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EFFECTIVENESS OF APPLYING THE METHODOLOGY FOR DEVELOPING PHYSICAL FITNESS TRAINING AMONG STUDENT YOUTH

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ABOUT ARTICLE

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Abstract: In this article, during the pedagogical experiment, training sessions were organized for the participants of the experimental group based on a program aimed at developing the physical fitness of university students with the help of a specially developed complex of exercises. In order to perform the leg's push-off movement closer to the body's common center of gravity — i.e., the pelvic-hip joint — when executing various running movements, it is necessary to develop the leg's tendon reflex. For this reason, taking into account students' academic test requirements, a complex of exercises to be performed with a large amplitude was developed and applied in practice, with the aim of ensuring effective performance in short-distance running, long jump, and throwing exercises. Based on the results obtained, the effectiveness of the developed complex of exercises and the degree of formation of students' level of physical fitness are revealed.

Introduction. Improving students' physical fitness is, first and foremost, a process aimed at the comprehensive and specialized physical development of the athlete. General physical training refers to the harmonious development of student youth — that is, strengthening the body's organs and systems through the development of motor muscles, increasing their functional capabilities, improving the ability to control movement, and raising

physical qualities such as strength, speed, endurance, agility, and flexibility, as well as correcting deficiencies in posture and body build. To achieve this, it is necessary to regularly influence, by physical means, the organs and systems of the athlete's body that take part in various forms of motor activity — indeed, every part of the body. For this purpose, using exercises from the three groups mentioned above, especially those intended to develop general physical fitness, can produce good results. Special physical training should be aimed at developing the physical qualities required by the particular sport in which one specializes, and at developing to a high degree all the functional capabilities of the body along with all of its organs and systems. For this, naturally, both general and special exercises specific to the chosen sport are used. In the training sessions of any student engaged in physical education and sport, strength-developing exercises are certainly employed. However, attention must be paid to developing the muscle groups that are most important for performing exercises in the chosen sport.

Methodology. To improve the display of muscular strength in the chosen sport, methods involving large and maximal tension are used. Strength is increased by performing specially selected exercises repeatedly with large and maximal force (at 75–100% of maximum intensity). Increasing students' endurance is one of the necessary training qualities not only for participating in competitions but also for carrying out large volumes of training load. It depends on the readiness of the athlete's organs and systems (particularly the central nervous system, heart, blood vessels, and respiratory system, as well as the muscular apparatus), on the degree of mastery of sports technique, and on the ability to perform movements economically.

Results and Discussion. Endurance is divided into general and special types. General endurance is a structural component of the overall physical development of any student-athlete, and it primarily brings about significant positive changes in the central nervous system, the cardiovascular system, the respiratory system, and other systems. Depending on the chosen sport, special endurance is formed in student youth. In the annual training sessions conducted with student youth, general endurance is developed through almost all physical exercises. Certain specialized training sessions in particular events of athletics also increase general endurance. However, the best means of increasing general endurance is the use of exercises such as cross-country running, swimming, and other sports performed over a long duration at moderate intensity. There is a difference in the methodology for developing special endurance among student youth depending on the sport they practice or the distance they run. This is determined primarily by the physiological characteristics related to running intensity and the duration of the running rhythm, which bring about changes in the various organs, systems, and

the organism as a whole in young athletes. It is particularly important here to take into account the growing demand for oxygen and the characteristics of its consumption. It is known that the working capacity of the organism, and especially of the nerve tissue of the brain, is linked to oxygen consumption. When the body lacks oxygen — particularly during prolonged work — working capacity declines. For this reason, this capacity also depends on the level of development of the respiratory and cardiovascular systems, which supply the body with oxygen. Based on the data obtained from the subjects of the experimental group, we developed a training complex aimed at raising the level of physical fitness during the course of academic training sessions. In the content of these training sessions, in order to perform the leg's push-off movement closer to the common center of gravity — i.e., the pelvic-hip joint — when performing various running movements, it is necessary to develop the leg's tendon reflex. For this reason, taking into account students' academic tests, a complex of exercises to be performed with a large amplitude was developed for the purpose of ensuring effectiveness in short-distance running, long jump, and throwing exercises. For events requiring endurance, a complex of exercises performed with a small amplitude was used instead. The results obtained are presented in Tables 1, 2, 3, and 4.

