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Special physical training of qualified wrestlers of individual styles of wrestling

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection.

Abstract

Background and Study Aim: Special physical preparedness of wrestlers is one of the main factors for achieving the highest possible results in competitive activity. Physical qualities can differ significantly among wrestlers of the same skill level, but different individual styles. In this regard, this study is aimed at improving the methods of special physical training of qualified wrestlers, taking into account individual styles of wrestling.

Material and Methods: The study involved 30 wrestlers of middle weight categories (72 kg, 77 kg, 82 kg). The participants were divided into two groups: control group - 15 athletes, average age (18.96±1.09) years, average weight (76.27±5.58) kg; experimental group - 15 people, average age (19.07±0.95) years, average weight (75.87±5.68) kg. All participants belonged to athletes of a high level of skill. Training tasks were developed to improve the methodology of special physical training of wrestlers, taking into account the styles of wrestling. The proposed program was tested in a pedagogical experiment that lasted one year. Significance of differences between groups was assessed using nonparametric signs (z) and Rosenbaum (Q) tests.

Results: during the experiment, the increase in the results of special physical preparedness among the wrestlers of the experimental group is much higher in all tests and it is in the range from 6% to 14%, and in the control group it is lower - from 2% to 3%. Also, these results were confirmed by a non-parametric criterion of signs. So, the wrestlers of the experimental group at the end of the experiment showed an improvement in performance. A significant increase in the results in the «Pull up» test was shown ($z=1$; $p<0.01$). The time to complete the tests significantly decreased: «10 back arch throws» ($z=0$; $p<0.01$), «10 suplexes» ($z=0$; $p<0.01$), «Flips on the gymnastic "bridge"» ($z=0$; $p<0.01$), «Running on the wrestling "Bridge"» ($z=0$; $p<0.01$), «10 forward somersaults» ($z=0$; $p<0.01$), «Three series of 15 back arch throws» ($z=3$; $p<0.05$). The number of repetitions in the tests increased: «Pull-up in 20 s» ($z=4$; $p>0.05$), «Push-up in 20 s» ($z=4$; $p>0.05$).

Conclusions: The fulfillment of the developed training tasks by the wrestlers of the experimental group made it possible at the end of the experiment to show significantly better results in terms of special physical fitness than the athletes of the control group ($p<0.05$-0.01). Such results testify to the effectiveness of the proposed methodology and the possibility of its implementation in the training process.

Key words: Greco-Roman wrestling, qualified athletes, training process, physical training, individual wrestling style.

Анотація

Юрій Тропін, Вячеслав Романенко, Леся Коробейнікова, Наталя Бойченко Ольга Подрігало. Спеціальна фізична підготовка кваліфікованих борців індивідуальних стилів ведення сутички. Передумови та мета дослідження: спеціально-фізична підготовленість борців є одним із головних чинників досягнення максимально високих результатів у змагальній діяльності. Фізичні якості можуть суттєво відрізнятися у борців однакового рівня майстерності, але різних індивідуальних стилів. У зв'язку з цим дане дослідження спрямоване на вдосконалення методики спеціальної фізичної підготовки кваліфікованих борців з урахуванням індивідуальних стилів ведення сутички.

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Матеріал та методи: у дослідженні взяли участь 30 борців середніх вагових категорій (72 кг, 77 кг, 82 кг). Учасники були розділені на дві групи: контрольна група - 15 спортсменів, середній вік (18,96±1,09) років, середня вага (76,27±5,58) кг; експериментальна група - 15 осіб, середній вік (19,07±0,95) років, середня вага (75,87±5,68) кг. Усі учасники належали до спортсменів високого рівня майстерності. Було розроблено тренувальні завдання для вдосконалення методики спеціальної фізичної підготовки борців з урахуванням стилів протиборства. Запропонована програма була апробована в педагогічному експерименті, який тривав один рік. Достовірність відмінностей між групами оцінювали за допомогою непараметричних критеріїв знаків (z) і Розенбаума (Q).

