



## Development Of Strength Physical Qualities Of Students Based On Rotary Movement Exercises

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### ABSTRACT

In the article, it has been proven that the strength based on rotational movement exercises has a reliable effect compared to the physical exercises specified in the training program for the development of physical qualities.

### Keywords:

qualities of physical strength, program of circular movements, program of educational processes, strength of stature.

**Relevance of the topic.** In world practice, a lot of scientific and research work has been carried out on some components that make up innovative educational technologies in the educational process of students studying in higher education institutions, that is, the organization of the educational process taking into account the readiness of students, obtaining and controlling results. Issues of physical development and improvement of physical fitness of students of higher education institutions have been researched. In particular, with the help of special exercises, the issues of forming the correct height, increasing the mobility of the joints, maintaining active work ability, and improving physical fitness indicators at different ages have been scientifically substantiated by researchers. However, few researches have been conducted on the problems of increasing the physical quality of strength training through circuit training.

Today, based on the social conditions in the world, it is important to scientifically substantiate research aimed at improving movement skills and strength physical qualities in students using circuit training.

In our republic, increasing the level of development of physical fitness and physical qualities of students, improving their health, with the help of a differentiated circular training methodology in physical education classes is one of the urgent problems. In the development of physical education and sports, "we should pay great attention to mass sports, not limited to achievements in the field of higher sports"[1,2]. Currently, the number of hours allocated to training in "Physical Education" curriculum in higher education institutions is regularly decreasing. In the existing scientific researches, the specific features of training methods for the development of physical qualities of students are not fully taken into account. issues such as management are still relevant [3,4,5].

The object of research is the process of physical education of students of higher educational institutions.

The subject of the study is physical education of students of higher educational institutions qualities.

The purpose of the research is to study the physical agility qualities of students of higher educational institutions.

The concept of power qualities. Strength is defined as a person's resistance to the external environment due to a reduction in muscle strength. Strength is the most important physical quality in all sports. Therefore, athletes attach great importance to its development.

During sports or professional activities that involve holding, lifting, or lowering a heavy load, the muscles contract or shorten against resistance. Such work is called overcoming. Muscles can also be stretched when they are strained while overcoming some resistance, such as when lifting a very heavy load. In this case, their work is called bystander. Both of these are called dynamic force.

The mode when the movement speed of the body parts on the simulators is given is called isokinetic (swimming, rowing). If the movements are performed by the athlete without the use of force, without a change in the length of the muscles, then we are talking about the static mode. Such a force is called static. There is an inverse relationship between strength and muscle contraction speed.

Mental mechanisms of this quality (power) are related to the management of tension in different modes of their work:

- in isometrics - muscle length does not change;
- in myometrium - shortening of muscle length;
- in plyometrics - increasing the length of a muscle when it is stretched.

This routine involves sitting down and raising the arm while shooting the ball.

The following types are distinguished in the pedagogical assessment of human strength qualities: maximum isometric (static strength) is an indicator of strength that is impossible to maintain for a certain period of time; slow dynamic (vertical lifting power without jerking) which is impossible when moving large objects from place to place (at this time, the speed of moving is not of practical importance); "explosive" strength - overcoming resistance in a short period of time without high muscle tension.

In sports practice, explosive power is manifested in various movements and is named differently: jumping (when pushed off the ground); tension (when hitting the ball); amortization force of muscles q It is

characterized by the development of stress when working in the side-pressing mode over time, for example, landing on the support in various forms of jumping. Strength endurance is assessed by maintaining the required strength of movement for a long time.

Power endurance in dynamic work and static endurance (keeping the body in a state of low movement, etc.) are distinguished. Recently, another characteristic of power has developed - the ability to switch from one mode to another while maintaining the apparent power tension. Special training is required for this.

According to their description, all exercises that help to develop strength are divided into the following main groups: general, regional and local effects on muscles. The directions of impact of stress (powerful) exercises are mainly determined by:

- with the type and appearance of exercises;
- with the magnitude of aggravation or resistance;
- with the number of repetitions of exercises;
- with the speed of performing mitigating or mitigating actions;
- with the speed of performing exercises;
- with the length and description of the rest time between attempts.

Quick-Strength occurs when performing quick movements against relatively small resistance. Weight-bearing exercises and jumping exercises are used to develop rapid strength.[6,7]

Strength and methods of its development: the physical quality "strength" is understood as the ability of a wrestler to overcome the opponent's resistance or resist him due to muscle tension.

Strength is the ability of a person to overcome external resistance or resist it due to muscle tension. The distinction between absolute and relative strength is accepted, the first describes the upper strength of a person, and the second - the strength obtained in relation to his weight. Absolute strength increases with increasing body weight, while relative strength, on the contrary, decreases with each kilogram of weight.

It is necessary to understand the manifestation of quick-power ability - not as a derivative of strength and quickness, but as an independent

quality. A change in the component composition towards an increase in the muscle component and a decrease in the fat component is an indicator of improvement in physical development. The large amount of fat in the body of women compared to men is one of the factors that prove that they have less mobility. The cumulative effect of training in the form of a decrease in the fat component is quickly achieved even during the same period of work. Organization of research: experimental research on improvement of physical qualities of students of Fergana State University was organized. Experiments were carried out in physical culture classes of students, in training sessions of students with different levels of physical qualities. At the beginning of the academic year, control tests were conducted in

order to find out the state of development of physical qualities of students. Based on the information obtained from control exercises aimed at the development of physical qualities, changes in comparison with previous training were hypothesized. Therefore, these experiments were planned on the basis of training aimed at developing the physical qualities of the students in the experimental group [7,8,9].