Table 1. Statistical characteristics of the physical fitness indicators of the experimental group subjects at the end of the experiment (n = 25)

No.	Full Name	100m run (sec)	4×10m shuttle run (sec)	3000m run (min.sec)	Standing long jump (cm)	Push- ups (times)	Rope jump, 1 min (times)	Pull- ups (times)
1	Abdurasulov Islombek	12,7	8,9	748	245	62	151	14
2	Abdurashidov Elyor	13,3	9,6	752	242	52	107	11
3	Abdullayev Javlonbek	13,9	9,1	766	239	49	124	14
4	Axmedov Ma'ruf	13,2	9,6	683	249	57	148	16
5	Bozorov Sherzod	12,8	9,2	728	229	43	143	13
6	Gadoyev Azizjon	12,2	8,9	649	256	62	157	17
7	Jumayev Doniyor	11,9	9,2	652	239	63	159	16
8	Malikov Jahongir	12,7	9,1	724	251	61	153	15
9	Mardonov Laziz	13,1	9,4	793	231	43	136	12

No.	Full Name	100m run (sec)	4×10m shuttle run (sec)	3000m run (min.sec)	Standing long jump (cm)	Push- ups (times)	Rope jump, 1 min (times)	Pull- ups (times)
10	Nazarov Shohruxjon	13,6	9,8	847	226	59	133	11
11	Nosirov Ahrorbek	12,8	8,9	665	243	52	142	13
12	Panjiyev Doston	12,6	9,2	683	244	55	154	11
13	Qo'ldoshev Abrorxon	13,8	9,6	728	228	44	148	12
14	Rahmatov Abdulaziz	12,5	8,9	721	246	57	149	14
15	Rixsixo'jayev Ismoilxo'ja	12,3	9,2	797	257	45	141	12
16	Ravshanov Davron	13,4	8,9	743	239	39	136	11
17	Soliyev Sardor	11,7	9,1	718	253	51	153	14
18	Tillaboyev Abdulaziz	13,6	9,8	892	242	39	109	10
19	Toshpo'latov Muhammadqodir	12,7	8,8	793	251	65	152	13
20	Toshmamatov Sayfiddin	13,3	9,2	838	252	51	145	14
21	Valiyev Amrullo	12,2	9,1	769	241	56	136	12
22	Yavkashev Shahzod	13,5	9,6	826	232	45	126	10
23	O'roqov Elnur	13,3	9,8	822	244	49	145	11
24	Abdumanapov Boxodir	12,9	8,9	793	241	56	133	13
25	Yuldashev Muslim	13,8	9,2	784	228	47	114	9
	$\bar{X}$	12,95	9,24	756,56	241,92	52,08	139,76	12,72
	σ	1,31	0,84	84,34	29,34	6,83	15,56	1,54
	V, %	10,12	9,13	11,15	12,13	13,11	11,13	12,12

Table 2. Dynamics of change in the statistical characteristics of the physical fitness indicators of the experimental group subjects during the pedagogical experiment

	Experimental group			Control group						
No.	$\bar{X}$	σ	V, %	$\bar{X}$	σ	V, %	Abs.	%	T	P
1	13,88	1,53	10,98	12,95	1,31	10,12	0,93	6,71	2,32	<0,05
2	10,29	1,03	9,98	9,24	0,84	9,13	1,05	10,19	3,94	<0,001
3	847,36	101,53	11,98	756,56	84,34	11,15	90,80	10,72	3,44	<0,01
4	216,28	28,09	12,99	241,92	29,34	12,13	25,64	11,86	3,16	<0,01
5	45,16	6,31	13,97	52,08	6,83	13,11	6,92	15,32	3,72	<0,001
6	121,28	14,54	11,99	139,76	15,56	11,13	18,48	15,24	4,34	<0,001
7	10,88	1,41	12,98	12,72	1,54	12,12	1,84	16,91	4,40	<0,001
								12,42 %		

