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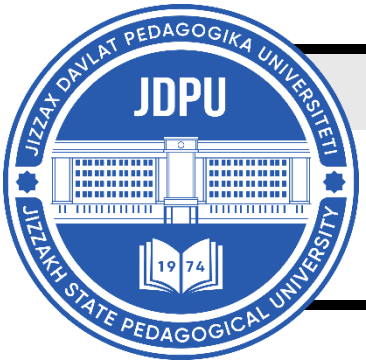

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DEVELOPMENT OF STRENGTH AND SPEED-STRENGTH ABILITIES OF QUALIFIED WRESTLERS IN SPORTS IMPROVEMENT GROUPS

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ABOUT ARTICLE

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Abstract: This article analyzes the methods and techniques for developing the strength and speed-strength (explosive power) abilities of wrestlers in sports improvement groups. These abilities are essential in modern sports, as they are necessary for achieving high results during competitions. The article highlights the use of innovative approaches, specialized physical exercises, modern technologies, and training programs to enhance strength and speed-strength characteristics. It also provides exercise complexes tailored to wrestlers of different ages and skill levels. Additionally, methods for measuring and evaluating strength and speed-strength indicators are discussed.

INTRODUCTION

In accordance with the Resolution of the President of the Republic of Uzbekistan No. PQ-4881 dated November 4, 2020, and other regulatory legal documents relevant to this field, a number of methods have been proposed to improve the technical and tactical preparation of young wrestlers in national wrestling styles, particularly belt wrestling and traditional wrestling (Kerimov N.A., Yuldashev A.M., Isakov R.M., 2009; Mirzakulov Sh.A., Isakov R.M., 2009). When selecting methods for conducting wrestling training sessions (I. Kh. Boymurodov, F.A. Kerimov, 2009; A. Beknazarova, Sh.S. Mirzanova, T.R. Ishmuxamedova, 2014), the importance of carefully choosing teaching techniques and methods, identifying individual competitive resilience traits, and adhering to the principle of personalization through planning and monitoring the educational process has been emphasized [1,2,3,4].

Therefore, the current system for training qualified wrestlers highlights the need for further scientific research, as the development of special physical abilities has not been adequately implemented.

MATERIALS AND METHODS

Research Objective:

To develop scientific and methodological recommendations for improving the general and specific physical preparedness of qualified wrestlers in sports improvement groups.

Research Methods:

The study utilized various methods, including analysis of specialized scientific and methodological literature, pedagogical observations, pedagogical testing, pedagogical experiments, mathematical statistical analysis, and processing of research results.

Organization of the Research:

The research focused on enhancing the effectiveness of attack techniques during competitions by incorporating exercises that demonstrate speed-strength abilities into the training process. Recommendations and suggestions were provided for integrating individualized technical movements into the wrestlers' training sessions to improve their tactical preparation and expand their personal technical arsenal.

Objective:

The objective of our study was to theoretically develop and empirically substantiate a differentiated methodology for the strength and speed-strength preparation of qualified wrestlers aged 15-17 in various weight categories during the sports improvement stage.

RESULTS AND DISCUSSION

The program for developing special and general physical preparedness was structured as follows: two sets of exercises aimed at enhancing the wrestlers' special physical preparedness (SPP) and two additional sets of exercises designed to improve their general physical preparedness (GPP).

Scientific and Methodological Basis:

Scientifically and methodologically justifying the speed-strength preparation of qualified wrestlers in sports improvement groups, considering their competitive activity, is a crucial condition in the long-term athlete development system. Despite extensive research in this area, numerous unresolved issues remain in identifying informative and reliable tests for assessing the strength and speed-strength readiness of qualified wrestlers.

Key Determinants of Effectiveness:

The effectiveness of training in wrestling largely depends on the rational selection of control exercises and tests appropriate to each athlete's age and physical preparedness level. The primary criterion for evaluating the effectiveness of these tests and control exercises is the improvement in sports performance. According to most experts, the success of competitive activity is determined by movement speed and muscle power, as evidenced by the high density of athletic achievements in international competitions. Consequently, many researchers have shown increased interest in studying strength and speed-strength preparation in athletes. The development level of these qualities determines success across nearly all sports, necessitating close attention to methods for monitoring and enhancing these attributes.

Complex Methodological System:

According to numerous experts, the methodology for speed-strength preparation in wrestlers is a complex organizational-methodological system that includes pedagogical, social, psychological, and medical-biological methods. These methods help identify the athletes' specialization potential in a particular sport.

Significance in Training:

Speed-strength preparation is a critical organizational component of the training process, as it supports the primary goal of sports preparation: achieving high athletic results. When determining the prospects of athletes, it is essential not only to focus on their high physical potential but also to assess their ability to mobilize reserve capabilities and effectively execute their movement potential in extreme conditions, such as high-stakes competitions.

Correlation Analysis:

I n our study, we identified the correlation between the following speed-strength indicators:

- **Fmax** – Maximum explosive strength of muscles in an isometric regime,
- **J** – Speed-strength index,
- **Coefficient characterizing explosive muscle strength in an isometric regime,**
- **Q** – Initial strength,
- **G** – Accelerating strength.