Результати: за час проведення експерименту приріст результатів спеціальної фізичної підготовленості в борців експериментальної групи значно вищий у всіх тестах і він перебуває в діапазоні від 6 % до 14 %, а в контрольній групі нижчий - від 2 % до 3 %. Також ці результати підтверджені непараметричним критерієм ознак. Так, у борців експериментальної групи наприкінці експерименту спостерігається поліпшення показників. Показано достовірне збільшення результатів у тесті «Підтягування на перекладині» (z=1; p<0,01). Достовірно знизився час виконання тестів: «10 кидків підворотом» (z=0; p<0,01), «10 кидків прогином» (z=0; p<0,01), «Перевороти на «мосту»» (z=0; p<0,01), «Забігання на «мосту»» (z=0; p<0,01), «10 перекидів вперед» (z=0; p<0,01), «Три серії по 15 кидків підворотом» (z=3; p<0,05). Збільшилася кількість повторень у тестах: «Підтягування у висі на перекладині за 20 с» (z=4; p>0,05), «Згинання-розгинання рук в упорі лежачи за 20 с» (z=4; p>0,05).

Висновки: виконання розроблених тренувальних завдань борцями експериментальної групи дали можливість наприкінці експерименту показати достовірно кращі результати в показниках спеціальної фізичної підготовленості, ніж спортсмени контрольної групи (p<0,05-0,01). Такі результати свідчать про ефективність запропонованої методики та можливість впровадження її в тренувальний процес.

Ключові слова: греко-римська боротьба, кваліфіковані спортсмени, тренувальний процес, фізична підготовка, індивідуальний стиль протиборства.

Introduction

In modern wrestling, only a talented athlete can achieve high international results. The ability of a wrestler to achieve a competitive result will depend on anthropometric, physical, mental, socio-psychological abilities [1].

To build a long-term training system for wrestlers, it is necessary to know the model characteristics of champions. Champions may have some peculiarities in their preparation. It is possible to single out groups of athletes that have approximately similar features, it is they who provide wrestlers with successful competitive activity and determine their fighting style [2].

Maximum individualization is one of the main directions for improving the training of wrestlers. On the basis of taking into account the physical, psychological and technical-tactical abilities, the formation of the style of the duel is carried out. An effective individual style of competitive wrestling increases the likelihood of high results [3].

The individual characteristics of highly qualified athletes depend on the manifestations of their cognitive abilities. The higher the qualification of an athlete, the higher his level of cognitive functions [4].

To increase the effectiveness of sports training of athletes of different skill levels, it is necessary to take into account the existing model characteristics. The age of maximum peak performance is an important consideration when planning long-term training [5].

International performances start at an early age. 48.8% of wrestlers take part in international competitions at the cadet age, 85.4% of the athletes at the junior age. 63.4% of juniors take part in international senior competitions [6].

Individual approach in sports covers a wide range of problems. They are associated with various aspects of sports training. Questions may relate to both the tasks of sports selection and the preparation of individual programs for martial arts athletes.

The development of the concept of individualization in sports is of particular relevance. The authors of [7] proposed the concept of building individual programs. This concept allows you to combine physiological, psychological and psychophysiological indicators into a single comprehensive assessment of the individual characteristics of an athlete.

Special physical readiness of wrestlers is one of the main factors for achieving the highest possible results in competitive activity [8]. Physical qualities can differ significantly among wrestlers of the same skill level, but different individual styles. The individual style of a wrestler depends on the level of development of one or more motor qualities, anthropometric and psychophysiological features. Each elite wrestler conducts successful wrestling matches in strict accordance with his individual style [3].

Research on the relationship between the manifestation of special physical qualities and the styles and manners of conducting a competitive duel remains relevant today.

Purpose: to improve the technique of special physical training of qualified wrestlers, taking into account individual styles of wrestling.

