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Optimization of training tools for sambo wrestlers at the stage of sport improvement

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Abstract
Purpose: The purpose of our research is to increase the level of pre-competitive readiness of highly qualified sambo wrestlers at the stage of sports improvement .
Methods: The study uses methods of analysis of scientific and methodological literature, questionnaires; pedagogical observations; medical and biological research methods; control tests on a five-stage program for increasing general and special physical fitness; pedagogical experiment; mathematical and statistical analysis of the data obtained.
Results: The Dynamic of the number of turns in a series of fights in the experimental group at the beginning of the study also had a tendency to a sharp decrease in the arithmetic mean quantitative indicator, after optimization of the training loads and means of sambo wrestlers of this group, at the end of the study the number of turns in a series of fights showed a smooth transition with stabilization towards improvement: a decrease in the indicator of the 1st bout speaks of the rational use of the strength qualities of sambo wrestlers, then there is a tendency to increase the quantitative indicators of turns, i.e., at the 2nd fight from 3 to 3.9, at the 3rd fight from 1.9 to 3, 6, at the 4th fight from 1.2 to 3.6, at the 5th fight from 0.3 to 2.9.
Conclusion: The developed training program can be used as an optimization of training means at the stage of sports improvement, which increases the effectiveness of special endurance and technical-tactical mastery of sambo wrestlers in the pre-competition period .

Keywords: Sport, sambo, qualified sambo wrestlers, speed-strength qualities, technical-tactical movements, fights, skill, technical and tactical techniques, final, competitive activity, general physical fitness, special physical fitness, special endurance.

Introduction

Today, modern achievements in martial arts are so great that without systematic training from a young age, one cannot count on a high performance of an athlete. World practice shows that at the present stage of development of sambo, a type of combat sports that has arisen and is gaining popularity at the present time, requires certain scientific research.

Every year sambo wrestling is gaining a large number of people involved in this sport. This can be clearly seen in the competition of the championships of the republic, Asia and the world, which requires a special scientific approach to improve the quality of training of highly qualified athletes. In recent decades, sambo has become one of the most popular sport in the world. However, there are not enough studies aimed at optimizing training means at the stage of sports improvement with the introduction of competitive load into the training process, taking into account the approximate number of fights and their duration.
An important legal basis for the reforms carried out in this direction is the Law of the Republic of Uzbekistan “About Physical Culture and Sports” and other regulatory legal acts aimed at attracting citizens, especially youth, women and children, to physical culture and sport. Young men and women defending the honor of the national flag, professionals of individual and game disciplines, demonstrating exceptional training and phenomenal skill at representative forums, eloquently confirm that they represent a country with rich sports traditions.

In the theory and methodology of sambo, there are enough research works and publications devoted to the solution of various aspects of training of sambo wrestlers, performed by athletes of different age and qualifications, improving the methodology of training wrestlers in sports sambo based on the predominant performance of competitive attacking techniques in the ground, however, many the issues remain not yet sufficiently studied, including the issues related to the optimization of means and loads at the stages of training for sports improvement. The analysis of the literature states that in SAMBO there are no scientific studies on the five-step system of training at the stage of sports improvement, since at the moment the increase in special endurance remains one of the main tasks. Therefore, the questions of optimization of training means at the stage of sports improvement are relevant today.

Modern world literature shows that most works on the types of wrestling are devoted to the methodological aspects of sports training management, including physical training, as

well as its sections of technical tactical and psychological training (Zakirov DR, 2012; Pankov A.V., 2008; Ryabinin S.A., 2007; Korzhenevsky A.L., 2017; A. Taymazov, 2017). Since all types of combat sports are associated with the manifestation of endurance, the question of the effectiveness of certain exercises aimed at developing the special preparedness of an athlete remains relevant.

Tumanyan G.S. emphasized the extreme importance of observing the principle of individualization through an adequate choice of means and methods of training, determining personal competitive characteristics, planning and monitoring the course of the training process.

The object of the research is the Dynamic of the development of general and special readiness of sambo wrestlers at the stage of training for sports improvement, the educational and training process of qualified sambo wrestlers involved in the physical culture and sports society "DYNAMO" under the National Guard of the Republic of Uzbekistan and the sports and recreation complex "JAR" under the Ministry of Internal Affairs of the Republic of Uzbekistan.

The subject of the research is the process of using a five-stage system of training loads during the period of pre-competitive readiness of highly qualified sambo wrestlers at the stage of sports improvement.

The structure of general and special physical readiness of sambo wrestlers of 18-20-year-old was investigated taking into account the influence of training means and imitation of competitive activity.

Materials and methods

The research was carried out in three stages during 2019-2020.

At the first stage - the exploratory stage - the scientific and methodological literature on the topic of the dissertation was studied and analyzed, the goal, research tasks and research methods were determined, the results of the questionnaire survey of coaches and qualified wrestlers were analyzed according to the importance of the ratio of sports qualifications of those involved; taking into account qualifications when distributing training loads; the values of the weight category of an athlete by the ratio of the training load; accounting for funds to increase overall physical and financial performance; measures to increase GPP and SPP with the value of the training load dosage; the importance of the training load in the preparatory period at the stages of sports improvement preparation with an emphasis on competitive circles; the ratio of GPP and SPP during training for junior sambo wrestlers in mesocycles; accounting of the time and circles of training bouts on the day of the struggle, the existing expert assessments were analyzed. In order to confirm the relevance of the research topic, the features of the existing methodology for training sambo wrestlers were determined. At this stage of the work, the trainers were questioned, the total number of those who participated in the questionnaire was 11 people.

