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PHYSICAL PREPARATION QUALITIES, AS WELL AS THE PHYSIOLOGICAL STATE OF THE ORGANISM AND THE GROWTH RATE OF RECOVERY OF FUTURE PHYSICAL EDUCATION TEACHERS DURING SPORTS TRAINING.

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Abstract. *This article provides information on the indicators and results of the growth rate of physical qualities, physical fitness , and physiological state and recovery of future physical education teachers during sports training , as well as on the fact that if running and jumping skills, such as long jump or hopping from foot to foot, are well developed, this can also have a positive effect on the result of running .*

Keywords and concepts: *physical qualities, physical training, sports training, concepts of physical and functional training , arterial blood pressure, systolic pressure, diastolic pressure, heart rate, deep exhalation and breath holding, deep exhalation and breath holding, respiratory rate, vital capacity of the lungs, initial reading, etc.*

Annotation. *This article presents the indicators and results of the growth rates of physical qualities, physical fitness, as well as the physiological state and recovery of future physical education teachers during sports training. It is also noted that when assessing students' physical fitness in sports, well-developed running and jumping abilities—for example, long jumps or hops—can positively impact running performance.*

Key words and concepts: *physical qualities, physical fitness, sports training, concepts of physical and functional fitness, blood pressure, systolic pressure, diastolic pressure, heart rate, breath holding after deep exhalation, breath holding after deep inhalation, respiratory rate, vital capacity of the lungs, baseline indicators and others.*

Annotation. *This article presents the indicators and results of the growth rate of physical qualities, physical fitness, as well as the physiological condition and recovery of the body of future physical education teachers during sports training. It is also noted that, in order to determine students' physical preparedness in sports activities, if their running ability and jumping skills—such as long jump or single-leg jumps—are well developed, this may have a positive effect on their running performance.*

Keywords and concepts: *physical qualities, physical preparedness, sports training, concepts of physical and functional preparedness, arterial blood pressure, systolic pressure, diastolic pressure, heart rate, breath-holding after deep exhalation, breath-holding after deep inhalation, respiratory rate, vital lung capacity, initial indicators, and others.*

the world scale in the training of future physical education teachers, demonstrating modern initiative, creative independence, solving highly effective tasks and developing physical education among the population. Scientific research has been conducted on the training of highly qualified specialists who are well versed in the profession and well-oriented in relevant areas, capable of

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professional growth and professional mobility, and ready for cooperation and interactive interaction in the information sphere.

Studies have shown that during the current annual training process, physical and functional fitness indicators in students were formed at a slow pace. In particular, during sports training , the annual growth rate of physical fitness in students decreased very slightly compared to the indicators studied before training, but the annual growth difference was recorded in milliseconds and mm. in the course of extracurricular sports training in physical education was expressed as follows: the initial indicator for the 100 m run was 13.09±0.88, the indicators before the training process were 12.98±0.49 in the 1st year, 12.82±0.42 in the 2nd year, and 3.51.4±1.24.8, 3.40.2±0.95.4, and 2.21.1±0.52.6 in the 1000 m run, respectively. In this regard, the indicators obtained for the 2000 m. and 3000 m. runs also express the growth rate characteristic of the noted direction.

Table 1

The growth rate of students' physical fitness $\bar{x}$during physical education sports activities (± δ)

Tests	Initial indicators	From the training process previous indicators	
		1st year	2 years
Running workouts (in seconds)			
100ms	13.0 9±0.88	12.9 8 ±0.4 9	12.82±0.42
1000ms	3.51.4 ± 1.24.8	3.40 .2 ± 0.95.4	3.21 .1 ± 0.52.6
2000 ms	8.07.2 ± 2.21.2	7.22.4 ± 2.10.3	6.57 .6 ± 2.19.4
3000 ms	1 4, 0 6 ,2±4.19,4	1 3, 56.2 ± 3.39.2	1 3.03 .4 ± 3.19.7
Long jump exercises (cm)			
Jumping from a standing position	2 14 .62±4.08	2 21.56 ±5.12	2 2 9.68±4.44
Standing triple jump	680.84 ± 6.12	7 2 0.67 ± 5.66	7 5 8.72 ± 5.74

