© Eurasian Journal of Sport Science 2021; 1(2): 149-154
https://eajss.uz

The practice of conducting a high-intensity weekly micro cycle at the stage of pre-competitive training of young gymnasts

Umarov Jamshid Hasanovich[1]
[1]Uzbekistan state university of physical education and sport, Chirchik, Uzbekistan

Abstract
Purpose: In this article, the issues of searching for the rational construction of the educational and training process of young gymnasts and the effective ratio of loads of different directions at the stage of in-depth specialization in the pre-competitive micro cycle are considered. To study the expediency of using high-intensity training loads in the process of training young gymnasts aged 12-16 years.
Methods: Study and analysis of literary sources on the research topic, pedagogical observation, pedagogical testing, pedagogical experiment, static methods of processing results.
Results: The number of combinations for gymnasts of all ages varies within the planned range (see table 1). The maximum indicators for first-graders are noted on the 2nd, and for MS (Master of sports) - a on the 1st day with a gradual decrease by the end of the week. In the CMS (Candidate for master of sports), the number of combinations decreased significantly only on the 4th day. At the same time, the largest number of combinations of gymnasts were performed on a horse (1128.0 ± 27.4) and the smallest on a crossbar –543.0±18.4).
Conclusion: In conclusion, it should be added that all the subjects underwent a comprehensive medical examination, which showed that the state of health of adolescents is satisfactory. Young gymnasts who performed a greater weekly load during the second "over-shock" training than in the first had a higher expert assessment (average score), as well as a lower physiological cost of work according to heart rate, blood pressure, ortho-tests and most indicators of neuromuscular apparatus, with better tolerability of repeated "over-shock" load is also evidenced by a smaller weight loss during training and a large increase in static strength of the hand.

Keywords: Young gymnasts, integral training, the volume and intensity of the training load, the ratio of loads, the stage of in-depth specialization, the stage of sports improvement, the structure of the training process, the pre-competitive micro cycle, the competitive stage, orthoprobe, tremorometry.

Introduction

The continuing intensification of the volume and intensity of the training load in promising young gymnasts due to integral training sets the task of sports theorists and gymnastics coaches to find and substantiate effective ratios and combinations of loads of various preferential orientation, ensuring optimal formation of sports and technical skills (STM) at the stages of in-depth specialized training and sports improvement (Arkaev, et al., 2004; Kachaev, 1986; Lebedev, 1981). The studies carried out in this direction mostly affected the general issues of training young gymnasts and did not give a complete picture of the organizational and structural features of the construction of the training process in the pre-competition micro cycles (Shlemin, et al., 1997; Smolevsky, et al., 1999; Umarov, 1995). Therefore, the problem of further search for the rational construction of the educational and training process of young gymnasts at the competitive stage of preparation has not lost its relevance (Efimenko, et al., 1990;Umarov, et al., 2009).

Methods

In the practice of training the strongest gymnasts of the world, high-intensity loads are used both within one training session and the micro cycle as a whole. However, this method of intensifying the training process has not yet received scientific justification. This type of "super shock" micro cycle was planned for a group of gymnasts Specialized youth sports school of the Olympic reserve of the city of Tashkent. In this group, 27 gymnasts 12-16 years old, mastering the programs of the first category, candidates for masters of sports (CMS) and masters of sports (MS) trained. The micro cycle program provided for 180-200 combinations or 30-35 combinations for each main training session, which exceeded the average load used in practice by 4-5 times. After the "super shock" micro cycle, a recovery week was envisaged, characterized by a small volume and intensity of the load (see tables 1, 2).

Results and discussion

The number of elements of the highest difficulty and exercises requiring a high concentration of muscle tension was reduced to a minimum. Throughout these two micro cycles, the timing of training sessions was carried out with the

registration of qualitative and quantitative indicators of the load. A radio telemetric method was used to monitor the heart rate. The state of the cardiovascular system was assessed by the pulse rate and blood pressure, by changes in these indicators during functional tests (step test, orthostatic).

