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Advantages of Involving Professors-Teachers and Staff in Sports Activities of The Institute for Re-Training and Professional Improvement of Physical Education and Sports Specialists

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Abstract: The article discusses the importance of involving professors, teachers and employees of the Institute for Retraining and Advanced Training of Specialists in Physical Education and Sports in sports. This process, in turn, is aimed at strengthening their health and ensuring their physical development. Based on the analysis of anthropological indicators, the positive effect of physical activity was identified in the studies. The results of this analysis were reflected in research works that help to further explain the importance of physical education and sports.

Keywords: Physical education, sports, physical fitness, anthropological indicators.

Introduction: Several important measures are being implemented in our republic to ensure a healthy lifestyle for the population. These measures are aimed, in particular, at encouraging physical activity, promoting healthy eating, and strengthening psycho-emotional health. There are all opportunities for the population of our country, regardless of age, gender, profession, and level of training, to actively engage in physical education and sports [3].

The purpose of physical education is to ensure the physical health of people, increase physical activity, and arouse interest in sports. In this process, the formation of a healthy lifestyle through physical education and anthropometric indicators of body composition are of great importance. Also, in this process, improving the psychological and emotional state, further increasing their social activity in the family and society, and at the same time, height, body weight, arm and leg length, and chest width are very important factors in body composition.

The purpose of the study is to determine the effectiveness of physical education and sports in increasing the level of physical development and physical fitness indicators of professors and employees

of the Institute for Retraining and Advanced Training of Specialists in Physical Education and Sports and to study their impact on their physical condition.

Research objectives:

- To generalize and analyze the materials of the existing scientific and methodological literature on the physical fitness and physical fitness indicators of professors and employees.

- To study the state of physical fitness of professors and employees.

- To determine the effectiveness of the complex of special exercises developed to have a positive effect on the level of physical fitness of professors and employees through pedagogical experiments.

Research methods. During our scientific research, we used the following research methods:

– Generalization and analysis of materials from scientific and methodological literature;

– Pedagogical observation;

– Pedagogical experiment;

– Mathematical and statistical analysis.

The level of study of the problem. Based on the generalization and analysis of the available scientific and methodological literature and periodical materials on the topic, the results of scientific research by specialists on the level of health of people engaged in physical education and sports from 40 to 60 years of age and some aspects and structure of factors that have a positive impact on it [5, 8, 11] show that, firstly, the vast majority of programs used in practice, due to their structural structure or the use of various devices and equipment, are too dynamic and the volume of the performed load is excessive, which leads to fatigue or boredom of the participants during the training in a shorter time than in other cases. At the same time, it is noted that these two factors together can significantly reduce the likelihood of optimizing the performed loads and maximizing the capabilities of the participants. Therefore, there is a great need for studies that would allow quantitatively assessing the positive effect of the volume of physical loads in new, that is, planned programs, on the body of the participants, taking into account their functional state in a comprehensive and complete way. The results of such scientific studies will allow the formation of methodological approaches and practical recommendations for planning the volume of loads when organizing training using special exercises of varying complexity [5, 12].

Between the ages of 40 and 60, the human body undergoes a relatively rapid aging process, which is influenced by the external environment [2]. Such changes in the human body are a physiological process, and according to most researchers, they are not considered a disease in the broad sense, but they lead to a significant limitation of the body's functional capacity and a slight decrease in its resistance to external harmful factors. At the same time, the aging of the human body is a biologically degradative process, during which the body's adaptive capacity is increasingly limited, various pathological changes develop, and premature death of people may occur [9, 10].

The terms physiological and premature aging are widely used in scientific and methodological literature. Physiological aging is understood as the gradual development and natural onset of changes in aging, as well as the limitation of the body's ability to adapt to environmental conditions [8].

Various complex pathological processes that lead to rapid aging of people, the reasons for the early appearance of signs characteristic of aging at a young age are well known to specialists. Some diseases cause people to look older than their age. These include atherosclerosis, coronary heart disease, diabetes, hypothyroidism, obesity.