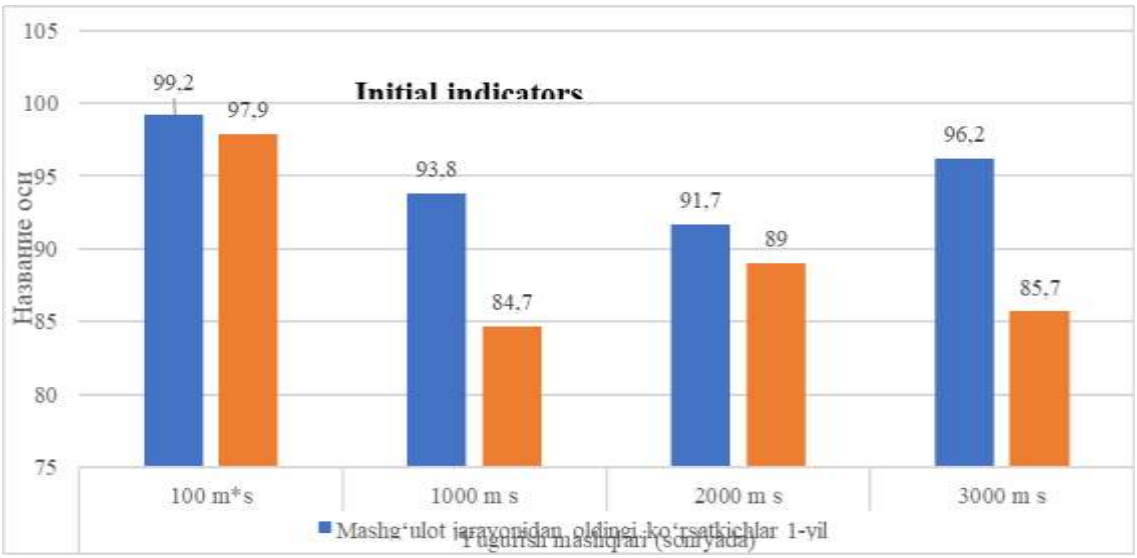

Figure 1. The growth rate of students' physical fitness during physical education sports activities .

The results for the long jump are as follows: standing jump 214.62±4.08, 221.56±5.12, 229.68±4.44, standing jump 3 times, jumping 680.84±6.12; 720.67±5.66; 758.72±5.74 increased (average statistical indicator of all participating students ($\bar{x}$).

The studied physiological indicators of the students participating in the studies were noted with specific characteristics.

Studies have shown that the initial results obtained and their rate of change and growth throughout the year indicated that the cardiovascular and respiratory systems of the students participating in this process were poorly developed.

For example, the initial indicator for AQB mm/cm. above . SB was 121.2±4.4, autumn 127.4±5.8, winter 122.7±4.4, spring 119.6±4.2, summer 129.2±5.6 .

According to DB: 63.4±3.8; 66.2±4.8; 68.4±3.6; 71.2±3.9; 73.4 ± 3.4 mm/s. u . expressed in the same amount. UQCh: 74.3±3.8; 71.4±4.0;

Table 2

The rate of development and growth $\bar{x}$of functional training in the process of physical education sports training (±δ)

Tests		n	DC	Autumn	Winter	Spring	Summer
AQB (mm/s)	SB	157	121.2±4.4	127.4±5.8	122.7±4.4	119.6±4.2	129.2±5.6
	DB	157	63.4 ± 3.8	66.2 ± 4.8	68.4 ± 3.6	71.2 ± 3.9	73.4 ± 3.4
YuQCh (marta/daq)		157	74.3 ± 3.8	71.4 ± 4.0	70.1 ± 3.7	74.9 ± 4.5	77.3 ± 3.9
Genchi sons (sec)		157	17.6 ± 1.9	22.2 ± 1.4	23.8 ± 2.1	27.6 ± 3.2	38.4 ± 3.6
Barbells (sec)		157	30.7 ± 1.0	33.7 ± 1.4	36.6 ± 2.5	17.6 ± 1.9	17.6 ± 1.9
NOCh (march/daq)		157	39.4 ± 2.2	15.6 ± 1.7	14.8 ± 0.8	16.8 ± 1.5	15.4 ± 2.2
OTC (ml)		157	4834.6 ± 126.2	4883.4 ± 134.9	5016.2 ± 148.6	5177.8 ± 411.4	5312.5 ± 152.6

Note: ABP – arterial blood pressure, SB – systolic pressure, 1st heard beat; DB – diastolic pressure – weak beat; HR – heart rate; Genchi test (sec.) – deep breath and hold; Stange test (sec.) – deep breath and hold; NOCh – respiratory rate; VTC – vital capacity of the lungs; DC – initial indicator.