Material and Methods

Participants

The study involved 30 wrestlers of middle weight categories (72 kg, 77 kg, 82 kg). The participants were divided into two groups: control group - 15 athletes, average age (18.96±1.09) years, average weight (76.27±5.58) kg; experimental group - 15 people, average age (19.07±0.95) years, average weight (75.87±5.68) kg. Informed consent was obtained from all study participants to participate in the pedagogical experiment.

All the wrestlers of the experimental group were divided into three subgroups according to their individual style: «playing combat style wrestler» (n=4), «tempo combat style wrestler» (n=5), «strength combat style wrestler» (n=6).

Procedure

On the basis of the analysis, the features of the athletes of individual styles of wrestling in Greco-Roman wrestling were formed: strength combat style, playing combat style and tempo styles. Also, the analysis made it possible to form: profiles of elite wrestlers of each wrestling style; highlight the strengths and weaknesses in sports preparedness; to determine that the key characteristics of the readiness of elite wrestlers with an equal volume of tactical and technical actions were their speed-strength qualities and special endurance [3, 9].

The proposed technique was developed taking into account the individual characteristics of wrestlers of each wres-

tling style.

A model of training tasks was developed to improve the methodology of special physical training, depending on the individual style of the wrestler, which is shown in Figure 1.

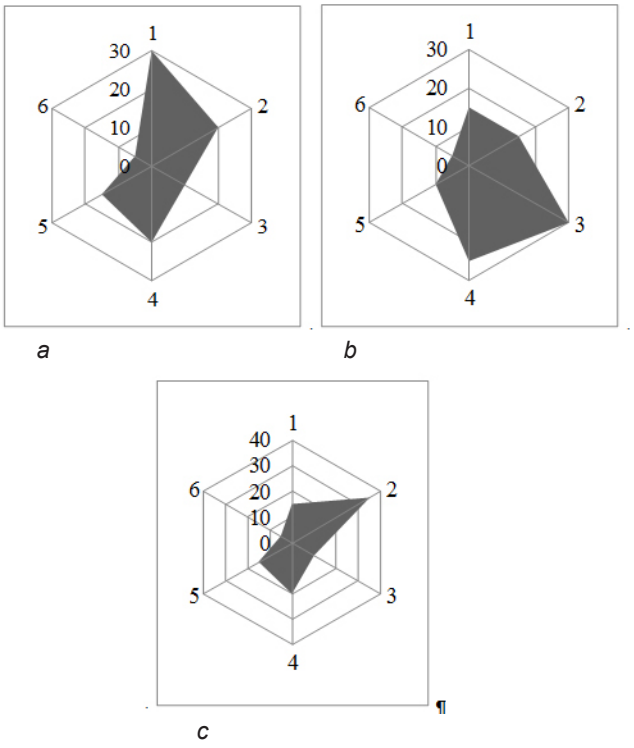

Figure 1. *Model of training tasks for the development of physical qualities of wrestlers of «playing» (a), «tempo» (b) and «strength» (c) style of wrestling*

1 - development of agility (%); 2 - development of special strength (%); 3 - development of general endurance (%); 4 - development of special endurance (%); 5 - development of speed (%); 6 - development of flexibility (%).

Training tasks to improve the methodology of special physical training of wrestlers, taking into account the individual style of wrestling, were implemented in an annual macrocycle (Table 1).

To test the effectiveness of the impact of training tasks to improve the methodology for developing the physical qualities of wrestlers, a pedagogical experiment was conducted from May 2020 to April 2021. The experiment was built according to a plan that involves the organization of two identical study groups. Improvement of wrestlers' skills in the experimental group was carried out mainly according to individual plans. The logical scheme for drawing up individual plans included: assessment of the individual characteristics of the preparedness of a particular athlete; comparison of his data with a model of a certain wrestling style and on this basis identifying the strengths and weaknesses of the wrestler's preparedness; definition of tasks for further improvement of strengths and elimination of the most important weak links of training; choice of means of increasing the wrestler's special working capacity due to the predominant improvement of speed-strength qualities and special endurance at each stage of the annual training.