According to experts in the field I.Kh. Vakhitov, I.D. Sitdikova, L.E. Alyasheva [4], aging occurs early and late only due to biological reasons or always occurs on time, only death is untimely.

L.I. According to Slonimskaya [11], physiological aging of the body is understood as a very complex process that begins in natural conditions and develops slowly, limits the body's ability to adapt to the external environment and is accompanied by an increase in the likelihood of death.

R.E. Motylyanskaya [10] emphasizes that a healthy lifestyle is of particular importance as a factor in strengthening people's health, and as a result, human health is interpreted as a socio-psychological category.

In addition to factors such as regular medical examinations and awareness of their importance, proper nutrition, full and regular observance of personal hygiene rules, physical activity and physical training, giving up harmful habits, and strict adherence to a reasonable daily routine, people also pay attention to their healthy relationship with the environment and their level of health (values) during their activities, and it is emphasized that their importance is no less than the above-mentioned constituent components.

Pedagogical experiment. The pedagogical experiment was conducted from January 2024 to January 2025. It was conducted by the scientific laboratory of the

Institute for Retraining and Advanced Training of Specialists in Physical Education and Sports, with the participation of professors, teachers and employees of the institute: 12 people in the control group and 12 people in the experimental group.

While the control group's exercises were conducted traditionally, based on the program, great attention was paid to the use of a set of exercises developed by us in the experimental group's exercises.

Group form of training. In the process of forming groups for training, in accordance with hygienic requirements, the composition of each physical education exercise consisted of three parts: preparatory, main and final parts. In the preparatory part of the training (duration 10-15 minutes), a set of gymnastic exercises was performed to prepare the muscles and joints for the main part of the loads and exercises that stimulate the activity of the aerobic system. In the main part of the training (duration 35 minutes), microcycles that stimulate general fitness, aerobic dances and exercises to develop strength were performed (with additional weight of external objects, with your own weight, venous body, isometric) and flexibility exercises combined with stretching exercises to develop muscle groups to develop various strength and endurance were also used. The technique of physical exercises is suitable for participants in this group and is the best means of preventing joint diseases. In the final part of the training (duration 10-15 minutes), relaxation and recovery exercises, stretching elements (for stretching various muscle groups), and breathing exercises were performed. The opinions of the participants were also taken into account when selecting the exercises to be performed when drawing up the training program. Strength gymnastics exercises have their own characteristics and a variety of tools, while they help improve the functional state of the spine and respiratory system, physical fitness and mental state.

To develop the body's flexibility, a static stretching method (stretching) was used. In this case, the final position of the exercise should be held for 15-30 seconds.

In the course of our scientific research, the participants' body circumferences (Chest circumference - CA, Waist circumference - BelA, Pelvis circumference - TA, Thigh circumference - SA, Hip circumference - BA) were 1 mm. was carried out using a measuring tape with an accuracy of up to

Organization of pedagogical research.

The research was conducted in several stages:

Stage 1 (September 2023-January 2023) - study of literature sources on the problem through theoretical analysis and generalization. Conducting a questionnaire survey. Control and experimental groups were formed and the initial (at the beginning of the experiment) results were recorded on the selected tests.

Stage 2 (January 2024) - control tests and pedagogical observations were conducted.

Stage 3 - (January 2024 - February 2025) included the organization (retests) and conduct of the final part of the pedagogical experiment. The participants of the experiment (professors, teachers and employees of the institute aged 40-60) were conditionally divided into control (CG) and experimental groups (TG) of 12 people each. (February 2025-March 2025) - generalization, analysis and mathematical-statistical processing of the obtained experimental results, discussion, interpretation, drawing conclusions and formalization were carried out.

RESULTS AND DISCUSSION

Based on the results obtained at the beginning of the pedagogical experiment, anthropometric indicators of the subjects, their main statistical characteristics, and statistical reliability estimates based on the calculation of the critical values of the Student distribution of the relative differences and absolute differences of the arithmetic mean values of the results, it was possible to draw a conclusion that the experiment was methodologically correct [1].