At the second stage, the main experiment was carried out. Two groups of sambo wrestlers were singled out, the sports experience of which is on average 9 years, the level of physical development and the level of physical fitness are approximately at the same level. Thus, the main experiment involved two equivalent groups of sambo wrestlers (control and experimental), 30 people each. At the same time, the athletes of the control group trained according to the standard method, and the subjects of the experimental group, with the same total load volume, trained according to the program which we developed. At the ascertaining stage, according to 6 tests characterizing the general and special preparedness of sambo wrestlers, the degree of interconnection between individual manifestations of physical qualities was established and the factor structure of the physical fitness of the tested was determined. To assess the level of physical development, physique features of sambo wrestlers, anthropometric research methods were carried out. On the basis of the indicators of the total body size of sambo wrestlers, the features of similarity and differences in the index of the “Ketle” weight-growth index were revealed in a comparative aspect, taking into account the weight category. To determine the prospects of athletes, the range of adaptive capabilities of sambo athletes to fulfill muscle loads, to identify the reserve capabilities of the cardio-respiratory system, integrative and informative indicators, as well as hemodynamic indicators at rest, during exercise and after exercise (HR - heart rate, BP - blood pressure, systolic pressure, systolic pressure, pulse pressure).

At the third stage of the research, the final assessment of the state of physical development

and physical fitness of the examined sambo wrestlers was given after the application of the program we developed. The stated organization of the experimental research made it possible to obtain the necessary factual material, on the basis of the analysis of which the developed program for training sambo wrestlers was tested at the stages of training for sports improvement. The results of experimental studies using the methods of mathematical statistics are analyzed, the data of scientific and methodological literature are summarized.

Results and discussion

The results of the questionnaire survey of 11 Sambo coaches with pedagogical work experience from 5 to 20 years, 3 honored coaches, 5 coaches of the highest category were analyzed; 3 respondents had coaching experience of more than five years or average experience of more than 10 years; among the respondents there were two candidates of pedagogical sciences, two associate professors. The questionnaire contained 11 questions with different answers.
The analysis of the physical development of sambo wrestlers was carried out, taking into account the weight category.

Analysis of the assessment of physical development by weight-height indicator, which is calculated by the Ketle index (KI), gives us the following results: at the beginning of the research, the sambo wrestlers of the control group, training in the "JAR" IC, have a norm of 36.6%, and 63.4% more norms, and for sambo wrestlers of "DINAMO", 40% have a norm, 60% of athletes are above the norm.

The pre-competition period is often accompanied by body weight regulation for sambo wrestlers. Therefore, the rational use of diet, restorative means at the end of the experiment, the value of IC changed for the better. At the end of the research, the following data were obtained in sambo wrestlers of the control group who train in the "JAR" index Ketle in 66.6% of the norm, in 10% above the norm, in 23.3% below the norm, and in the sambo wrestlers of the "DINAMO", in 93.4 % normal, 3.3% of athletes above normal, 3.3% below normal.

To assess the reaction of the cardiovascular system to a two-step load, the analysis of hemodynamic indices of sambo wrestlers at the stage of sports improvement was carried out, which are presented in tables 1-, 2-, and 3-.

The average resting heart rate in our experiments was within 56-91 beats per minute, blood pressure averaged 120.5 / 80 mm Hg. In the first minutes after the start of the PWC170 test (1st loading stage), heart rate and blood pressure increased and amounted to 84-138 beats / min. and 160/80 mm Hg. Art. respectively. The increase in heart rate after the bicycle-ergometric test was 86-88%, and blood pressure 10-33%. Further observations showed that the recovery of the pulse in some subjects

Table 1. Heart rate response of sambo wrestlers from the EG to a step load at the beginning of the research.

Wrestlers	Heart rate indicators				
	Before loading	1st stage	2nd stage	After load	After 3 minutes after loading
MSIC, n=2	72±6	97,5±4,5	150±8	122,5±16,5	73±4
MS, n=13	73,5±17,5	111±27	147,5±22,5	144±31	73±13
CMS n=15	71,5±9,5	107,5±17,5	158±22	127,5±38,5	82,5±12,5

Table 2. BP response of sambo wrestlers from the EG to a step load at the beginning of the research.

Wrestlers	Blood pressure indicators			
	Before loading	During load	After load	After 3 minutes after loading
MSIC, n=2	115/80 ±5/0	170/80 ±25/15	157,5/72,5 ±12,5/17,5	120/80±0/0
MS, n=13	105/75 ±15/15	165/77,5 ±25/17,5	147,5/72,5 ±27,5/12,5	110/70±10/10
CMS n=15	115/75 ±15/5	170/65 ±25/15	130/72,5 ±30/17,5	112,5/70 ±12,5/10

Table 3. Reaction of heart rate and blood pressure of sambo wrestlers from the EG at the end of the research to a step load.

Wrestlers	Blood pressure indicators			
	Before loading	During load	After load	After 3 minutes after loading
MSIC, n=5	110/70±5/0	165/80±20/15	155/70±10,5/10,5	110/70±0/0
MS, n=10	115/75±15/15	165/77,5 ±15/17,5	145/71 ±20/12,5	110/70±5/5
CMS n=15	110/75±15/5	170/65±20/15	135/72±15/12,5	110/70±12/5
Wrestlers	Heart rate indicators			
	Before loading	During load	After load	After3 minutes after loading
MSIC, n=5	70±10	145±15	120±25	70±8
MC, n=10	73,5±17,5	148±22	130±30	68±10
CMS n=15	72,5±9,5	150±20	127,5±35	80±10,5

Table 4. Analysis of indicators of general and special physical fitness of sambo wrestlers in the experimental group. Note: μ- arithmetic mean; σ- is the standard deviation; υ- the coefficient of variation.

Sambo wrestlers of "DINAMO" - experimental group							
At the start of the research		Running 100 meters	Running 1000 meters	climbing a 5-meter rope	Turns on throws for speed (for 30 seconds)	Signature throws for speed (for 30 sec)	Forward somersaults (in 30 sec)
	μ	14,1	4,4	10,9	37,2	18,4	24,6
	σ	0,38	0,20	0,65	1,07	1,30	1,43
	υ	2,68	4,47	5,97	2,88	7,08	5,82
At the end of the re-search	μ	12,6	4,0	9,6	37,5	20,8	25,8
	σ	0,44	0,39	0,32	1,11	0,92	1,04
	υ	0,20	0,15	0,10	1,22	0,86	1,08

was completed in the 1st minute of rest, in others it was delayed up to the 3rd minute. A similar trend was recorded for changes in blood pressure values. It should be noted that in some athletes, the recovery of heart rate occurred after the expiration of 5 minutes indicated in the classical description of the test, which was a "find" of the research undertaken and the need for additional examination in order to exclude the state of overtraining and overvoltage of the CVS.