Pedagogical testing was conducted at the beginning and at the end of the experiment. The following tests have been used:

– «10 back arch throws», «10 suplexes». These two tests characterize the speed-strength abilities of wrestlers. The athlete performed 10 throws of a partner of equal weight with maximum speed. Estimated time to complete throws in seconds.

– «Pull-ups in 20 seconds», «Push-ups in 20 seconds». These tests characterize the speed-strength abilities of the muscles of the upper shoulder girdle. The wrestler performed the maximum number of movements for 20 seconds at a maximum pace. Recorded number of times in 20 seconds.

– «The maximum number of pull-ups» this test characterizes the strength endurance of the muscles of the upper shoulder girdle. The wrestler performed the maximum number of pull-ups. The athlete independently determined the optimal pace of the exercise. The measurement was carried out according to the number of times performed.

– «Handspring on the wrestling "Bridge"». This test provides information about a wrestler's coordination abilities. The athlete was asked to perform 15 handsprings at the maximum pace. Exercise technique: starting position - emphasis with hands, feet and forehead on the carpet, knees bent; throw your

Table 1. Percentage distribution of physical training means of wrestlers of the experimental group in the annual macrocycle (%)

Year		2020								2021			
Periods of one-year training		Pre-season			In-season		Off-season	Pre-season			In-season		Off-season
Month		5	6	7	8	9	10	11	12	1	2	3	4
Wrestling styles			P/T/S*	P/T/S*				P/T/S*	P/T/S*	P/T/S*			
Types of physical qualities	Agility	15	10/5/5	10/5/5	5	3	15	10/5/5	10/5/5	10/5/5	5	3	15
	Special strength	10	5/5/10	5/5/10	5	2	10	5/5/10	5/5/10	5/5/10	5	2	10
	General Endurance	10	5/10/5	5/10/5	5	2	10	5/10/5	5/10/5	5/10/5	5	2	10
	Special Endurance	-	10	10	5	3	-	10	10	10	5	3	-
	Leading physical qualities	-	-	-	10	8	-	-	-	-	10	8	-
	Other physical qualities	5	3	3	2	2	5	3	3	3	2	2	5

Note: wrestlers' individual styles: P/T/S* – playing combat style / tempo combat style / strength combat style.

legs over yourself to be in the "bridge" position; throw your legs back, return to the starting position. Estimated exercise time in seconds.

– «Running on the wrestling "Bridge"». This test characterizes the wrestler's coordination abilities. The athlete at the maximum pace performs 5 runs to the left and 5 runs to the right. Exercise technique: starting position - emphasis with hands, feet and forehead on the carpet, knees bent; fix the head in place; take 3 side steps to one side, and then, throw one leg over the other. Estimated exercise time in seconds.

– «10 somersaults forward». This test provides information about a wrestler's coordination abilities. The athlete was asked to perform 10 somersaults forward at the maximum pace. Technique for performing the exercise: combat stance, crouching emphasis, put your hands forward, tilting your head to your chest, push off with your feet and, grouping, roll forward into a crouching emphasis position. Estimated time to complete the exercise in seconds.

– «3 series of 15 back arch throws» This test characterizes the wrestler's special working capacity. The athlete performed 3 series of 15 back arch throws with a partner of equal weight at maximum speed. Rest between series was 1 minute. The total time of throws in three series in seconds was determined.

During the performance of the control exercises, the observance of the technique was determined visually and all errors were reported to the athlete. The given tests are used to control the special physical fitness of wrestlers in the Youth Sports School.