The following tables (Table 1) show the statistical characteristics of the initial (test) and final (retest) indicators during the experiment, allowing to assess the effect of the 40-60-year-old participants belonging to the control and experimental groups on the individual indicators of their physical development, the relative differences of the arithmetic mean values of the results, and the statistical reliability estimates based on the calculation of the theoretical critical values of the Student distribution of the absolute differences.

Table 1.

Comparison of the dynamics of changes in anthropometric indicators of professors, teachers and employees of the Institute for Retraining and Advanced Training of Specialists in Physical Education and Sports in the control (CG, n=12) and

experimental (TG, n=12) groups during the experiment

Test	Group	Be experienced			Final experience			Everything		t	P
		$\overline{X}$	σ	B %	$\overline{X}$	σ	B %	AO	HO		
1.	НГ	95,21	7,74	8,13	94,03	7,36	7,83	1,18	1,24	0,41	>0,6
	ТГ	95,79	7,40	7,73	93,34	6,63	7,10	2,45	2,55	0,92	>0,3
2.	НГ	32,57	2,85	8,74	32,79	2,68	8,17	0,22	0,67	0,21	>0,7
	ТГ	31,86	2,91	9,12	31,14	2,62	8,41	0,72	2,25	0,69	>0,4
3.	НГ	24,36	1,78	7,31	24,49	1,67	6,82	0,13	0,55	0,20	>0,7
	ТГ	23,93	2,06	8,59	23,77	1,84	7,74	0,16	0,66	0,22	>0,8
4.	НГ	24,93	1,64	6,58	24,86	1,59	6,40	0,07	0,28	0,11	>0,9
	ТГ	24,21	1,93	7,97	23,93	1,71	7,15	0,28	1,17	0,41	>0,6
5.	НГ	72,36	3,54	4,90	73,16	3,34	4,57	0,80	1,11	0,62	>0,5
	ТГ	72,86	3,82	5,24	70,26	3,43	4,88	2,60	3,56	1,89	>0,05
6.	НГ	35,93	3,47	9,67	35,98	3,27	9,09	0,05	0,14	0,04	>0,9
	ТГ	36,57	3,20	8,76	35,92	2,92	8,13	0,65	1,78	0,56	>0,5
7.	НГ	35,64	3,08	8,64	35,79	2,89	8,07	0,15	0,41	0,13	>0,8
	ТГ	36,14	2,82	7,81	35,47	2,52	7,10	0,67	1,86	0,67	>0,5

Note: for convenience and conditionally, anthropometric parameters are defined in table 1 and diagram 1 as follows: 1- length of chest circumference at rest, cm.; 2- length of neck circumference, cm.; 3- the length of the left wrist circumference, cm.; 4- the length of the right wrist circumference, cm.; 5- Waist length, cm.; 6- the length of the circumference of the left calf, cm.; 7-right calf circumference length, cm.

The analysis of the data presented in the table made it possible to determine that the anthropometric parameters of the faculty and staff of the Institute of Retraining and Advanced Training of Physical Education and Sports Specialists of the control group did not change statistically reliably during the pedagogical experience (diagram in Fig. 1). In particular, the largest relative increase in this group during the experiment was observed in indicator 1, which amounted to 1.24%, and the smallest was in indicator 6, which amounted to 0.14%. The average relative difference of the studied indicators for this group was 0.63%.