The volume velocity of blood flow in the working and non-working muscles of the forearm changed at rest and under static load. The state of the neuromuscular apparatus was assessed according to tremorometry and dynamometry. Taking into account the severity of the load performed, daily before training, between the two types of all-around and after their completion in the process of the "shock" micro cycle, restorative means of local (local vibration and manual massage, electrical stimulation, ultra-high frequency therapy) and general effects (general massage, steam bath, sauna) were used.

The analysis of individual load indicators revealed that the number of combinations does not depend on the age and qualifications of the athlete, but is related to the level of training (see table. 1).

Presented in Table 1 the pulse rate and blood pressure measured daily before the start of training (15 min.) during the "super shock" and recovery week increased slightly. By the end of the recovery week, heart rate and blood pressure returned to normal, and the pulse of 14 -year-old gymnasts became significantly less frequent relative to the initial one.

The pulse rate in response to the ortho probe was 15-23 beats at the first examination without age differences (see table 3). Immediately after the "super shock" week, more significant reactions of the cardiovascular system to the ortho probe were observed in terms of pulse rate from 25 to 33 beats in different groups. In 13-year-old young athletes, these changes turned out to be reliable. A week after the "super-shock" training, the pulse changes during the ortho probe returned to the initial level. Changes in heart rate indicators for the "step-test" sample were not reliable.

Significantly greater changes were observed in the analysis of shifts in blood pressure, especially minimum blood pressure. After a "super-shock" week of min. Blood pressure in response to the "step test" sample decreased by an average of 6.7 mm, whereas before the "shock" micro cycle, this decrease was 26 mm ($P < 0.01$). As a result of a slight decrease will give. BP pulse pressure also increased slightly (± 22.7 mm after intensive training compared to 51 mm before the "shock" week), which is unfavorable and indicates a state of fatigue.

As can be seen from Table 4, after the

Table 1. Dynamics of training load and physiological parameters of the cardiovascular system on different days (shock) and recovery weeks among gymnasts of the sports boarding school. Note: NIC– number of integral combinations; NE - the number of elements; HR – heart rate per minute (bpm); BD – arterial pressure (diastolic\systolic mmHg.); GPT – general physical training.

Categoryage	Indicators	"Shock" week						Recovery week					
		1st day	2nd day	3rd day	4th day	5th day	6th day	1st day	2nd day	3rd day	4th day	5th day	6th day
1st (12-13 years old)	NIC^x	30.4	35.0	29.4	30.4	28.1	27.0	-	-	-	-	-	-
	NE^x	515.0	480.2	509.8	519.3	488.7	484.0	197.3	268.4	235.4	GPT	345.3	197.4
	HR^x	74.3	77.2	76.6	76.2	75.6	81.8	76.9	82.0	83.6	83.6	77.6	74.2
	BD^x	107/69	105/64	103/69	105/67	102/64	100/68	102/69	105/69	-	101/73	-	105/67
CMS (14 years old)	NIC	31.5	29.4	32.0	24.0	30.0	30.0	-	-	-	-	-	-
	NE	574.5	527.5	647.6	604.4	598.3	526.7	195.7	247.5	216.3	GPT	347.8	207.4
	HR	79.5	81.0	76.5	74.5	72.0	75.6	73.0	76.5	81.0	76.5	72.5	71.5
	BD	115/70	108/66	112/65	109/71	107/65	109/68	108/71	110/73	-	109/71	-	109/65
MS (15-16 years old)	NIC	34.0	31.0	30.0	29.0	29.0	29.0	-	-	-	-	-	-
	NE	668.0	571.8	609.5	616.5	592.5	566.0	207.0	276.7	242.8	GPT	334.5	242.3
	HR	75.0	78.0	75.6	76.4	76.0	74.0	68.0	72.4	78.8	78.8	76.4	76.8
	BD	125/75	119/68	118/74	118/71	121/68	124/71	121/74	122/76	-	127/85	-	123/71

Table 2. The maximum indicators of the training load performed on the days of the "super-shock" week Gymnasts of various qualifications (12-16 years old). Note: NIC - is the number of integer combinations; NE - is the number of elements.

