

The methods of the research are: generalization of scientific-methodic literature, testing of special physical fitness's level, analysis of competition functioning, methods of mathematical statistics.

Materials of researches – the researches were conducted on the base of Kharkiv regional higher establishment of physical culture and sports (control group) and Zaporozhye SCJSS (weight lifting) "Spartak" (main group). 20 weight lifters in control group and 20 – in main group took part in the researches. Age of sportswomen was 12-13 years,

doi: 10.15561/18189172.2015.0111

sport qualification – 1st junior sport degree. At the beginning of the research sportswomen's physical fitness was at one and the same level.

Results of the research

Organization of training process in weight lifting has its own specificities and based on optimal distribution of loads, selection of optimal load's scope and intensity for every sportswoman. Special attention is paid to general and special physical training [3, 7].

At initial basic stage there are used main means of training, which include increasing scope of special auxiliary exercises, improvement of technique of classic exercises. At this stage of training scope of training loads gradually increases as well as intensity and density of trainings to special and physical fitness with prevalence of exercises, in which are oriented on improvement of speed-power qualities, flexibility, coordination, general endurance.

Great attention is paid to moral-will training of junior sportswomen, to increasing of tactic sportsmanship, ability to realize test attempts at competitions. Basic stage is very important in weight lifting in process of many years' training; it makes ground for sportswomen's functional and physical potentials and their future success in sports.

For creation of the most gentle conditions for woman's organism, achievement of higher sport results in the future we offered to optimize training loads for junior girls-weight lifters, which was recommended by weight lifting curriculum for CJSS, SCJSS and SHS [8].

For example, in training program we recommended the following distribution of training loads for first year girls-weight lifters at initial basic stage in training and competition period (see table 1).

Table 1

*Training loads for first year girls-weight lifters at initial basic stage in training and competition meso-cycles * Weight lifting training program for CJSS, SCJUSS, SHS, 2011)*

Training periods	Exercises							
	Jerks	Pushes	Jerk pulling	Push pulling	Squatting	Pressing	Other	Total
Training	216	240	120	108	264	120	132	1200
Competition	216	234	54	45	180	72	90	900

*Note – meso-cycle consists of four weekly micro-cycles

According to presented training program quantity of trainings in weekly micro cycle is 6, with КПШ 90 % from maximal weight and higher– 2.2 % (from general scope of loads in classic exercises in training period) and 2.8 % (in competition period) with correlation of GPT and SPT of 65:35 % [8].

Basing on recommendations of advanced specialists and many years' own experience we offered the following distribution of training loads for first year girls-weight lifters at initial basic stage in training and competition period (see table 2).

Table 2

*Training loads for first year girls-weight lifters at initial basic stage in training and competition meso-cycles **

Training periods	Exercises							
	Jerks	Pushes	Jerk pulling	Push pulling	Squatting	Pressing	Other	Total
Training	245	282	0	0	312	158	179	1176
Competition	263	314	0	0	169	68	86	900

*Note – meso-cycle consists of four weekly micro-cycles

We inserted the following changes in training loads for first year girls-weight lifters: Б

1. Quantity of trainings in weekly micro-cycle – 5 instead of 6;
2. Correlation of general physical training and special physical training is 55:45 %, instead of 65:35 %;
3. Absence of different pulling in training;
3. Increasing of load scope in training period (by 13,. % - jerks and by 17.5 % - pushes);
4. Increasing of load scope in competition period (by 21.7 % - in jerks and by 34.1 % - pushes);
5. Increasing of loads in special-auxiliary exercises in training period – by 33.7 %;
6.Reduction of special-auxiliary exercises' loads in competition period – by 5.26 %.
7. Babsence of training loads in classic exercises with intensity of 90 % and higher.

These are just the changes, which permit to reduce quantity of traumas of junior sportswomen and improve significantly technique of classic exercises' fulfillment. As experience shows, application of different pulling at this training stage does not give desired result because in this age category anthropometric indicators of sportswoman are

intensively changing and, as a result, width of hands' hold is changing and location of body in start position. Increasing of quantity of weight lifting in jerks and pushes permits to better improve technique of such exercises' fulfillment.

Concerning heavy weight lifting (90 % and more) in classic exercises at this stage, in our opinion load with such intensity worsens technique of exercises' fulfillment and results in traumas and worsening of junior sportswomen's emotional state.