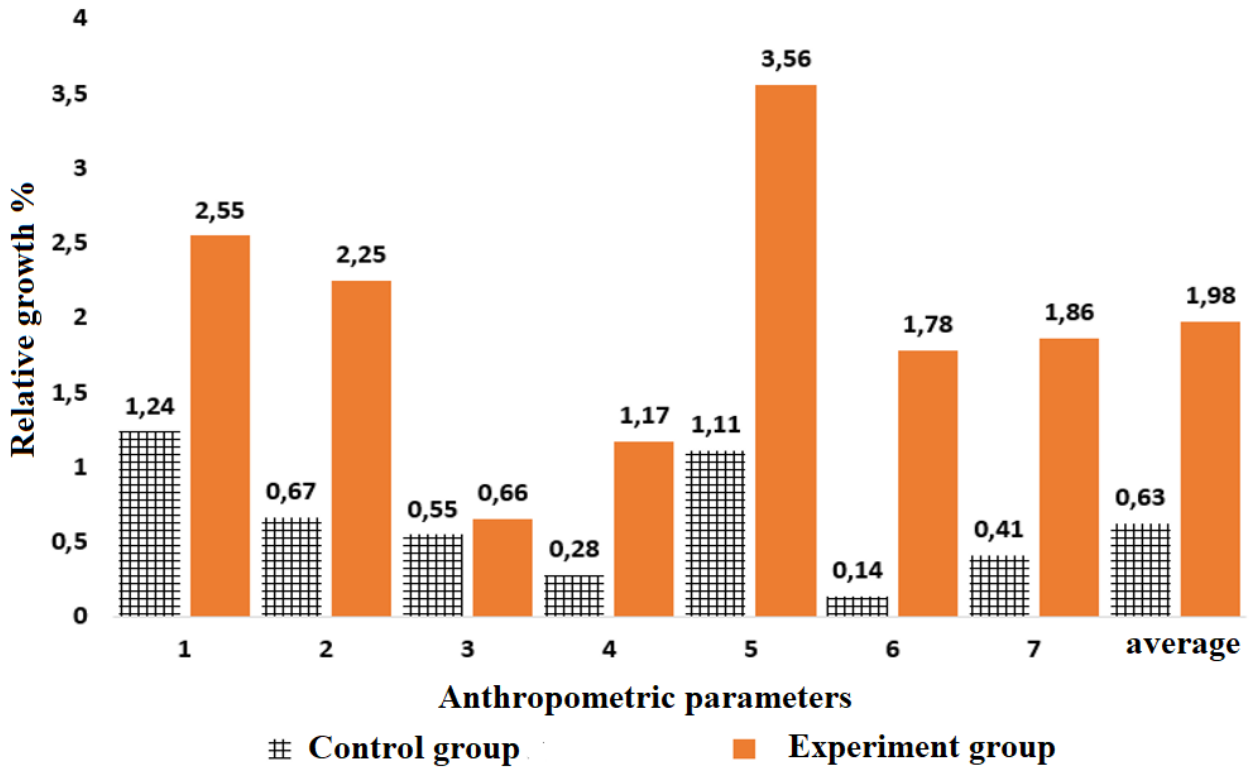

Figure 1. Diagram comparing the average arithmetic values of anthropometric indicators of 40-60-year-old female medical workers belonging to the control and experimental groups and their relative growth during the experiment (in percent)

It was possible to determine that the anthropometric indicators of the participants of the experimental group were better than those of the control group during the pedagogical experiment, but did not change statistically significantly. In particular, the largest relative increase in this group during the experiment was observed in indicator 5 and amounted to 3.56%, and the smallest was in indicator 3, which amounted to 0.66%. It was found that the average relative difference in the studied indicators for this group was 1.98% (1.35% more than in the control group, compared to 0.63%). Table 2 and the diagram in Fig. 2 present the statistical characteristics of the recorded indicators of the physical training of teachers and employees of the Institute of Retraining and Qualification of Physical Education and Sports Specialists, as well as data on the statistical reliability estimates based on the calculation of the critical values of the Student distribution of the absolute growth and the relative growth of the average arithmetic values of the results during the experiment.

Table 2.