Statistical analysis

Statistical analysis of the obtained data was carried out using licensed Excel spreadsheet packages. The indicators of descriptive statistics were determined (arithmetic mean, standard deviation, and error of the mean) [10]. Significance of differences in groups was assessed using non-parametric criteria of signs (z) and Rosenbaum (Q). Differences were considered significant when $p<0.05$.

Results

To test the effectiveness of improving the methodology of special physical training of wrestlers, a pedagogical experiment was conducted (from May 2020 to April 2021).

At the beginning of the experiment, the obtained indicators of special physical preparedness in the experimental (n=15) and control (n=15) groups did not have significant differences. This indicates the homogeneity of the studied samples ($p>0.05$).

After the end of the pedagogical experiment, the results of the special physical preparedness of wrestlers were obtained, which are presented in Table 2. Significant differences were revealed among the athletes of the experimental group in all considered indicators. ($p<0.05$; $p<0.01$).

As can be seen from the data obtained (Figure 1), the test complexes proposed by us have the greatest increase in results in terms of special physical preparedness among the wrestlers of the experimental group.

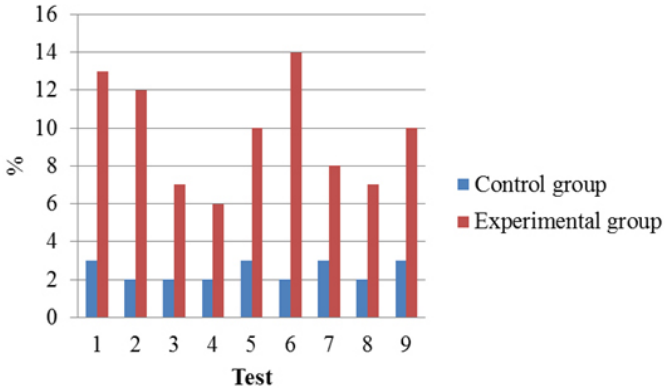

Figure 1. *Increase in the results of special physical preparedness of wrestlers in the control (n=15) and experimental (n=15) groups after the end of the pedagogical experiment*

Tests: 1 – 10 back arch throws, 2 – 10 suplexes, 3 – pull-ups in 20 seconds, 4 – push-ups in 20 seconds; 5 – maximum number of pull-ups; 6 – handspring on the wrestling "Bridge" 15 times, 7 – running on the wrestling "Bridge" (5-left, 5-right), 8 – 10 somersaults forward, 9 – 3 series of 15 back arch throws.

The introduction of the developed sets of tasks for the wrestlers of the experimental group into the training process led to an improvement in many indicators at the end of the experiment. A significant increase in the results in the «Pull-ups»

Table 2. Indicators of special physical readiness of wrestlers of the control (n=15) and experimental (n=15) groups at the end of the pedagogical experiment

№	Indicators	Group	$\bar{X}\pm m$	Q	p
1	10 back arch throws, s	CG	28,07±0,56	**9**	**<0.01**
		EG	23,93±0,61		
2	10 suplexes, s	CG	31,00±0,51	**13**	**<0.01**
		EG	26,73±0,64		
3	Pull-ups in 20 seconds, number of times	CG	15,53±0,27	**17**	**<0.01**
		EG	17,00±0,31		
4	Push-ups in 20 seconds, number of times	CG	31,07±0,61	**12**	**<0.01**
		EG	33,20±0,47		
5	Maximum number of pull-ups, number of times	CG	30,27±0,89	**11**	**<0.01**
		EG	34,53±1,00		
6	Handspring on the wrestling "Bridge" 15 times (s)	CG	34,71±0,39	**20**	**<0.01**
		EG	29,36±0,79		
7	Running on the wrestling "Bridge" (5-left, 5-right), s	CG	15,12±0,27	**10**	**<0.01**
		EG	13,90±0,28		
8	10 somersaults forward, s	CG	12,19±0,16	**13**	**<0.01**
		EG	11,16±0,18		
9	3 series of 15 back arch throws, s	CG	103,00±1,78	**6**	**<0.05**
		EG	97,13±1,95		

Notes: critical values Q-test – Q=6, $p<0.05$, Q=9, $p<0.01$.