70.1±3.7; 74.9±4.5; 77.3±3.9, times/minute. Genchi test - 17.6±1.9; 22.2±1.4; 23.8±2.1; 27.6±3.2; 38.4±3.6. Barbell test - 30.7±1.0; 33.7±1.4; 36.6±2.5; 17.6±1.9; 17.6±1.9. NOCh - 39.4±2.2; 15.6±1.7; 14.8±0.8; 16.8±1.5; 15.4±2.2. O'TS - 4834.6±126.2; 4883.4±134.9; 5016.2±148.6; The results of the tests 5177.8±411.4; 5312.5±152.6 are also expressed in the same way as the growth rate of the above indicators .

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Genchi test capacity is a criterion reflecting the hypoxic capacity of the organism and is of great importance for increasing endurance qualities.

If breathing exercises aimed at increasing the duration of the Genchi and Stange tests (sec.) in various static (static) situations are combined with endurance exercises in a hypoxic mode, the organism's ability to work in an aerobic-anaerobic mode increases and the ability to consume oxygen in central and peripheral organs, tissues and cells is well developed.

The results of the study showed that the results obtained before the start of the experiment did not differ significantly from each other in both the control and experimental groups.

In particular, 100 m. NG - 13.06±0.32, TG - 13.09±0.88 s; 1000 m. NG – 3.56.6 ±1.16.3 s; TG – 3.51.4 ±1.24.8 s; 2000 m NG - 8.05.3 ±2.16.4 s; TG -8.07.2 ±2.21.2 s; 3000 m NG -14.04.10 ±4.16.01 s; TG – 14.06.2 ±4.19.04 s; results were recorded

(See Table 4.2.3).

Table 4.2.3

The growth rate of endurance qualities during the pedagogical experiment conducted among students in the control and experimental groups during physical education classes

Run and run. tests	**Groups**	**From experience before ($\bar{x}$±δ)**	**In the middle of the experiment ($\bar{x}$±δ)**	**Experience at the end($\bar{x}$±δ)**	**P**
100 m, (s)	NG	13.06 ± 0.32	13.03 ±0.24	1 2 , 98 ±0.29	>0.05
	TG	13,09±0,88	12,98±0,49	12,82±0,42	<0,01
1000 m, (s)	NG	3,56,6±1,16,3	3,53,4±0,99,04	3,48,7±0,85,7	>0,05
	TG	3,51,4±1.24,8	3,40,2±0.95,4	3,21,1±0,52,6	<0,05
2000 m, (s)	NG	8,05,3±2,16,4	8,02,32±2.01,11	7,45.8±2.03,25	>0,01
	TG	8.07,2±2.21,2	7.22,4±2.10,3	6.57,6±2.19,4	>0,01
3000 m, (s)	NG	14,04,10±4,16,01	14,01,4±3,59,05	13,56,8±3,42	<0,05
	TG	14.06,2±4,19,4	1 3 .56.2 ± 3.39.2	1 3 . 03 .4 ± 3.19.7	<0.05
Length jump tests					
Long jump from standing position, (cm)	NG	2.13.15±7.87	2.15.8±4.21	2.18.7±5.60	<0.05
	TG	2 14 .62±4.08	2 21 .56±5.12	2 2 9.68±4.44	<0.05
Long jump triple jump from position i, (cm)	NG	6.78±10.22	6.95±13.42	7.15±17.60	<0.05
	TG	680.84 ± 6.12	7 2 0.67 ± 5.66	7 5 8.72 ± 5.74	<0.05

Note: CG – control group; TG – experimental group.