Comparison of statistical characteristics of physical fitness indicators of professors and teachers of the Institute for Retraining and Advanced Training of Specialists in Physical Education and Sports in the control (CG, n=12) and experimental (TG, n=12) groups and changes during the experiment

Test	Group	Be experienced			Final experience			Everything		t	P
		$\overline{X}$	σ	B %	$\overline{X}$	σ	B %	AO	HO		
1.	ТГ	13,74	1,51	10,99	11,91	1,20	10,11	1,83	13,32	3,55	<0,01
	НГ	13,27	1,41	10,63	12,39	1,25	10,09	0,88	6,63	1,75	>0,05

2.	ТГ	9,08	1,18	12,95	7,63	0,93	12,14	1,45	15,97	3,62	<0,01
	НГ	8,75	1,11	12,69	8,06	0,98	12,16	0,69	7,89	1,74	>0,05
3.	ТГ	6,02	0,78	12,96	7,28	0,88	12,09	1,26	20,93	4,01	<0,001
	НГ	6,26	0,72	11,55	6,85	0,76	11,09	0,59	9,42	2,10	<0,05
4.	ТГ	2,98	0,39	12,99	3,53	0,43	12,12	0,55	18,46	3,57	<0,01
	НГ	3,14	0,39	12,52	3,41	0,41	12,14	0,27	8,60	1,77	>0,05
5.	ТГ	6,94	0,83	11,96	8,09	0,90	11,12	1,15	16,57	3,51	<0,01
	НГ	7,26	0,84	11,53	7,83	0,87	11,11	0,57	7,85	1,77	>0,05
6.	ТГ	122,97	13,49	10,97	145,98	14,79	10,13	23,01	18,71	4,30	<0,001
	НГ	127,87	14,03	10,97	138,97	14,05	10,11	11,10	8,68	2,09	<0,05
7.	ТГ	18,17	2,17	11,94	21,24	2,36	11,11	3,07	16,90	3,58	<0,01
	НГ	18,82	2,17	11,53	20,27	2,25	11,10	1,45	7,70	1,74	>0,05
8.	ТГ	2,94	0,38	12,93	3,43	0,42	12,13	0,49	16,67	3,25	<0,01
	НГ	3,06	0,38	12,55	3,32	0,40	12,14	0,26	8,50	1,75	>0,05

Note: For convenience and conditionally, in Table 3 and the diagram in Figure 2, the physical fitness indicators are indicated in the following order: 1- 60 m. running time, s.; 2- 3x10 m. running time, s.; 3- bending the arms while lying on the hands (times); 4- bending forward without bending the knees while standing, cm.; 5- hanging on the gymnastic wall and raising the legs until a right angle is formed, (times); 6- long jump from a standing position (cm.); 7- high jump from a standing position (cm.) and 8- bending forward while sitting with the legs together (cm.).

Generalizing and analyzing the data presented in this table, it can be seen that during the pedagogical experiment, the smallest relative increase in physical fitness indicators in the experimental group was observed in indicator 1, which was 13.32%, while the largest relative increase was observed in indicator 3, which was 20.93%. The average relative increase in the parameters studied during the experiment was 17.19% (9.03% or 2.11 times higher than the corresponding indicator of 8.16% in the NG) (see the diagram in Figure 2).