Table 3. Dynamics of indicators of special physical preparedness of wrestlers of the experimental (n=15) group during the pedagogical experiment

№	Indicators	Experiment periods	□X±m	z	p
1	10 back arch throws, s	At the beginning	27.40±0.51	**0**	**<0.01**
		At the end	23.93±0.61		
2	10 suplexes, s	At the beginning	30.20±0.59	**0**	**<0.01**
		At the end	26.73±0.64		
3	Pull-ups in 20 seconds, number of times	At the beginning	15.87±0.27	4	>0.05
		At the end	17.00±0.31		
4	Push-ups in 20 seconds, number of times	At the beginning	31.33±0.53	4	>0.05
		At the end	33.20±0.47		
5	Maximum number of pull-ups, number of times	At the beginning	31.47±1.02	**1**	**<0.01**
		At the end	34.53±1.00		
6	Handspring on the wrestling “Bridge” 15 times, s	At the beginning	34.21±0.62	**0**	**<0.01**
		At the end	29.36±0.79		
7	Running on the wrestling “Bridge” (5-left, 5-right), s	At the beginning	15.02±0.42	**0**	**<0.01**
		At the end	13.90±0.28		
8	10 somersaults forward, s	At the beginning	12.02±0.30	**0**	**<0.01**
		At the end	11.16±0.18		
9	3 series of 15 back arch throws, s	At the beginning	106.93±1.72	**3**	**<0.05**
		At the end	97.13±1.95		

Notes: critical values criteria of signs – z=3, p<0.05; z=2, p<0.01

test was shown (z=1; p<0.01). Significantly reduced test execution time: «10 back arch throws» (z=0; p<0.01), «10 suplexes» (z=0; p<0.01), «Handspring on the wrestling “Bridge”» (z=0; p<0.01), «Running on the wrestling “Bridge”» (z=0; p<0.01), «10 somersaults forward» (z=0; p<0.01), «3 series of 15 back arch throws» (z=3; p<0.05). Increased the number of times in the tests: «Pull-ups in 20 s» (z=4; p>0.05), «Push-ups in 20 s» (z=4; p>0.05) (Table 3).

Thus, the obtained results of special physical preparedness indicate the superiority of the wrestlers of the experimental group in comparison with the indicators of the athletes of the control group, which indicates the effectiveness of the improved method of special physical training of wrestlers of individual styles of wrestling and the possibility of its implementation in the training process.

Discussion

The effectiveness of the improved technique of special physical training of wrestlers, taking into account individual styles of wrestling, was tested in the annual macrocycle.

As recent studies show [11, 12, 13], the planning of the training process in the annual macrocycle is an important aspect in the long-term training of athletes in various sports. The articles show that the annual macrocycle has the following structure: macrocycles, periods, stages, mesocycles and microcycles. The construction of training sessions in each structural element has its own characteristics and specific tasks.

Svecla & Gorashchenco [14] conducted research on the effectiveness of building strength training for middle-distance runners in the autumn-winter macrocycle. It was determined that in the semi-annual training macrocycle of middle-distance runners, the conjugated-sequential form of organizing loads with the element of concentration of strength loads has a more favorable effect on the dynamics of the level of general preparedness than the complex-parallel.

Kamaev et al. [15] determined the effective methods and means of training and their correlation in the strength and functional training of qualified cross-country skiers in the preparatory period. It was revealed that the use of dynamic and static exercises after aerobic exercise can significantly increase the speed-strength and functionality of skiers, the manifestation of which is necessary at the end of the competitive distance.

Yerlan et al. [16] revealed the dynamics of planning and implementation of various types of sports training for highly qualified volleyball teams in the competitive period. As a result of the experiment, the optimal parameters for the percentage planning of various types of training were determined, general, special and jumping training in the competitive season of the annual macrocycle was identified.