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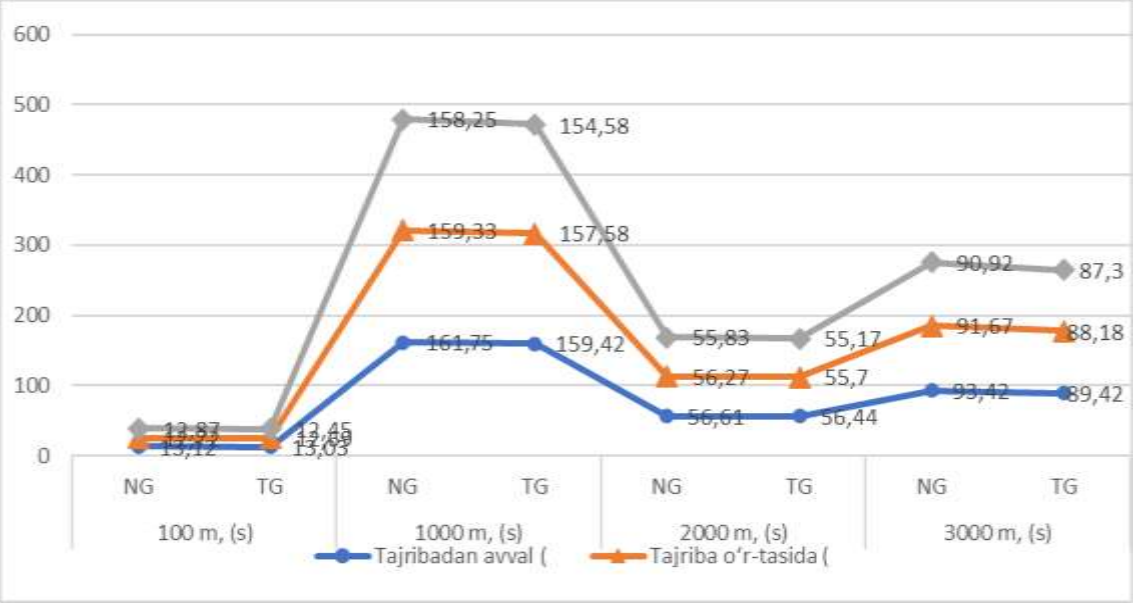

Figure 4.2.2. Growth rate of endurance qualities during the pedagogical experimental test conducted among students in the control and experimental groups during physical education classes.

In the process of physical education sports training, in order to determine the physical fitness of students, if running and jumping skills (especially long jump or hopping) are well developed, this can also have a positive effect on the running result.

Taking into account the results of the running tests, during the physical education sports training, jumping tests were administered to students in the control and experimental groups. The results obtained in this process showed that the jumping performance recorded before the experiment did not differ significantly in the two groups.

For example, Standing long jump, (cm) NG - 2.13.15±7.87 cm; TG - 214.62±4.08 cm; Standing triple long jump, (cm) NG - 6.78±10.22 cm; TG - 680.84±6.12 cm; results were recorded

This indicated that these groups were physically equally prepared.

During the pedagogical experiment, the jump performance in both groups was expressed in an increase in the “bottom-up” direction. The growth rate of these indicators was even more rapid in the experimental group. In particular, in the control group, the indicator recorded at the beginning of the experiment in the long jump test (251.0 cm) increased by only 0.08 cm by the middle of the experiment . The difference in the increase in jumping ability between the indicators obtained at the beginning of the experiment and those observed at the end was 3.67 cm. The indicators observed in the experimental group, on the contrary, were expressed in a more positive hemodynamic (hemodynamic - the difference in different parts of the circulatory system is expressed in the reflex effect (reaction) of hydrostatic pressure (blood movement through blood vessels due to low pressure).

From physiological studies, it was found that the functional indicators obtained before the training session at the beginning of the experiment did not differ from each other in both groups (see Table 4.2.4). However, it was observed that the indicators recorded at the end of the training session and after 10 min. were characterized by different growth rates.