Of the total 161 students selected for the experimental group, 81 were girls and 80 were boys. A total of 75 students (37 girls, 38 boys) were selected for the control group.

The indicators of students in terms of initial physical qualities are presented in the following tables.

Table 1

Strength quality indicators of control and experimental group students with different physical development at the beginning of the pedagogical experiment

Назорат тестлар	Гажриба гуруҳи Қиз болалар n=81, Ўғил болалар n=80			Назорат гуруҳи Қиз болалар n=37, Ўғил болалар n=38			Нисбий ўсиш, %	t	P
	$\bar{X}$	$\sigma$	V %	$\bar{X}$	$\sigma$	V %			
Қиз болалар									
Паст турникда (90см) тортилиш (марта)	5,30	0,62	11,70	5,19	0,58	11,18	2,08	0,94	>0,05
Тренажёрда белларни букиб ёзиш (марта)	8,20	0,87	10,61	8,30	0,92	11,08	1,22	0,56	>0,05
Тренажёрда оёқларни букиб ёзиш (марта)	7,40	0,93	12,57	7,50	0,92	12,27	1,35	0,55	>0,05
Ўғил болалар									
Турникда тортилиш (марта)	8,50	1,01	11,88	8,74	0,98	11,21	2,82	1,23	>0,05
Штангани белгача кўтариш. Шахсий вазнинг 50 % даги оғирликдан бажаради (марта)	15,80	2,04	12,91	15,40	1,95	12,66	2,53	1,03	>0,05
Штанга билан ўтириб туриш. Шахсий вазнинг 50 % даги оғирликдан бажаради (марта)	13,70	1,47	10,73	13,50	1,42	10,52	1,46	0,71	>0,05

The difference between the performance of the experimental and control group students in the quality control tests was as above. Pulling on the low bar was 5.30 times on average among female students of the experimental group, and 5.19 times (difference of 0.11 times) among female students of the control group. The experimental group of female students of bending the waist on the simulator showed an average of 8.20 times, the control group showed an average of 8.30 times (difference of 0.1 times). The experimental group of female students did 7.40 times on average, the control group did 7.50 times on average (difference 0.1 times).

The average of boys in the experimental group of pull-ups on the horizontal bar

8.50 times, boys in the control group averaged 8.74 times the result (difference 0.24 times). Lifting the barbell to the waist was an average of 15.80 times in the experimental group

of male students, and 15.40 times in the control group of male students (difference 0.4 times). Barbell sit-ups averaged 13.70 times in the experimental group student boys and 13.50 times (difference 0.2 times) in the control group student boys.

The effectiveness of the observed changes was that the content of the physical exercise sessions was determined taking into account the individual characteristics of the students, which ensured the development of the physical qualities and physical fitness of the students.

During the pedagogical experience with students, personal body weight, exercises with various objects and pairs were widely used. In each session, the students' functional status was monitored according to objective and subjective indicators. The indicators of students in terms of initial physical qualities are presented in the following tables

Table 2

The dynamics of changes in the strength quality indicators of female students of the experimental and control groups with different physical development during the pedagogical experience

Назорат тестлар	Тажриба бошида			Тажриба охирида			Нисбий ўсиш, %	T	P
	$\bar{X}$	$\sigma$	V %	$\bar{X}$	$\sigma$	V %			
Тажриба гуруҳи қиз болаларn=81									
Паст турникда тортилиш (марта)	5,30	0,62	11,70	5,63	0,64	11,37	6,23	3,33	<0,01
Тренажёрда белларни букиб ёзиш (марта)	8,20	0,87	10,61	8,66	0,88	10,16	5,61	3,35	<0,01
Тренажёрда оёқларни букиб ёзиш (марта)	7,40	0,93	12,57	7,88	0,93	11,80	6,49	3,28	<0,01
Назорат гуруҳи қиз болаларn=37									
Паст турникда тортилиш (марта)	5,19	0,58	11,18	5,47	0,59	10,79	5,39	2,06	<0,05
Тренажёрда белларни букиб ёзиш (марта)	8,30	0,92	11,08	8,67	0,94	10,84	4,46	1,71	>0,05
Тренажёрда оёқларни букиб ёзиш (марта)	7,50	0,92	12,27	7,84	0,82	10,46	4,53	1,68	>0,05

When the results of the physical fitness indicators of the female and male students involved in the study were checked at the beginning and at the end of the study, the physical fitness indicators of the female students increased by 5.72% and the boys by 6.07%. It is significant that it has increased compared to the beginning of the study.

**Conclusions:** The results of the experimental group showed that the physical fitness of female students at the beginning of the experiment showed an average of 8.20 repetitions of back-bends on the simulator, while the physical fitness of female students in the experimental group who regularly performed the recommended exercises showed an average of 8.66 ( $R < 0.01$ ), at the beginning of the experiment, in the exercise of lifting the barbell up to the waist with a weight of 50% of the personal weight, the student boys performed an average of 15.80 (times) at the beginning of the experiment. , increased by 63 times ( $R < 0.05$ ).

The physical fitness of the control group of female students, who were engaged in training according to the plan of the school, the experiment on bending the legs in the exercise machine gave incredible results ( $R > 0.05$ ).

Taking into account that the physical quality of strength is developed in students of higher educational institutions based on the rotational exercise program, we recommend to include the method developed by us in the educational process program.

## Literature

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