№	Weekdays	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Average per workout		Total workout	
	Full name, category	NIC[x]	NE[x]	NIC	NE	NIC	NE	NIC	NE	NIC	NE	NIC	NE	NIC	NE	NIC	NE
1.	B-in A. 1st	38	620	37	504	30	420	25	420	25	360	48	742	39	538	208	3228
2.	K-uk I. 1st	40	600	35	540	40	750	30	450	30	360	30	540	34	570	204	3420
3.	N-in A. CMS	35	477	40	537	35	634	35	611	21	315	37	529	34	632	203	3103
4.	Y-in A. CMS	35	597	32	594	37	657	35	625	32	595	34	602	34	612	205	3670
5.	S-ov P. MS	30	623	30	592	40	633	30	623	30	654	30	613	32	623	190	3738
6.	K-ov A. MS	35	714	36	695	34	697	32	540	26	578	32	578	32	647	195	3882

Table 3. The Changes in the heart rate of gymnasts during orthostatic effects at the beginning and end of the study. Note: The difference between the heart rate in the horizontal and in the 3rd minute of the vertical ortho position.

Age, category	1 - examination		2 - examination		3 - examination	
	Horizontal position (min)	The difference is 3 minutes	Horizontal position (min)	The difference is 3 minutes	Horizontal position (min)	The difference is 3 minutes
13 years old 1st category	78±7.2	19±1.7	79±7.4	31±3.1	75±7.1	23±1.9
14 years old CMS	77±8.0	19±2.6	69±5.1	27±2.1	72±7.0	21±2.1
15 years old MS	74±3.3	20±2.1	68±3.2	36±2.6	72±6.3	26±2.1

Table 4. Change of physiological parameters for a functional test before and after the "shock" week.

Functional test	Indicators		Examination		
			1st	2nd	R 1 - P
Step test	Pulse amount		1.1±14.0	1.0±14.1	> 0.05
	Max BP shifts		25.1±5.4	6.0±4.5	> 0.05
	Minimum BP shifts		6.2±2.7	-.7±3.6	< 0.01
	Shifts in blood pressure pulse		51.3±7.5	2.7±6.4	< 0.01
Static load of forearm muscles	Volume of circulating blood of the forearm:	right	7.2±2.2	9.2±3.4	> 0.05
		left	7.9±2.3	9.6±3.4	> 0.05
	Additional blood flow:	right	66.7±7.5	3.8±8.7	< 0.001
		left	49.1±2.0	4.4±11.0	> 0.05
	Peak blood flow:	right	21.1±1.9	28.4±5.2	< 0.05
		left	10.1±4.3	10.3±3.3	> 0.05

completion of the "super shock" week, there were tendencies to increase blood flow at rest, as well as an increase in the maximum (peak) blood flow in the working arm in response to static load.

However, the greatest difference between the values before and after the "super shock" week was revealed by the indicators of additional blood flow, i.e., the amount of blood that the muscles did not receive during work (holding a static load for 2 minutes,), This is due to a slowdown in metabolic recovery processes under the influence of intense loads, the analysis of individual data showed that, as a rule, after 7-10 days, while observing the appropriate "gentle" training regime, the indica-

Table 5. Comparison of indicators of the duration of training, its intensity (by heart rate) and the process of restoring the heart rate of gymnasts before and immediately after the completion of the "super-shock" micro cycle.

Category	Before and after the "shock" week	Training time (min)		Heart rate per workout (count)		Dynamics of heart rate recovery (min) on:			
		Warm-up	Main part	Sum	Average (min)	5 min	10 min	15 min	20 min
1st	Before	5.2	22.1	4464	115.2	78	72	70	70
	After	5.3	23.1	4608	122.4	96	84	78	80
CMS	Before	6.2	40.4	7325	117.6	80	76	72	70
	After	6.1	44.7	7593	124.8	90	78	78	76
MS	Before	6.0	57.4	8550	114.0	90	78	74	72
	After	6.6	68.4	9360	127.2	110	90	93	84

tors of peripheral blood circulation in the forearm muscles return to the initial level.

The results of radio telemetric registration of heart rate in the process of performing the mandatory program before and immediately after the end of the "super-shock" week allowed us to compare the response indicators of the cardiovascular system of young gymnasts.

According to Table 5, with approximately the same time spent on a general warm-up (5-6 minutes), there is a significant difference in the indicators for the total time of work, the amount and average heart rate per workout, as well as heart rate recovery indicators at 5, 10, 15 and 20 minutes.