The table shows that at the end of the preparatory period sambo wrestlers differed in the level of physical working capacity. In 50% of sambo wrestlers, the level of functional capabilities can be considered increased. And 23.3% of sambo wrestlers had average indicators at this stage.

The foregoing indicates that the majority of sambo wrestlers spent the transition period quite rationally.

Optimization of training means through the use of short-term restorative massage after training loads on the days of struggle allowed us to correctly remove metabolic products, normalize hemodynamic parameters.

In order to assess the effectiveness of the performance of technical and tactical actions of sambo wrestlers of "DINAMO", pedagogical observations were carried out during the pre-competition and competitive periods of 2019 (September-December). Simultaneously, during this period, the use of training loads was monitored.

The parameters of the training loads were recorded in a special protocol. A total of 240 training sessions were analyzed. The purpose of this stage of the study was to study and evaluate the effectiveness of the load. The assessment of general physical fitness (GPP) and special physical fitness (SPP) of sambo wrestlers was carried out by means of a battery of tests char-

acterizing different sides of the wrestlers' preparedness.

Experimental substantiation of the optimality of loads in microcycles showed its high efficiency in terms of increasing the level of their physical fitness.

The increase in the parameters of this side of readiness for the final stage of the experiment reached reliable values in terms of the time of the "five-stage training system".

So, in the CG the values "Running per 100m" were 13.6 ± 0.5, p≤0.05, with an increase of 2.8%, in the EG - 12.6 ± 0.44 with p≤0.05, and an increase - 10.6%.

sidering that among the exercises it increases special endurance, the experiment used such an exercise as "Crown throws for speed (30 sec)". In the EG, by the end of the experiment, the value reached 20.8 ± 0.92, at p≤0.05, the increase was 13.04%, in the CG - 19.2 ± 1.34, at P≤0.05, the increase was 4.3%. Exercises for coordination, which are also part of the motor qualities of special endurance of a sambo wrestlers, are demonstrated in such an exercise as "Forward somersaults (30 sec)". At the final stage in the EG its value reached 25.8 ± 1.04 at p≤0.05, and the gain increased by 4.9%, in the CG - the gain was - 1.2%.

Table 5. Dynamic of changes in GPP and TFP indicators in the EG and CG (n = 30)

Indicators	Control group				Experimental group			
	before exp. $\bar{x} \pm \sigma$	after exp. $\bar{x} \pm \sigma$	growth (%)	p	before exp. $\bar{x} \pm \sigma$	after exp. $\bar{x} \pm \sigma$	growth (%)	p
Running per 100m	14±0.54	13.6±0.5	2.8	<0.05	14.1±0.38	12.6±0.44	10.6	<0.05
Running for 1000m (min)	4.6±0.42	4.5±0.27	2.2	>0.05	4.4±0.2	4.0±0.39	9.1	<0.05
Rope 5m (sec)	11.2±1.05	11.1±1.01	0.9	>0.05	10.9±0.65	9.6±0.32	11.9	<0.05
Turns on speed (30 sec)	37.8±1.21	36.4±2.13	3.7	<0.05	37.2±1.07	37.5±1.11	0.8	<0.05
Signature throws for speed (30 sec)	18.4±1.19	19.2±1.34	4.3	<0.05	18.4±1.3	20.8±0.92	13.04	<0.05
Somersaults forward (30 sec)	25.1±1.03	25.4±1.52	1.2	>0.05	24.6±1.43	25.8±1.04	4.9	<0.05

The average group indices at the final stage of the research were 4.0 ± 0.39 in the test "Running for 1000m (min)" for sambo wrestlers in the experimental group, the increase was 9.1%, at p≤0.05, and in the control group 4.5 ± 0.27, the 2.2%, at P> 0.05.

A similar situation is observed in the average group indicators in the tests "Rope 5m (sec)", in the experimental group - 9.6 ± 0.32s, with p≤0.05, the increase was –11.9%, in the control group - 11.1 ± 1.01s), the increase was 0.9% at p >0.05.

In the test "Turns for speed (30 sec)" - the increase in the EG was 0.8% times at p≤0.05, in the CG - the increase was 3.7% at p≤0.05. Con-

The Dynamic of the number of turns in a series of fights in the control group at the beginning of the study had a tendency of sharp change with a decrease in the arithmetic mean quantitative indicator, after a certain rationalization of the training regime of sambo wrestlers in this group.

At the end of the study of twists in a series of contractions, he showed a smooth transition with a decrease in quantitative indicators, but still towards improvement in the 4th fight from 0.8 to 1.3; on the 5th fight from 0.3 to 0.7. At the end of the study, the participants in the control group could not overcome the five-stage load, since the optimization of training loads

Table 6. Dynamic of changes in the number of turns and throws in fights in the EG and CG n = 30, ($\bar{x}$)

Indicators		Control group		Experimental group	
		before exp. (quantity)	after exp. (quantity)	before exp. (quantity)	after exp. (quantity)
1st fight	Turns	3.9	3.6	5.1	4.3
	Throws	3.6	2.8	2.5	3.3
2nd fight	Turns	2.6	3.1	3	3.9
	Throws	2.2	2.3	1.7	3
3rd fight	Turns	2.7	1.7	1.9	3.6
	Throws	1.6	1.3	1.3	3.4
4th fight	Turns	0.8	1.3	1.2	3.6
	Throws	0.7	0.7	0.9	3
5th fight	Turns	0.3	0.7	0.3	2.9
	Throws	0.6	0.4	0.3	2.6

and means was introduced only for the sambo wrestlers of the experimental group.