We also analyzed their relationship with the following special physical preparedness indicators:

- Forward roll performed 10 times (seconds),
- Transition from the initial position to the bridge position and running in any direction 5 times (seconds),

- Running 5 times to the left and 5 times to the right in a bridge position (seconds),
- 10 bridge position rotations (seconds),
- Throwing over the waist 10 times (seconds),
- Throwing over the chest 10 times (seconds),
- Forward leg sweep 10 times (seconds),
- Backward leg sweep 10 times (seconds).

Results:

Table 1 presents the correlation analysis between the speed-strength indicators measured using a special training simulator and the special physical preparedness indicators of wrestlers.

The experiment involved 24 qualified wrestlers from sports improvement groups.

As shown in Table 1, a high correlation was observed between the speed-strength indicators and the special physical preparedness indicators of qualified wrestlers in sports improvement groups. This highlights the significance of speed-strength preparation for enhancing their overall performance and technical skills in competition.

Table 1

Correlation Between Speed-Strength Preparation and Special Physical Preparation Tests in Wrestlers from Sports Improvement Groups

SSP and SPP Indicators	**SSP**				**SPP**							
	Fmax	J	Q	G	1	2	3	4	5	6	7	8
F max	//////											
J – speed	0,717	//////										
Q – Initial Strength	0,709	0,635	//////									
G – Accelerating Strength	0,726	0,619	0,741	/////								

Continuation of Table 1

1	Forward somersault 10 times (second)	0,452	0,321	0,369	0,339	/////							
2	Bridge position to any direction sprint 5 times (seconds)	0,431	0,343	0,353	0,407	0,432	/////						
3	Sprinting 5 times left and 5 times right from bridge	0,382	0,368	0,372	0,375	0,417	0,613	/////					

	position (seconds)												
4	Turns from bridge position 10 times (seconds)	0,368	0,354	0,382	0,423	0,382	0,538	0,567	//////				
5	Throwing over the waist 10 times (seconds)	0,447	0,419	0,428	0,453	0,426	0,618	0,622	0,635	//////			
6	Throwing by bending 10 times	0,518	0,433	0,409	0,391	0,431	0,721	0,638	0,618	0,635	/////		
7	Forward throwing by tripping 10 times	0,416	0,384	0,374	0,422	0,398	0,535	0,574	0,585	0,511	0,622	///////	
8	Backward throwing by tripping 10 times	0,387	0,372	0,319	0,413	0,432	0,601	0,526	0,529	0,534	0,591	0,726	////

The correlation analysis of control exercises for wrestlers' speed-strength indicators and special physical preparedness allowed for the identification of informative tests characterizing the readiness level of qualified wrestlers in the sports improvement group.

A program developed to determine speed-strength preparedness based on the individual characteristics and weight categories of wrestlers was implemented into the training process. This program aimed to enhance both the leading and lagging aspects of special physical preparedness in athletes, as well as to improve the execution levels of leading and lagging technical methods through specialized exercises.

Eight indicators describing the speed-strength abilities of qualified wrestlers engaged in the sports improvement phase were analyzed. Comparative statistical analysis was conducted using Student's t-test.

The analysis revealed that at the beginning of the pedagogical experiment, there were no statistically significant differences in the studied parameters between the qualified wrestlers of the experimental and control groups (see Table 2).

The results of the comparative statistical analysis of the average indicators of control norms are presented in Table 2.

Table 2

Comparative Analysis of GPP and SPP Indicators of Skilled Wrestlers in the Control and Experimental Groups at the Beginning of the Experiment (n=21)

№	GPP and SPP Indicators	Control Group		Experimental group		t	P
		$\bar{X} \pm \sigma$	V%	$\bar{X} \pm \sigma$	V%		
1	Forward Roll 10 Times (seconds)	17,0±2,3	13,52	16,9±2,4	14,20	1,7	>0,05
2	Standing in a Bridge Position and Running in Any Direction from a Standstill 5 Times (seconds)	12,3±1,4	11,38	12,4±1,6	12,90	0,9	>0,05
3	Running 5 Times to the Left and 5 Times to the Right in a Bridge Position (seconds)	16,9±1,7	10,05	16,8±1,8	10,71	1,1	>0,05
4	Turning 10 Times in a Bridge Position (seconds)	26,6±2,8	10,52	27,6±2,6	9,42	1,2	>0,05
5	Throwing Over the Hip 10 Times	25,3±2,9	11,46	26,4±2,4	9,09	1,3	>0,05
6	Throwing While Bending Forward 10 Times	27,3±2,9	10,62	28,4±3,1	10,91	0,8	>0,05
7	Throwing 10 Times with a Front Trip	22,6±2,7	11,94	23,6±3,3	13,98	0,7	>0,05
8	Throwing 10 Times with a Rear Trip	23,4±3,6	15,38	22,7±2,8	12,33	0,6	>0,05

As seen from Table 2, the wrestlers in the control group completed 10 forward rolls in 17.0±2.3 seconds, while the experimental group achieved it in 16.9±2.4 seconds (t=1.7; P>0.05). The initial data for transitioning from a standing position to a bridge position and then running in any direction from a standstill (5 times) did not show significant differences between the groups. The control group's results were 12.3±1.4 seconds, and the experimental group's results were 12.4±1.6 seconds (t=0.9; P>0.05).