The highest heart rate indicators were recorded immediately after the "super-shock" week when performing exercises (206 beats/min) and exercises on the crossbar (9198 beats/min), and the longest recovery time of heart rate to the initial level (96 – 120 beats/min) is observed after combinations on the bars, rings and crossbar in all gymnasts both at the beginning and at the end of the "super-shock" week (3.59 ± 0.54 min,), minimum heart rate indicators are noted when performing combinations on horseback (172 beats/min,) and rings (160 beats/min), the recovery time of heart rate to the initial compared to other types of all-around (except jumping) is shorter, after performing exercises on horseback and in floor exercises (2.4± 0.25 min, respectively).

In order to determine the effect of increased stress on the neuromuscular apparatus during the "super-shock" week, static tremor was measured daily (see table 6).

In all gymnasts, the tremor value increases throughout the "super-shock" week and is kept at a high level for 3 days of the recovery week.

However, by the seventh day of recovery, the tremometry index returns to the initial level,

Table 6. Changes in tremorometry indicators in gymnasts during the "super-shock" and recovery week .

Category	Stage and day of examination	Weekly micro cycle						
		"Shock"				Restorative		
	Indicators	1st day	2nd day	3rd day	4th day	5th day	6th day	7th day
1st	Number of touches	24.6	25.0	30.5	27.9	34.3	35.1	20.0
	Touch time (sec)	1.38	1.16	2.18	2.03	2.22	1.93	0.95
CMS	Number of touches	19.3	25.3	29.0	33.3	34.2	34.8	17.3
	Touch time (sec)	0.66	1.18	1.60	1.78	1.70	1.55	0.55
MS	Number of touches	22.0	25.3	26.5	27.0	28.8	24.8	22.5
	Touch time (sec)	0.75	1.88	1.70	1.80	2.05	1.18	0.81
Average by group	Number of touches	22.0	25.2	28.7	29.4	32.4	35.6	19.3
	Touch time (sec)	0.93	1.56	1.83	1.87	1.99	1.55	0.77

Table 7. Results of control competitions (average score) of gymnasts before and after the experiments

№	Category / Stage	1st category	CMS	MS
1.	At the beginning of the experiment	8.55±0.15	12.55±0.15	12.40±0.25
2.	At the end of the experiment	8.25±0.25	12.35±0.35	11.96±0.35
3.	After two weeks	8.80±0.25	12.75±0.10	12.45±0.15

Table 8. Comparison of a number of pedagogical and physiological indicators in the "super-shock" microcycles of the preparatory (I-78) and competitive periods (VII-78) for gymnasts of various qualifications. Note: 1 - Wrist dynamometry the indicators of the **right** hand were used.

Indicators		Condition	1st category		CMS		MS	
			I 2012	VII 2012	I 2012	VII 2012	I 2012	VII 2012
Element (amount) Combinations Average score		For training	563.5±50.1	572.2±47.2	580.0±59.1	645.4±63.2	604.0±54.3	638.0±43.7
		For training	30.0±3.25	35.2±3.7	29.8±2.9	35.8±3.6	30.3±3.0	35.0±3.8
		For the combination	7.8±0.22	8.35±0.31	7.0±0.24	7.85±0.27	5.95±0.25	7.3±0.32
Cardiovascular system	Heart rate (min.)	Before training during the "shock" week	91.3±5.6	76.8±4.3	88.0±5.2	76.0±5.0	84.0±4.9	75,0±5,2
	Max BP		108.1±7.8	103.6±7.4	115.0±8.4	111.6±7.7	127.0±8.9	124,0±6,9
	Minimum BP		73.1±4.2	66.8±3.9	73.2±4.1	67.0±3.4	78.0±2.9	71,1±2,7
Heart rate difference		Average for the week	33.0±5.0	34.0±4.7	32.5±4.5	29.5±3.9	37.5±4.3	37.0±4.0
		After a week	23.0±2.4	23.1±3.1	22.0±2.7	20.1±2.9	24.2±2.6	24.3±2.0
Tremorometry	Frequency of touches (count)	Average for the week	31.4±2.1	29.1±1.6	29.9±1.9	26.5±2.1	33.0±1.5	25,2±1,7
		After a week	23.1±1.3	20.1±1.5	21.5±1.4	17.0±1.2	25.4±1.6	22,5±1,3
	Touch time (sec.)	Average for the week	2.05±0.3	1.80±0.27	1.9±0.22	1.28±1.07	2.68±0.24	1,50±0,27
		After a week	1.4±0.19	1.05±0.21	1.1±0.18	0.55±0.19	1.55±0.21	0,87±0,24
Double tapping		Average for the week	42.0±5.2	43.1±4.2	51.5±4.4	51.7±4.0	57.0±4.1	56,5±3,90
		After a week	43.0±4.2	45.1±3.9	47.2±3.7	53.2±3.9	59.1±3.5	61,2±3,2
Weight loss (kg)		For training	-0.79±0.07	-0.57±0.04	-0.90±0.08	-0.83±0.09	-0.94±0.08	-0.985±0.1
Strength gain[1] (kg)		For training	1.1±0.32	1.25±0.45	1.0±0.25	1.4±0.32	0.94±0.27	2.0±0.55