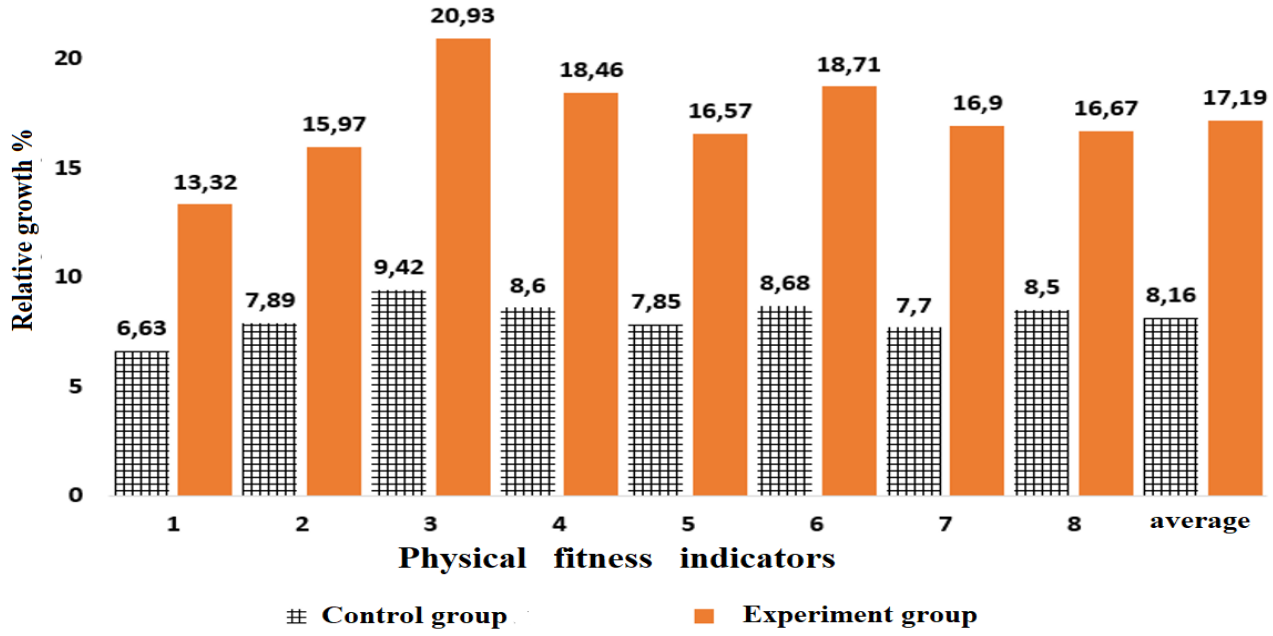

Figure 2. Diagram comparing the arithmetic mean values of physical fitness indicators of participants in the experimental and control groups and their relative growth during the experiment (in percent)

At the same time, it was found that the absolute increases in the mean arithmetic values of the anthropometric indicators of the TG participants during the experiment were statistically insignificant in 7 of them (between t=1.74 and t=1.77 and P> 0.05) and statistically significant in one of them (between t=2.10 and P< 0.05), while 2 of them were statistically significant at a high level of significance (between t=4.01 and t=4.30 and P< 0.001) and the remaining six were statistically significant at a good level of

significance (between t=3.25 and t=3.62 and P< 0.01).

During the pedagogical experiment, analyzing and comparing this table, diagram and the above data, it was observed that the average arithmetic values of the recorded physical fitness indicators of the professors, teachers and employees of the Institute for Retraining and Advanced Training of Specialists in Physical Education and Sports of NG and TG differed by at least 1.96 times and at most 2.22 times during the experiment, and the advantage in this was on the side of TG. It was found that the average relative increase in the average arithmetic values of the indicators of NG and TG differed by 2.11 times.

CONCLUSIONS

Generalization and analysis of the available scientific and methodological, special literature and periodical materials, as well as analysis of the results obtained in the process of pedagogical experiment made it possible to draw the following conclusions:

- currently, the preservation and strengthening of health, the prevention of various diseases, the improvement of physical education and health-improving work with the population are of particular social importance;

- the basis for further health-improving work of professors, teachers and employees should be increased physical activity, self-awareness in all spheres of life, leading to a healthy lifestyle;

- the indicators of physical fitness of the participants of the TG during the pedagogical experiment showed that the smallest relative increase in the experimental group during the pedagogical experiment was 13.32%, while the largest relative increase was 20.93%. The average relative increase in the parameters studied during the experiment was 17.19% (9.03% or 2.11 times more than the corresponding indicator of 8.16% in the NG).

- It was found that the absolute increases in the average arithmetic values of the anthropometric indicators of professors and employees during the experiment were statistically insignificant (P > 0.05) in NG and statistically significant (P < 0.05) in TG, while 2 in TG were statistically significant (P < 0.001) and the remaining six were statistically significant (P < 0.01).

- During the pedagogical experiment, it was observed that the relative increases in the average arithmetic values of the physical fitness indicators recorded by professors and employees of the NG and TG institutes differed by at least 1.96 times and at most 2.22 times, with the advantage in this being on the side of TG. The fact that the average relative growth of NG and TG indicators differs by 2.11 times from the average arithmetic values is proof of the effectiveness of the tools and methods used in TG.

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