The Dynamic of the number of turns in a series of fights in the experimental group at the beginning of the study also had a tendency to a sharp decrease in the arithmetic mean quantitative indicator, after optimization of the training loads and means of sambo wrestlers of this group, at the end of the study the number of turns in a series of fights showed a smooth transition with stabilization towards improvement: a decrease in the indicator of the 1st bout speaks of the rational use of the strength qualities of sambo wrestlers, then there is a tendency to increase the quantitative indicators of turns, i.e., at the 2nd fight from 3 to 3.9, at the 3rd fight from 1.9 to 3, 6, at the 4th fight from 1.2 to 3.6, at the 5th fight from 0.3 to 2.9.

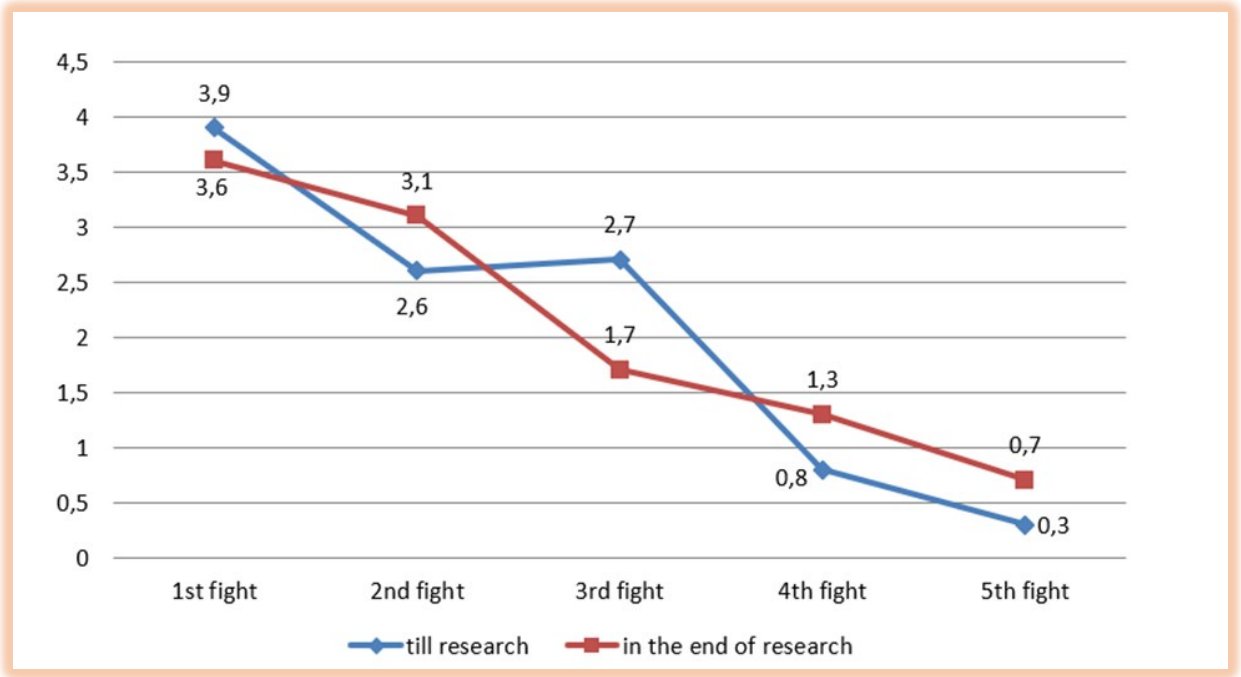


Figure 1. Dynamic of the number of turns in a series of contractions in the control group.

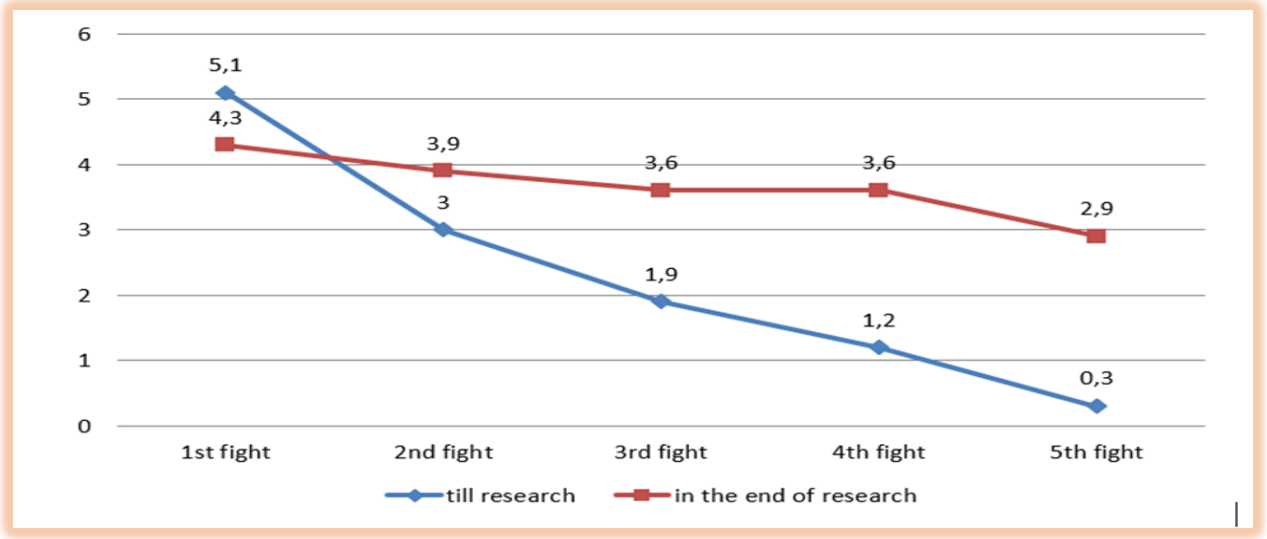


Figure 2. **Dynamic of the number of turns in a series of fights in the experimental group.**