a faster recovery is noted in younger age groups of gymnasts (13 - 14-year-old athletes).

Measuring the strength of the hand in gymnasts before and after the end of the "super shock" week revealed an increase in it in all gymnasts, for example, in first category athletes, the strength of the right hand increased by 1.5 kg, CMS - by 1.85 kg and MS - by 2.95 kg, which indicates positive changes in the neuromuscular apparatus of adolescents.

Conclusion

One of the objective indicators that allows us to judge the level of training and the condition of the gymnast's athletic form is the result of the competition before and immediately after the completion of the study indicates a sharp decrease in the average score of all gymnasts, To determine the duration of the recovery period and the impact of increased load on technical fitness, repeated control competitions were held at the end of the two-week cycle, which showed that the average score of first category athletes and CMS exceeds the initial one, and MS remains within the initial one (see table 7).

Taking into account the absence of unfavorable physiological shifts, as well as positive pedagogical results, at the end of the competitive macrocycle, the "super shock" micro cycle was repeated.

A comparison of the physiological shifts in performance during the 1st and 2nd "super shock" micro cycles is given in Table 8, which presents the average values calculated from the training days and determined daily before and after training, as well as a week after the completion of the "shock" micro cycle.

References

Arkaev L.Y., Suchilin N.G. (2004) *How to prepare champions. Theory and technology of training highly qualified gymnasts, Physical culture and Sport*. Moscow.

Efimenko A.I., Umarov M.N. (1990) *Management of pre -competitive training of young gymnasts, Educational and methodological manual*. Tashkent, Uzbek State University of Physical Culture and Sports.

Kachaev V.I. (1986) Construction of the pre-competitive stage of training highly qualified gymnasts taking into account the peculiarities of competitive activity. *Abstract, dissertation, Candidate of Pedagogical Sciences*. Moscow.

Lebedev N.I. (1981) Stage-by-stage pedagogical control of the readiness of promising gymnasts. *Abstract, dissertation, Candidate of Pedagogical Sciences.* Moscow.

Shlemin A.M., Petrov P.K. (1997) *System of training of young gymnasts.* Methodical manual. Moscow.

Smolevsky V.M., Gaverdovsky Y.K. (1999) *Gymnastics*. Textbook for institutes of physical culture, Kiev.

Umarov M.N. (1995) *Pre-competitive training of gymnasts.* Methodological recommendations. Publishing and Printing Department of Uzbek State University of Physical Culture and Sports. Tashkent.

Umarov M. N., Eshtaev A.K. (2009) *Program requirements of gymnastics and technology of their distribution by years of education.* Methodical manual, Publishing and Printing Department of Uzbek State University of Physical Culture and Sports. Tashkent.

AUTHOR BIOGRAPHY



Djamshid Khasanovich UMAROV

Employment
Head of the Department of Theory and methodology of physical culture and sports, Professor at Uzbekistan state university of physical education and sport.

Degree
PhD

Research interests
Sport Science, physical education, theory and methodology of physical culture and sports, outdoor games, preschool education, gymnastic.

E-mail: jamshid-0505@mail.ru