For running 5 times to the left and 5 times to the right in a bridge position, the control group had an average time of 16.9±1.7 seconds, while the experimental group recorded 16.8±1.8 seconds (t=1.1; P>0.05).

In the task of performing 10 turns in a bridge position, the control group completed it in 26.6±2.8 seconds, while the experimental group took 27.6±2.6 seconds (t=1.2; P>0.05). These four control exercises revealed no significant differences in the initial technical readiness of the wrestlers in both groups.

In the task of throwing over the hip 10 times, the control group completed it in 25.3±2.49 seconds, while the experimental group took 26.4±2.4 seconds (t=1.3; P>0.05). For 10 forward

throws, the control group recorded 27.3±2.9 seconds, and the experimental group achieved 28.4±3.1 seconds (t=0.8; P>0.05).

The average time for 10 front-trip throws was 22.6±2.7 seconds for the control group and 23.6±3.3 seconds for the experimental group (t=0.7; P>0.05).

Lastly, for 10 rear-trip throws, the control group averaged 23.4±3.6 seconds, while the experimental group recorded 22.7±2.8 seconds (t=0.6; P>0.05).

The initial results from these 8 control exercises indicate no statistically significant differences between the control and experimental groups. This suggests that both groups consisted of participants with similar physical preparedness levels.

However, after the pedagogical experiment, significant statistical differences were observed between the measured parameters of the skilled wrestlers in the control and experimental groups. The comparative statistical analysis of the average results for both groups is presented in Table 3.

Table 3

Comparative Analysis of GPP and SPP Indicators of Skilled Wrestlers in the Control and Experimental Groups at the End of the Pedagogical Experiment (n=21)

№	GPP and SPP indicators	Control group		Experimental group		t	P
		$\overline{X} \pm \sigma$	V%	$\overline{X} \pm \sigma$	V%		
1	Forward somersault 10 times (seconds)	17,1±1,6	9,35	16,2±1,4	8,64	1,92	>0,05
2	Getting into a bridge position and run in place in any direction 5 times (seconds)	11,8±0,9	7,62	10,4±0,8	7,69	1,84	>0,05
3	In the bridge position, running 5 times to the left and 5 times to the right (seconds)	16,8±1,4	8,33	16,0±1,2	7,5	1,75	>0,05
4	Turning around in the bridge position 10 times (seconds)	25,2±2,4	9,52	23,3±2,1	9,01	2,22	<0.05
5	Throwing over the hips 10 times	24,5±2,3	9,38	22,1±2,1	9,50	2,28	<0.05
6	Throwing by bending 10 times	26,6±2,2	8,27	24,1±2,3	9,54	2,21	<0.05
7	Throwing 10 times with a forward sweep	21,8±2,4	11,0	18,7±1,9	10,16	2,42	<0.05
8	Throwing 10 times with a backward sweep	22,5±2,2	9,77	17,3±1,5	8,67	2,33	<0.05

As seen from Table 3, by the end of the experiment, the indicators for throwing with 10 backward leg sweeps showed significant changes in the wrestlers of the studied groups. The average performance of the wrestlers in the control group was 22.5±2.2 seconds, while in the experimental group it was 17.3±1.5 seconds (t=2.33; P<0.05).

CONCLUSION

In the research, it was revealed that despite involving 24 athletes with a wrestling sports category and analyzing scientific works related to wrestling, there is still no consensus on how to organize and conduct training sessions focused on speed-strength preparation. Therefore, addressing this issue is considered relevant and requires more comprehensive research. Additionally, the system for training wrestling coaches at higher educational institutions also requires further improvement in the future.

A comparative analysis of the general physical preparedness and specific physical preparedness of skilled wrestlers in the control and experimental groups at the end of the pedagogical experiment showed that the physical and specific physical preparedness of skilled wrestlers improved due to the training method aimed at developing speed-strength abilities. Significant changes were observed in the wrestlers' performance in the experimental group in the throwing task with 10 backward leg sweeps. The average performance of the wrestlers in the control group was 22.5±2.2 seconds, while it was 17.3±1.5 seconds in the experimental group ($t=2.33$; $P<0.05$).

Statistical analysis conducted at the end of the pedagogical experiment identified significant statistical differences in 6 out of 8 control norms for the wrestlers in the experimental group. No significant differences were found in the norms for performing 10 forward somersaults, transitioning from a standing position to a bridge, running 5 times in any direction from a stationary position, and running 5 times to the left and 5 times to the right in a bridge position. These results allow us to conclude that the proposed methodology for developing strength and speed-strength qualities had a positive impact on the development of strength qualities in the wrestlers of the experimental group.

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