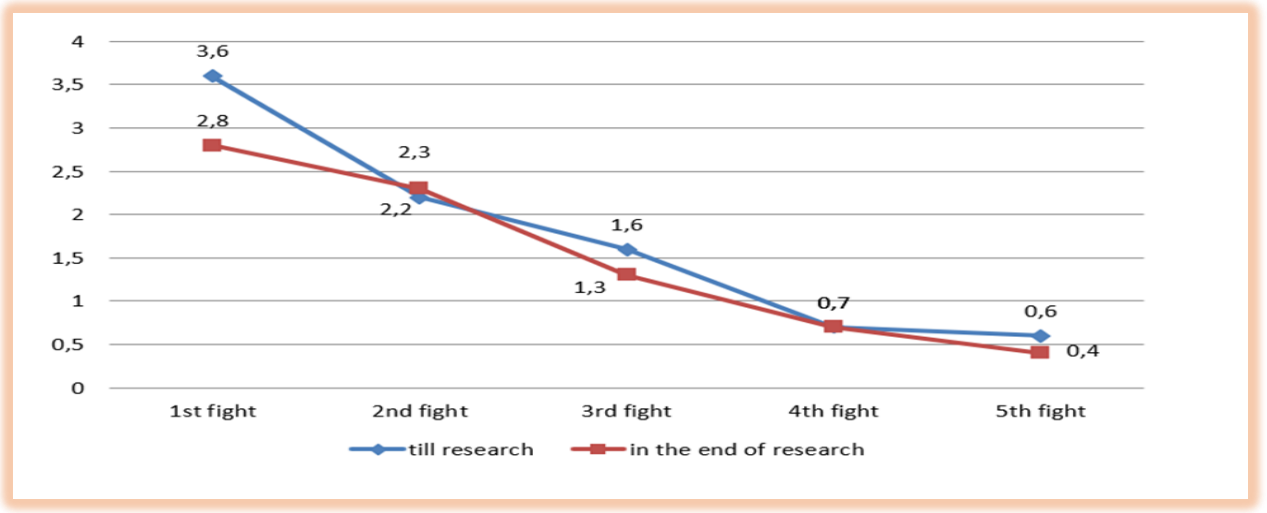


Figure 3. **Dynamic of the number of throws in a series of fights in the control group.**

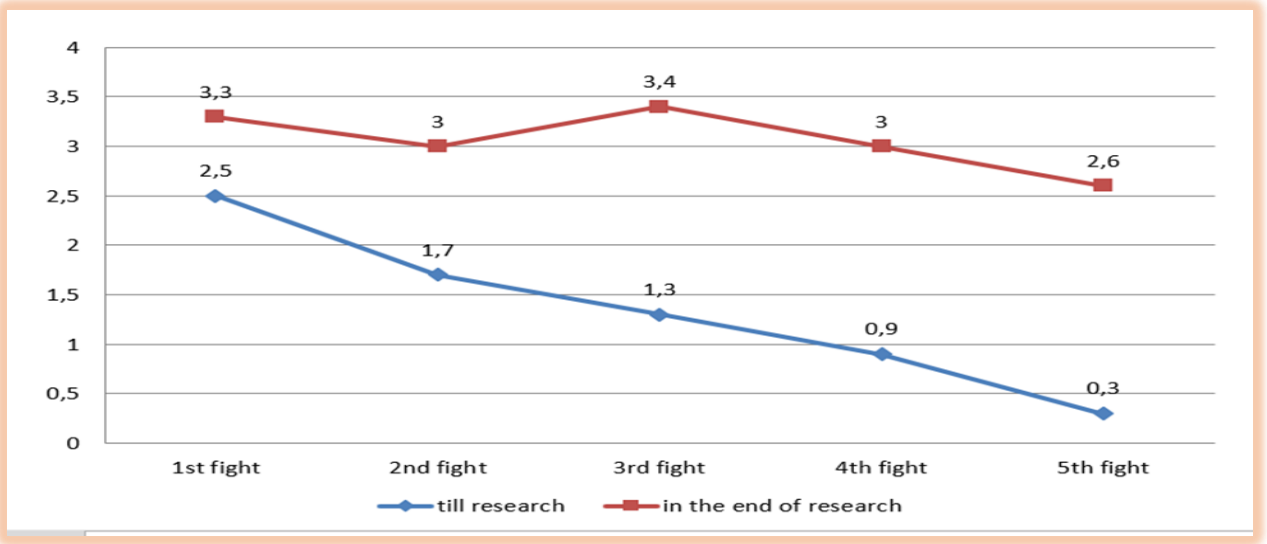


Figure 4. **Dynamic of the number of throws in a series of fights in the control group.**

The Dynamic of the number of throws performed in a series of fights in the control group at the beginning of the study had a tendency to a sharp decrease in the arithmetic mean quantitative indicator, at the end of the study, throws in a series of fights showed a smooth transition with a decrease in the arithmetic mean quantitative indicators, but still it was determined towards improvement only on the 5th skirmish from 0.4 to 0.6.

The Dynamic of the number of throws fulfillment in a series of fights in the experimental group at the beginning of the study also had a tendency to a sharp decrease in the arithmetic mean quantitative indicator, after the use of a five-stage program of training loads and sports recovery massage, at the end of the study the number of throws in a series of fights among sambo wrestlers showed positive changes: at the 1st fight from 2.2 to 3.3, at the 2nd fight from 1.7 to 3, at the 3rd fight from 1.3 to 3.4, at the 4th fight from 0.9 to 3, in the 5th fight from 0.3 to 2.6.

wrestlers in the control group, the arithmetic mean values in seconds of the exercises "Running for 100m" were 13.6 ± 0.5, p≤0.05, with an increase of 2.8%, and among the sambo wrestlers of the experimental groups - 12.6 ± 0.44 with p≤0.05, and the increase is 10.6%.

The average group indicators at the final stage of the research were 4.0 ± 0.39 in the test "Running for 1000m (min)" for the sambo wrestlers of the experimental group, the increase was 9.1%, at p≤0.05, and in the control group 4.5 ± 0.27, the increase was 2.2%, at P> 0.05. A similar situation is observed in the average group indicators in the tests "Rope 5m (sec)", in the experimental group - 9.6 ± 0.32s, with p≤0.05, the increase was –11.9%, in the control group - 11.1 ± 1.01s, the increase amounted to 0.9% at p >0.05.