Manolachi et al. [17] evaluated the influence of effort parameters on fitness test indicators by the ratio of variable components of training of judo athletes in different mesocycles. An experimental technique was planned in each training mesocycle. It has been established that the optimal ratio between the parameters of effort and training components contributes to an increase in working capacity. Optimization of general physical training and consolidation of preferred techniques in combination with other techniques can improve the technical and tactical preparedness of judo athletes.

Kirk et al. [18] studied the effectiveness of training load distribution and periodization strategies in mixed martial arts MMA athletes in weekly microcycles. A group of experienced MMA athletes were followed up to complete an 8-week training period, during which the authors quantified training duration, workload and associated fatigue and soreness within and between each weekly microcycle, as well as the frequency and intensity of each specific training session. It was established that periodization of the training load in the group of studied athletes was largely absent between weekly microcycles.

The planning of the training process in our study was based on an individual approach. It is important in the sports training of qualified and elite athletes [4, 5]. The problem of using an individual approach in the preparation of athletes is devoted to a large number of scientific works. For example, Chernozub et al. [19] developed individual models of strength training for athletes of mixed martial arts MMA, depending on the predominance of a strike or wrestling style of wrestling, and also determined the effect of the proposed training loads on increasing the functionality of their body.

Sciranka et al. [20] determined the ratio of efforts and pauses in competitive matches among freestyle wrestlers of different weight categories. Kinovea software was used for time and motion analysis. Established the ratio of efforts and pauses among wrestlers of lightweights, middleweights and heavyweights. The obtained results of the study can be used to individualize the training process of wrestlers of different weight categories.

Kozina et al. [21] determined the methodological foundations of individualization of the technical and tactical manners of wrestling by qualified taekwondo athletes, taking into account typological characteristics. It was established that the system of individualization of the process of training taekwondo athletes consists of three directions: determination of the individual factor structure of the preparedness of athletes; determination of patterns of individual dynamics of the functional state; development of interactive technologies to improve the individualization of the training process. It was recommended to use the methods of mathematical modeling, factorial and cluster analysis when identifying an individual tactical manner of wrestling among taekwondo athletes.

Tropin et al. [22] developed model characteristics of the competitive activity of elite mixed martial arts MMA athletes of various weight categories. It was established that athletes of each weight category have their own characteristics in terms of competitive activity. The model characteristics that were obtained in the course of the study can be used to plan the training process of qualified athletes and to address issues of managing their individual preparation for competitions.

Pityn et al. [23], based on the analysis of the competitive activity of qualified kickboxers, identified the four most common fighting styles, such as «Points Fighters», «Continuous Fighters», «Knock out Fighters» and «Versatiles». Based on the characteristics of each fighting style, a methodology was developed and introduced into the training process to individualize the training of qualified kickboxers of the Ukrainian team, which made it possible to achieve high competitive results in the championship of Ukraine.

Safronov et al. [24] determined the boxing style of qualified boxers on the basis of neurodynamic parameters using multivariate analysis methods. It was revealed that psychophysiological and neurodynamic indicators are informative for determining the inclinations of boxers to a certain style of boxing. This provision can be applied at all stages of training athletes to quickly and effectively determine the inclination to a certain style of boxing match based on innate neurodynamic and psychophysiological characteristics.

To test the effectiveness of the developed program, we conducted a pedagogical experiment. This method of research is used in many sports. It allowed to establish the effectiveness of the developed programs in wheelchair basketball [25], in taekwondo [26], in Greco-Roman wrestling [3].

The sequential analysis procedure requires comparison of two groups. In our study, these are the control and experimental groups of wrestlers. This study design is common in sports science. Branco et al. [27] studied the effects of an additional strength program on the general and special physical preparedness of judo athletes. For the study, athletes were divided into control and experimental groups. After 8 weeks of strength training, the results of general and special preparedness were significantly better in judo athletes of the experimental group.