Table 3. Level of physical fitness of the control group subjects at the end of the experiment (n = 25)

No.	Full Name	100m run (sec)	4×10m shuttle run (sec)	3000m run (min.sec)	Standing long jump (cm)	Push- ups (times)	Rope jump, 1 min (times)	Pull-ups (times)
1	Abduvohidov Behzod	11,9	9,4	732	240	54	146	11

No.	Full Name	100m run (sec)	4×10m shuttle run (sec)	3000m run (min.sec)	Standing long jump (cm)	Push- ups (times)	Rope jump, 1 min (times)	Pull-ups (times)
2	Asatullayev Aziz	12,6	10,2	746	245	63	157	16
3	Eliboyev Elbek	13,9	10,4	891	230	52	114	12
4	Eshmatov Mahmud	13,1	10,3	865	233	49	133	10
5	Eshmanov Samandar	13,3	10,6	847	241	61	145	13
6	Fayziyev Sherbek	13	9,7	852	237	46	134	12
7	Ibrohimov Akbarshoh	12,8	10,1	784	226	53	153	11
8	Ismoilov Mirzabotir	14,1	9,8	883	219	56	136	10
9	Jo'raqulov Azamat	13,9	10,4	856	238	44	109	11
10	Kenjayev Allayor	12,4	9,4	782	251	39	161	13
11	Komiljonov Ollayor	13,4	9,8	774	228	37	98	9
12	Mamadiyorov Asqar	12,9	9,5	817	249	42	154	12
13	Mamayusupov Humoyun	13,6	9,7	782	216	52	143	11
14	Mamidov Farrux	14,3	10,4	844	223	39	97	12
15	Narzullayev Nazarbek	13,2	9,3	807	239	43	153	13
16	Nuraliyev Behruz	12,9	10,8	774	204	37	136	11
17	Obidov Ravshan	13,9	9,6	882	200	48	124	9
18	Otamurodov Samandar	12,8	10,1	851	231	52	143	12
19	Rahmatov Komiljon	13,1	10,5	881	222	36	97	10
20	Temirov Elbek	13,6	9,8	751	226	43	104	11
21	To'layev Safarbek	14,2	10,5	892	203	56	118	14
22	Halilov Jumabek	13,1	9,8	822	217	49	143	12
23	Xolbuvayev Farhod	13,9	10,1	736	226	43	152	14
24	Zokirov Qamariddin	13,6	10,4	842	239	39	106	9
25	Abduhakimov Salohiddin	12,7	9,6	763	250	61	147	10
	$\bar{X}$	13,29	10,01	818,24	229,32	47,76	132,12	11,52
	σ		0,91	91,14	27,78	5,41	14,68	1,40
	V, %	10,16	9,13	11,14	12,11	11,33	11,11	12,12

Table 5. Dynamics of change in the statistical characteristics of the physical fitness indicators of the control group subjects during the pedagogical experiment

	At the start of the experiment			At the end of the experiment						
No.	$\bar{X}$	σ	V, %	$\bar{X}$	σ	V, %	Abs.	%	T	P
1	13,98	1,48	10,57	13,29	1,35	10,16	0,69	4,92	1,72	>0,05
2	10,48	1,00	9,58	10,01	0,91	9,13	0,48	4,54	1,75	>0,05
3	864,60	99,96	11,56	818,24	91,14	11,14	46,36	5,36	1,71	>0,05
4	209,60	26,35	12,57	229,32	27,78	12,11	19,72	9,41	2,58	<0,05
5	44,08	5,98	13,57	47,76	5,41	11,33	3,68	8,35	2,28	<0,05
6	118,48	13,72	11,58	132,12	14,68	11,11	13,64	11,51	3,39	<0,01
7	10,64	1,34	12,59	11,52	1,40	12,12	0,88	8,27	2,27	<0,05