The increase in the parameters of special physical readiness by the final stage of the experiment reached reliable values in terms of the time of the "five-stage system of training loads" fulfillment. The dynamic of the results of spe-

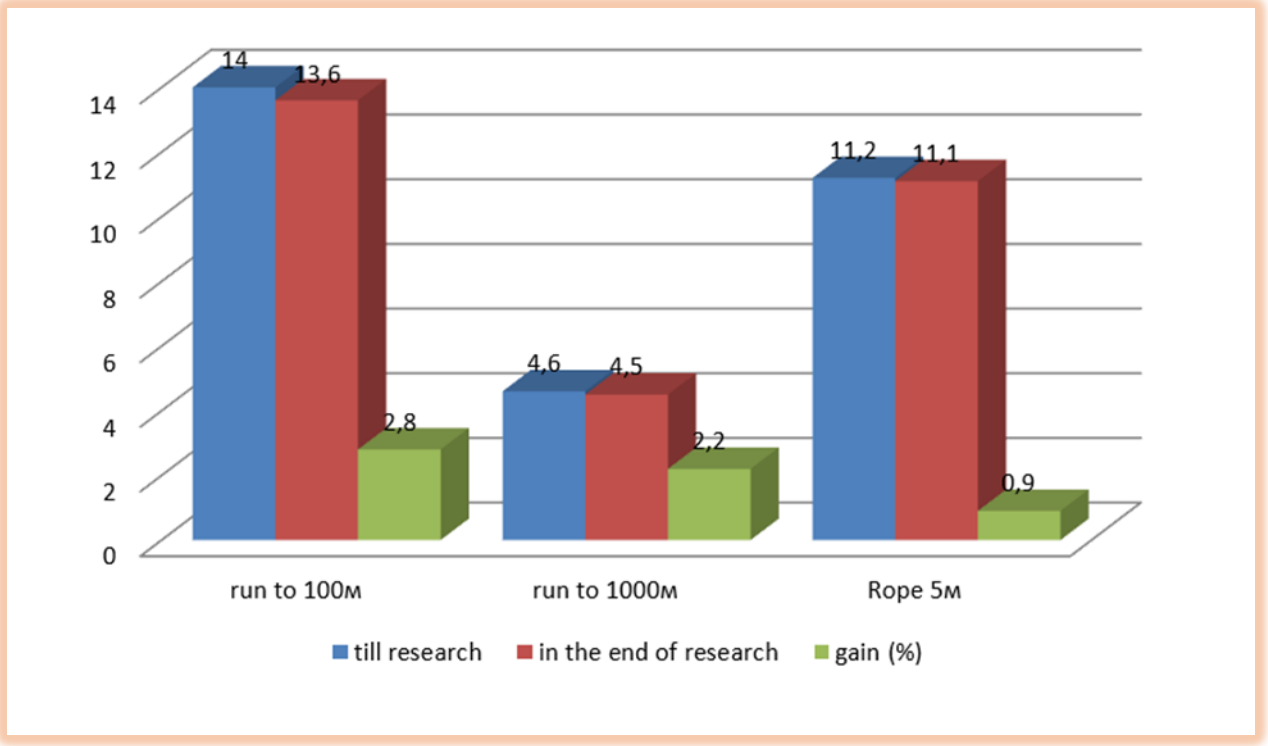


Figure 5. Dynamic of GPP results in the control group (in seconds).

The increase in the parameters of general physical readiness by the final stage of the experiment reached reliable values in terms of the time of the "five-stage system of training loads" fulfillment. The dynamic of the results of general physical readiness exercises among sambo wrestlers gave the following results: for sambo

cial physical readiness exercises among sambo wrestlers gave the following results: arithmetic mean values in the test "Turns for speed (30 sec)" - the increase in the EG was 0.8% times at p≤0.05, in the CG - the increase was 3.7% at p≤ 0.05.