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Table 4. 2.4

The physiological state of the body and the rate of recovery during training during the pedagogical experiment

Funk - sio - horseshoe tests	Group-spirit-s	At the beginning of the experiment			The experiment is over		
		Busy before	Busy then	After 10 days of recovery	Before the training	After the mass shooting	After 10 days of recovery
YUQCh times/min	NG	66.2±2.0	179,8±7,6	112,2±5,6	68,4±4,4	189,6±6,6	138,2±5,2
	TG	64,7±2,6	186,4±6,6	106,4±4,0	60,8±2,4	181,4±4,2	124,6±3,8
NOCh marta/daq	NG	16,4±1,6	44,6±3,4	21,4±2,2	17,8±2,4	46,6±5,8	26,9±5,2
	TG	14,8±1,0	42,8±3,2	17,6±12	13,2±1,1	40,4±3,6	16,2±2,2
Shtange sinovi	NG	33,7±1,4	28,4±3,8	36 ,6 ±22	38,2±4,2	32,6±3,4	34,7±4,8
	TG	36,8±1,8	25,2±2,8	42,2±3,4	62,4±3,4	39,8±3,6	56,4±4,4
Genchi sinovi	NG	14,2±0,6	14,4±1,6	16,8±2,8	16,4±2,2	15,0±3,4	17,4±3,2
	TG	13.4±0.4	12.8± 22	17.2±3.4	26.2±2.6	19.6±2.8	38.2±3.6

Note: HR – heart rate; HR – breath hold; HR – respiratory rate; CG – control group; CG – experimental group; Barbell test – deep breath in and breath hold; Genchi test – deep breath out and breath hold.

In particular, the results obtained on the NOCh detection test showed that before the training session at the beginning of the experiment, the indicators in this regard in the control group were 16.6±1.6 times/minute, after the training session it was 44.6±3.4, and 10 minutes after the training session it was 21.4±2.2 times/minute.

At the end of the experiment, the NOCh in this group before the training was expressed as 17.8±2.4 times/min., immediately after the training - 46.6±5.8, and 10 minutes after the training - 26.9±5.2 times/min. A sharp difference was observed in the rate of increase of the indicated indicators. However, when comparing the indicators obtained at the beginning and end of the experiment, it turned out that the training load carried out at the end of the annual training process led to a significant increase in NOCh and a significant slowdown in the recovery process. Thus , the training loads during the entire year of the experiment increase the complications of fatigue in the corresponding organs (tissues, cells and muscle fibers).

In the experimental group, the indicators representing the growth rate of NOCh were observed in a relatively increasing direction. For example, NOCh in this group before the training at the beginning of the experiment was 14.8±1.0 times/min., immediately after the training was completed - 42.8±3.2, and after the training was completed, 10 min. after the training was completed - 17.6±1.2 times/min.

It is clear that the recovery rate of NOC in the experimental group was faster than in the control group, or the indicator in this regard was much closer to the initial indicator obtained before training (14.8 times/min - initial indicator, 17.6 times/min - recovery indicator).

The barbell test score in the control group before the training session at the beginning of the experiment was 33.7±1.4 s, immediately after the training session was 28.4±3.8 s, and 10 min

after the training session was 36.6±2.2 s. Before the training session at the end of the experiment, this score was 38.2±4.2, after the training session was 32.6±3.4 s, and 10 min after the training session was 34.7±4.8 s.

In the experimental group, deep breathing and breath holding during the training at the beginning of the experiment were 36.8±1.8; 25.2±2.8; 40.2±3.4 s, and during the training at the end of the experiment were 62.4±3.4; 39.8 ± 3.6; 56.4±4.4 s. From the growth rate of these indicators, it became clear that in the experimental group, 10 minutes after the training at the beginning of the experiment, breath holding was 40.2 s, or 6.2 s more than in the control group. In particular, this indicator increased to 56.4 s after 10 minutes after the training at the end of the experiment. The indicators expressed by such a positive growth rate indicate that the leg muscle recovery exercises used at the end of each session during the experiment not only had a positive effect on muscle activity, but also confirmed that the hypoxic capabilities of the students in the experimental group were significantly increased.

In conclusion, the jumping exercises used in the relay-game order during the training sessions of the runners in the experimental group and the relaxation exercises performed at the end of each training session to restore the leg muscles and work capacity are considered to have the value of increasing the results from training to training.

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