As per researches by O.S. Medvyedev and our experience fulfillment of training load in classic exercises with intensity of 70-85 % provides maximal opportunity for improvement of technique of classic exercises' fulfillment and for development of physical potentials that facilitates significant improvement of competition results [7].

By intensity zones and load scope we offer the following distribution (see table 3, 4).

Table 3

*Distribution of loads of girls-weight lifters in training meso-cycle * by zones of intensity (KPS)*

Exercises	Zones of intensity %						
	50-69	70-79	80-89	90-99	100	+ 100	total
Jerks	-	112	133	-	-	-	245
Pushes	-	139	143	-	-	-	282
Squatting	-	153	59	67	33	-	312
Presses	158	-	-	-	-	-	158

*Note – meso-cycle consists of four weekly micro-cycles

Table 4

*Distribution of loads of girls-weight lifters in training meso-cycle * by zones of intensity (KPS)*

Exercises	Зони інтенсивності %						
	50-69	70-79	80-89	90-99	100	+ 100	total
Jerks	-	132	131	-	-	-	263
Pushes	-	145	169	-	-	-	314
Squatting	-	80	31	39	17	2	169
Presses	68	-	-	-	-	-	68

*Note – meso-cycle consists of four weekly micro-cycles

The offered load permits to confidently improve results of girls-weight lifters of main group in comparison with control group, in which traditional training loads were used.

For evaluation of special physical fitness's level we used control tests, recommended by weight lifting academic program for CJUSS, SCJUSS, SHS [8]. Analyzing dynamics of indicators' increment of main and control groups' special physical fitness we determined that indicators of all control tests confidently improved in both groups (see table 5).

Table 5

Indicators of increment of special physical fitness of control and main groups' girls weight lifters

Control SPF exercises	Absolute increment (kg)		Relative increment (%)	
	Control group	Main group	Control group	Main group
Jerk in half squatting	7	12	4,5	9,8
Lifting of weight on chest with half squatting	5	15	6,2	16,3
Lifting of weight on chest	6	13	8,6	15,7
Pushing of weight from supports	10	14	12,3	15,3
Squatting with weight on chest	10	17	5,9	11,8
Squatting with weight on shoulders	13	21	8,3	18,2
Weight pressin in standing position	7	13	3,9	9,4

Besides, as per results, demonstrated by sportswomen at official competitions, junior girls-weight lifters of main group showed confidently better result in exercise "Classic jerk" than sportswomen of control group (by 6.6%).

Correspondingly, result of competition exercise "classic push" was higher at main group (by 8.8%). Result in sum of biathlon of main group sportswomen was also significantly better than in control group (by 6.5%).

Conclusions:

1. Results, obtained in our researches, showed that optimization of training loads of junior girls-weight lifters at initial basic stage permits to significantly improve the sportswomen's competition results, more effectively improve technique of classic exercises' fulfillment, increase level of special physical fitness and reduce traumatism.

2. The offered by us optimization of training loads at initial basic stage in training and competition periods facilitates significant improvement of junior sportswomen's special physical fitness.

Further researches will be oriented on optimization of training loads of girls-weight lifters at further stages of many years' training.

References:

1. Bulgakova N.Zh., Chebotareva I.V. *Teoriia i praktika fizicheskoj kul'tury* [Theory and practice of physical culture], 1999, vol.6, pp. 37-39.
2. Volkov L.V. *Teoriia i metodika detskogo i iunosheskogo sporta* [Theory and methods of children and youth sports], Kiev, Olympic Literature, 2002, 296 p.
3. Dvorkin L. S., Slobodian A.P. *Tiazhelaia atletika* [Weightlifting], Moscow, Soviet sport, 2005, 600 p.
4. Dvorkin L.S. *Silovye edinoborstva* [Force martial arts], Rostov on Don, Phoenix, 2001, 384 p.
5. Dvorkin L.S. *Tiazhelaia atletika i vozrast* [Weightlifting and age], Sverdlovsk, Ural University Publ., 1989, 198 p.
6. Levenec S.A. *Gigiena i sanitariia* [Hygiene and sanitation], 1979, vol.1, pp. 25-28.
7. Medvedev A.S. *Olimp* [Olympus], 1996, vol.1, pp. 13-14.
8. Oleshko V.G., Pucov O.I., Tkachenko K.V. *Vazhka atletika* [Weightlifting], Kiev, 2011, 79 p.
9. Platonov V.N., Gus'kov S.I. , Linec M.M., Iushko B.N. *Podgotovka sportsmenov v professional'nom sporte* [Preparing athletes in professional sports], Kiev, 2000, pp. 326-348.
10. Pucov S. O. Analiz pokaznikiv trenuval'noyi roboti vazhkoatletok visokoyi kvalifikaciyi riznikh grup vagovikh kategorij [The analysis of the training of highly qualified vazhkoatletok different groups weight categories]. *Olimpijskij sport i sport dlia vsekh* [Olympic sport and sport for all], Kiev, 2005, pp. 407.
11. Vorob'ev A.N. *Tiazhelaia atletika* [Weightlifting], Moscow, Physical Culture and Sport, 1981, 256 p.
12. Shakhlina L.G. *Individual'nyj podkhod kak odno iz napravlenij sovershenstvovaniia sistemy sportivnoj trenirovki zhenshchin* [Individual approach as one of the ways to improve the system of sports training women], Katowice, 1997, pp. 506-515.
13. Iust V.V. *Osobennosti podgotovki iunykh tiazheloatletok* [Features training young weightlifters], Khabarovsk, DSAPC, 2003, 68 p.
14. Can S. Determination of the factors motivating and motivation level of the weightlifters participating in Turkish weightlifting championship. *Procedia - Social and Behavioral Sciences.* 2010, vol.2(2), pp. 4245-4249. doi:10.1016/j.sbspro.2010.03.672.
15. Gourgoulis V., Aggelousis N., Mavromatis G., Garas A. Three-dimensional kinematic analysis of the snatch of elite Greek weightlifters. *Journal of Sports Sciences* 2000, vol.18(8), pp. 643-652. doi:10.1080/02640410050082332.
16. Hirunrat S., Ruktawee P. Kinematics analysis of the barbell of youth Weightlifters during the snatch. *Journal of Science and Medicine in Sport.* 2012, vol.15, pp. 152-156. doi:10.1016/j.jsams.2012.11.368.
17. Hymechko I.M. Mahlovanyy A.V. Characteristic of parameters of speed-strength preparednees of highly skilled weightlifters. *Pedagogics, Psychology, Medical-Biological Problems of Physical Training and Sports*. 2012, vol.6, pp. 115 - 119
18. Izquierdo M., Ibáñez J., Häkkinen K., Kraemer W.J., Ruesta M., Gorostiaga E.M. Maximal strength and power, muscle mass, endurance and serum hormones in weightlifters and road cyclists. *Journal of Sports Sciences* 2004, vol.22(5), pp. 465-478. doi:10.1080/02640410410001675342.
19. Lively W. Mathew. Sports Participation and Pregnancy. *Athletic Therapy Today*. 2002, vol.7(1), pp. 11-16.
20. Lutovinov Iu.A., Martin V.D., Oleshko V.G., Lisenko V.N., Tkachenko K.V. Physical development, the level of physical and technical preparedness of 14 - 15 year old young weightlifters of different weight categories groups. *Physical Education of Students*, 2014, vol.5, pp. 25-29. doi:10.15561/20755279.2014.0505
21. Malina R. M. *Fitness and physical fitness of girls 7 to 17 years*. Beunen Obesity Research. 1998, pp. 221-231.
22. Sitilertpisan P., Pirunsan U., Puangmali A. Comparison of lateral abdominal muscle thickness between weightlifters and matched controls. *Physical Therapy in Sport* 2011, vol.12(4), pp. 171-174. doi:10.1016/j.ptsp.2011.02.002.

Information about the author:

Orlov A.A.: ORCID: http://orcid.org/0000-0003-3770-9307; Orlov105@mail.ru; Zaporizhzhya National University; Zhukovsky Str. 66, Zaporozhye, 69000, Ukraine.

Cite this article as: Orlov A.A. Optimization of training load among weightlifters during pre-basic training. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2015, vol.1, pp. 57-61. doi: 10.15561/18189172.2015.0111

The electronic version of this article is the complete one and can be found online at: http://www.sportpedu.org.ua/html/arhive-e.html

Received: 10.10.2014
Published: 30.01.2015