Considering that among the exercises it

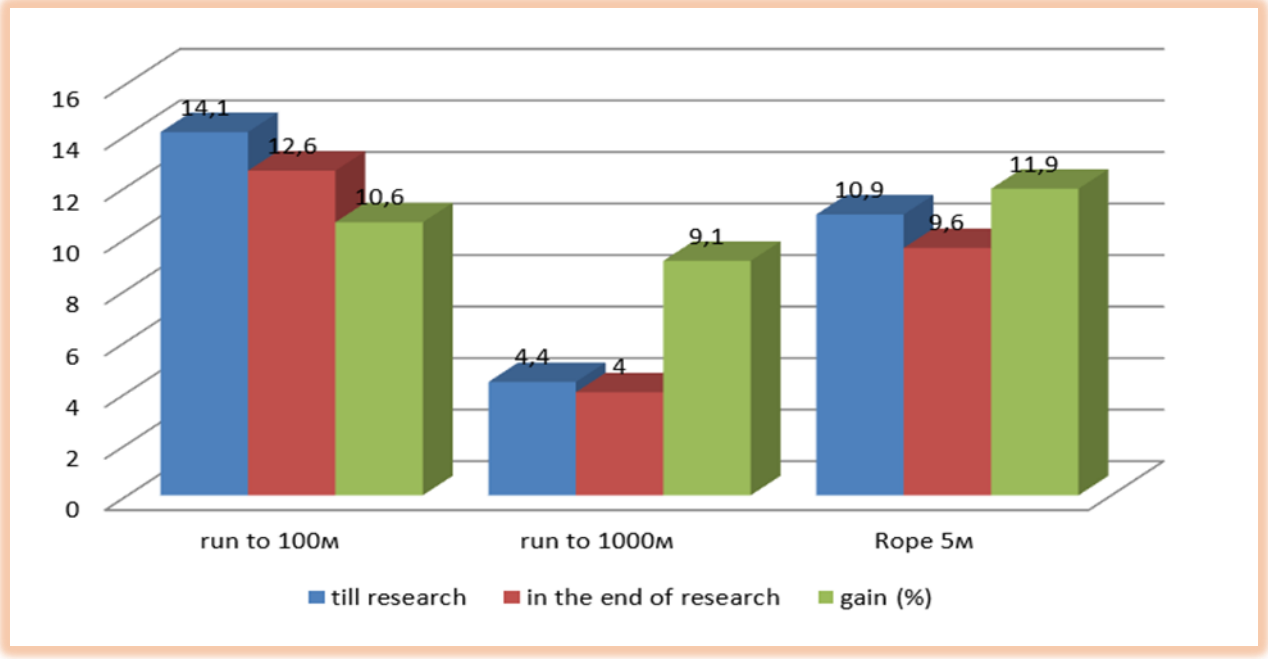


Figure 6. **Dynamic of RPP results in the experimental group (in seconds).**

increases special endurance, the experiment used such an exercise as "Crown throws at speed (30 sec)". In the EG by the end of the experiment the value reached the arithmetic mean quantitative indicator of 20.8 ± 0.92, with p≤0.05, the increase was 13.04%, in the CG - 19.2 ± 1.34, with P≤0.05, the increase was 4.3%.

Exercises for coordination, which are also part of the motor qualities of special endurance of a sambo wrestlers, were conducted and evaluated in such an exercise as "Forward rolls (number of rolls in 30 seconds)". At the final stage in the EG, its value reached 25.8 ± 1.04 at p≤0.05, and the gain increased by 4.9%, in the CG the value reached 25.4 ± 1.52 at p >0.05, with an increase - 1.2%.