At the end of the pedagogical experiment, final control tests were carried out to determine the effectiveness of the applied training complex. According to these tests, the average result of the experimental group subjects in the 100m run — which reflects speed-strength quality — improved to 12.95 ± 0.00 seconds by the end of the experiment. This indicator can be expressed as 13.29 ± 0.00 seconds for the control group. In the next test, the 4×10m shuttle run, which reflects speed-strength endurance, the experimental group recorded 9.24 ± 0.84 seconds, while the control group's result was observed to equal 10.01 ± 0.91 seconds. In the 3000m run test for special endurance, the experimental group showed 756.56 ± 84.33 minutes-seconds, whereas the control group's result for this indicator was recorded at 818.24 ± 91.14 minutes-seconds during the pedagogical experiment. In the standing long jump test, which determines the leg's speed-strength quality, the final result in the experimental group amounted to 241.92 ± 29.34 cm, compared with 229.32 ± 27.78 cm in the control group. In the push-up test used to assess arm strength, the experimental group improved its results to 52.08 ± 6.83 repetitions, while the control group's indicator was 47.76 ± 5.41 . In the one-minute rope-jumping test, the experimental group achieved 139.76 ± 15.56 jumps, while the control group's indicator was observed to equal 132.12 ± 14.68 jumps. In our final test, the pull-up result in the experimental group amounted to 12.72 ± 1.54 repetitions, while the control group showed an improvement to 11.52 ± 1.40 repetitions. Comparative analysis of the results obtained shows that the training complex developed for the experimental group subjects allowed for the uniform formation of student youth's physical fitness and improved their daily lifestyle. These research findings therefore demonstrate that developing the tendon reflex while running

various distances or performing movements lays the foundation for the experimental group to effectively carry out various motor actions in their daily lives.

Conclusions. The results of the pedagogical experiment conducted made it possible to draw the following conclusions:

— The analysis of the literature on developing student youth's physical fitness shows that, in the course of this research, it was found that insufficient scientific research has been carried out aimed at raising the level of development of student youth's physical fitness.

— It is necessary to involve student youth in physical education and sport as an effective way of spending their free time, since physical education and sport play a major role in shaping their daily lifestyle — contributing in particular to their harmonious development, raising their level of health, and improving their day-to-day lifestyle.

— Applying, in training sessions conducted with student youth, a complex of exercises that develops the tendon reflex creates a foundation for increasing physical fitness and improving functional condition.

At the end of the pedagogical experiment conducted, the average relative increase in the mean arithmetic values of the seven physical fitness indicators recorded by the subjects of the experimental and control groups amounted to 7.48% in the control group, whereas the same indicator in the experimental group amounted to 12.77% (a positive change 5.29 percentage points higher than the control group's indicator). Regarding these indicators, among the statistical reliability values of the absolute differences of the results, one was reliable at a good level of significance (at $t = 3.39$ and $P < 0.01$), a further three were reliable at a satisfactory level of significance (in the range $t = 2.27$ to $t = 2.58$, at $P < 0.05$), and the remaining three (in the range $t = 1.71$ to $t = 1.75$) were statistically unreliable at their respective levels of significance. By contrast, of the changes in these seven test results in the experimental group, four were statistically reliable at a high level of significance (in the range $t = 3.94$, $t = 3.72$, and $t = 4.40$, at $P < 0.001$), while the remaining three were reliable at a good level of significance (in the range $t = 3.16$ to $t = 3.44$, at $P < 0.01$). These facts confirm the effectiveness of the means and methods applied in the experimental group compared with those applied in the control group during the course of the pedagogical experiment.

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