Podrihalo et al. [28] carried out a comparative analysis of the morphological parameters of athletes who are engaged in street workout. To do this, the athletes were divided into two groups depending on the training experience. It was determined that the strength of the grip and the specific gravity of the muscle component are predictors of success in this sport.

Parraga Montilla et al. [29] compared the force-velocity (F-V) profile in judo athletes and freestyle wrestlers. It was revealed that among judo athletes there is a bias towards strength in the F-V profile, and among freestyle wrestlers they showed the F-V profile is focused on speed.

Sadeghipour et al. [30] we studied the effects of WB-EMS training and resistance training on maximal strength and body composition in trained women. The study showed that both types of exercises are capable of improving maximal strength, although each of them has its unique advantages.

Okun et al. [31] revealed differences in the anthropometric indicators of girls aged 9-12 who go in for canoe slalom in kayaks and canoes. It was established that, according to most indicators, kayaker girls had advantages over their peer canoe girls, but the differences between them are insignificant.

Podrigalo et al. [32] carried out a comparative analysis of the psychophysiological characteristics of football players and athletes of water sports as factors of professional selection. The results obtained reflect the specific impact of sport on the body of athletes.

Nesen et al. [33] found that the use of a set of exercises of a speed-strength nature on the coordination ladder and with stuffed balls for 8 weeks increases the indicators of technical readiness of handball players aged 13-14. The developed sets of exercises were tested by comparing the results in the control and experimental groups during the pedagogical experiment.

Analysis of the results of pedagogical testing after the experiment showed that the athletes of the experimental group have significant differences in all indicators of special physical preparedness ($p<0.05$-0.01). A high level of special physical preparedness largely determines the tactical and technical training of a wrestler, the style and nature of competitive wrestling. The importance of this type of readiness for success in competitive activity has been confirmed by a number of studies. Prystupa et al. [34] proposed an author's program for building special physical training of kickboxers, taking into account different styles of competitive activity, the effectiveness of which was tested in a pedagogical experiment.

Tota et al. [35] implemented a 14-week fitness-specific training program that resulted in favorable changes in participants' body composition, as well as improvements in upper limb anaerobic peak power and aerobic preparedness in the MMA athlete.

Maki et al. [36] to develop special physical qualities of a wrestler, use a set of exercises with a Bulgarian bag. The use of these exercises had a significant impact on the increase in the strength of the upper limbs of athletes. The authors propose to integrate these exercises into a structured program of special strength training for wrestlers.

Summing up, we can say that the training process should be built individually, taking into account the patterns of training athletes in modern sports, this is confirmed in previous studies [37, 38, 39].

Conclusions

A technique for improving special physical training was proposed, which included models of training tasks depending on the wrestler's individual style. It was carried out mainly according to individual plans, which included: an assessment of the individual characteristics of the preparedness of a particu-

lar athlete; comparison of his data with a model of a certain wrestling style and on this basis identifying the strengths and weaknesses of the wrestler's preparedness; definition of tasks for further improvement of strengths and elimination of the most important weak links of training.

The effectiveness of the methodology was tested in a pedagogical experiment. The experiment lasted one year. At the end of the pedagogical experiment, the indicators of special physical preparedness of the wrestlers of the experimental group are significantly higher than those of the athletes of the control group ($p<0.05$-0.01).

During the experiment, the increase in the results of special physical preparedness among the wrestlers of the experimental group is much higher in all tests and it is in the range from 6% to 14%, and in the control group it is lower - from 2% to 3%. Such results indicate the effectiveness of the proposed methodology for improving the special physical training of wrestlers of individual wrestling styles and the possibility of introducing it into the training process.

A promising area of research is the further improvement of the Greco-Roman style wrestlers' individualization system, as well as the use of the developed methodology in other martial arts.

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Conflict of interest.

The authors declare no conflict of interest.

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