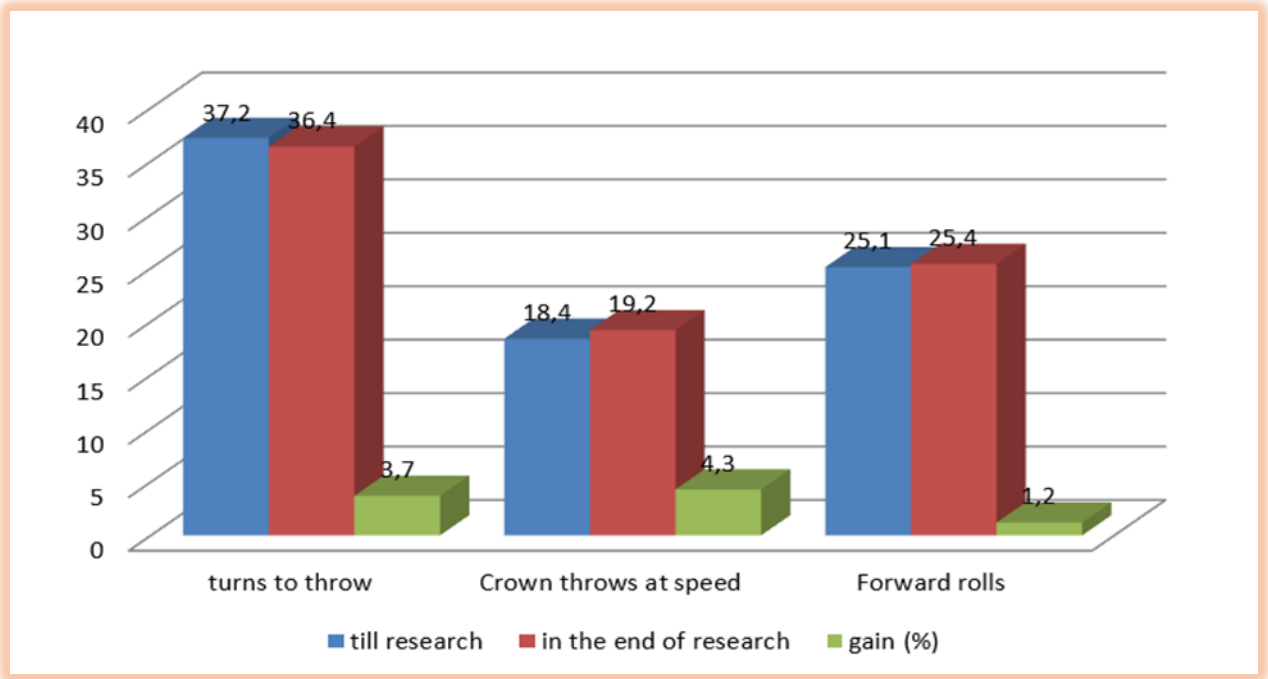


Figure 7. **Dynamic of TFP results in the control group (number).**

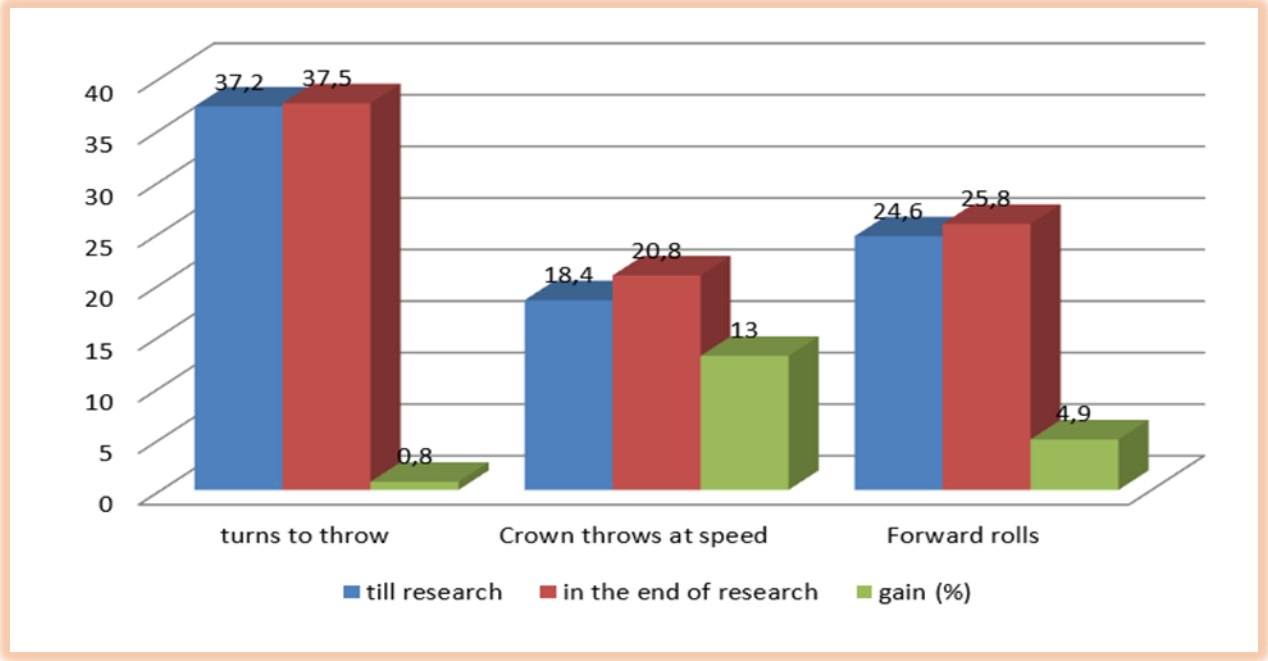


Figure 6. Dynamic of TFP results of the experimental group (number).

Conclusion

The analysis of scientific - methodical literature has shown that of the least studied aspects of international sambo wrestling, the optimization of training means and loads at the stage of preparation for sports improvement is practically not studied. Sambo, as a kind of combat sports, is a situational sport, characterized by a variable composition of motor actions. However, the place and significance among international types of wrestling have not yet been studied. In the available educational and methodological publications, the issue of increasing special physical training and special endurance has not been studied enough, important morphological and functional indicators that ensure the manifestation and development of physical abilities are not taken into account.

The results of the survey conducted among the leading coaches showed that the following are of the greatest importance in the structure of physical fitness of sambo wrestlers:

- 64% of coaches chose to use general physical training exercises “differently every day”, and 36% recommend the use of cross. When asked about the use of physical loads in order to increase special physical readiness, 64% of coaches prefer to use SPP exercises “every day in different ways”, and 36% of coaches recommend using training fights more often.

- When asked about the ratio of exercises of general physical readiness and special physical readiness used by coaches during training among sambo wrestlers, 55% of respondents prefer the ratio "30:70", 27% of respondents indicated the ratio of GPP / SPP -50: 50, and 9% the coaches noted the ratio - 80:20 and 70:30.

- Regarding the time interval of training bouts among sambo wrestlers, 36.4% of the surveyed coaches indicated the use of "5 or more fights for 3 minutes", or "10 fights for 2 minutes", 18.2% of respondents noted the use of 3 fights for 10 minutes, 9% chose the use of training contractions of 10 circles for 5 minutes. The unanimous opinion of the coaches on the need to use training fights indicates that this method of training is effective and aimed at developing the quality of endurance, the development of which will ensure greater efficiency of athletes.

At the initial stage of the research, the selection of participants in the experiment was carried out, who, based on the results of preliminary testing, were divided into control and experimental groups. According to the results of anthropometric research, the results of functional testing, the examined athletes were divided into control and experimental groups of 30 people each. The level of physical development of sambo wrestlers in the CG and the EG, calculated by the Ketle index, were the same and ranged from 36.7% - 40% corresponded to the

norm, 60% -63.3% above the norm. The physical loads experienced by the participants in the control and experimental groups were homogeneous during testing.

Analysis of the Dynamic of the states of the sambo wrestlers' organism in microcycles from 6 to 10 days showed that it is extremely difficult to perform large loads of a developmental nature, since the body of athletes does not have time to fully recover. In a six and especially in a ten-day microcycle, the use of one developmental training is quite sufficient.

The analysis of hemodynamic parameters after training loads of different power was carried out. The average resting heart rate in our experiments was in the range of 56-91 beats per minute, blood pressure averaged 120.5 / 80 mm Hg, with a load of highly qualified sambo wrestlers, blood pressure ranged from 165/77 - 170/80. In the first minutes after the start of the first exercise test, heart rate and blood pressure increased and amounted to 84-138 beats / min. and 160/80 mm. rt. Art. respectively. The increase in heart rate after performing the functional test was 86-88%, and blood pressure 10-33%. Further observations showed that the recovery of the pulse in some subjects completed in the 1st minute of rest, in others it was delayed up to the 3rd minute. A similar trend was recorded for the change in blood pressure values.

The use of short-term restorative massage after training loads promoted the elimination of metabolic products, the normalization of hemodynamic parameters on load, contributing to an increase in the functional state of the cardiovascular system. As a result, the restoration of the executive systems of the body of athletes and the achievement of psychological comfort were achieved.

Approbation of the experimental program for training wrestlers showed its high efficiency in terms of increasing the level of their general and special physical fitness. In the experimental program, the training process, built on the basis of the "five-stage system of training loads" by the final stage of the experiment, reached reliable values:

A) "Turns for speed (30 sec)" - the increase in the EG was 0.8% at $p \leq 0.05$, in the CG - the increase was 3.7% at $p \leq 0.05$.

B) Among the exercises that increase special endurance, in the experiment "Crown throws for speed (30 sec)" were used. Thus, its value in the EG by the end of the experiment reached the arithmetic mean quantitative indicator 20.8 ± 0.92, at $p<0.05$, the increase was 13.04%, in the CG - 19.2 ± 1.34, at $p<0,05$, an increase of 4.3%.

C) The indicator "Run per 1000m (min)" was 4.0 ± 0.39 s for the sambo wrestlers of the experimental group, the increase was 9.1%, with $p < 0.05$, and in the control group $4.5 \pm 0, 27$, increase - 2.2%, with $p > 0.05$. In the test "Climbing a rope (5m.)", In the experimental group - 9.6 ± 0.32 s, with $p < 0.05$, the increase was –11.9%, in the control group - 11.1 ± 1.01 s, the increase was 0.9% with $p > 0.05$.

The developed training program can be used as an optimization of training means at the stage of sports improvement, which increases the effectiveness of special endurance and technical-tactical mastery of sambo wrestlers in the pre-competition period. .

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