© Eurasian Journal of Sport Science 2021; 1(2): 66-78
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Features of the development of strength qualities during the training of cyclists

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Abstract
Purpose: As known, among the main physical qualities, the strength training of cyclists is of the most important practical importance. In this case, strength is defined as the ability to overcome or resist external resistance through muscle tension. In addition, the development of this physical quality is largely associated with age. Based on this, the purpose of the scientific article is to develop a methodology for developing the quality of endurance strength with the help of special weightlifting exercises chosen by cyclists on its basis and in research.
Methods: A specially developed training program is included in the training plan of bicycle trackers (3 times a week). Before the start of the study, the prescribed norms were observed. After the study, the differences were studied. From the exercises, the number of attempts and intensity were selected mainly according to the methods of counting. the amount of training was calculated based on the number of barbell lifts (NBL) in weekly cycles.
Results: A comparative analysis of the results showed that during the experiment, the participant determined that the arithmetic mean of the positive change in the results of this exercise was 1.90 seconds, the arithmetic mean of the relative change was 3.04%. At the same time, the results showed that the arithmetic mean of the group participants changed statistically significantly during the experiment ($t=1.85$ and $R>0.05$). This, in turn, shows that the method we use gives a positive effect.
Conclusion: Prior to the study, an analysis of local literature showed that cyclists were determined to develop strength qualities through weightlifting exercises, regardless of whether training or programs were conducted at that time. In the annual cycle of training cyclists in the climatic conditions of Uzbekistan, the development of strength qualities falls on January, December of the year. Taking into account the climatic conditions and age characteristics of cyclists, the study developed a training program for the development of cyclists in the style of weightlifting exercises in a closed gym and overcoming the resistance of the muscles of the legs, waist, arms and shoulders on simulators.

Keywords: Development of strength qualities, training of cyclists, comparative analysis, highly effective sports exercises in weightlifting, annual cycle of training cyclists.

Introduction

As known, strength is a basic physical quality that is directly related to the level of human biological development. The effect of training, which has the property of strength, causes functional and metabolic changes that are pronounced in the body of those engaged, leads to a much greater load on all organs and systems. It can be seen from this that the ability of athletes and athletes of different ages to master the power loads of their composition and adequately respond to them is not the same.

With the development of sports in adolescents, the age-related aspects of the development of physical qualities, including, first of all, strength, have been enriched by scientific developments. The justification of the fact that adolescent children can study in classes with weights dictated the conduct of serious research (Arhipov et al., 2007; Dvorkin, 2006; Dvorkin et al., 2000; Kalmikov, 1994; Marchenko et al., 1988).

Dvorkin LS it is noted that purposeful training, which is carried out with weights that have the property of strength, has a positive effect on the functional state of the cardiovascular system in athletes aged 15-16 years, contributes to its adaptation to physical exertion, as well as to the body as a whole (Matkarimov, 2020).

In the annual cycle of training cyclists in the climatic conditions of Uzbekistan, the training of strength qualities falls on January, December of the year. During these months, cyclists develop the strength qualities of the muscles of the legs, waist, arms and shoulders in the technique of overcoming resistance, mainly in weightlifting exercises and on simulators in indoor sports facilities. But before this period, not a single methodological manual or article on preparing meals for cyclists was published in our republic. This creates many problems in the training of young cyclists for many years. For example, coaches who are engaged in cycling, weightlifting and train in the gym make many mistakes when performing exercises. This leads to a state of tension and extreme tension of the body of young athletes, as well as a sharp decrease in the dynamics of sports results. In this regard, the topic we have chosen is one of the most urgent problems of today.

Many scientific and methodological works on cycling have been created in Uzbekistan, including Chernikova EN, Karimov II, Halmuradov OY co-author of the book "Theory and methodology of cycling", Minakov SM and LI Abrakamova's textbook "Features of the period of training of highly qualified cyclists", II Karimov's master's thesis "Improving the process of training young cyclists at the initial preparatory stage" and textbooks on improving pedagogical skills in cycling, as well as in weightlifting, the book by Matkarimov RM and Pakova AV "Planning of training loads during the preparation and competition of weightlifters of the mass category" (methodological guide), Matkarimov RM "Division of weightlifting among young people", Matkarimov RM, Yunusov SA, Khodjaev AZ "Technology of using additional exercises at the stage of becoming a master of sports", RM Matkarimov's textbook "Weightlifting" is also from this list.

But there was no detailed information about strength training in cycling, about the subjects of developing strength qualities with the help of weightlifting exercises or about dissertations.

Aim of the experiment to study the cyclist's annual training plan, using the selected special weightlifting exercises, it is necessary to develop a methodology for developing the endurance and strength qualities of cyclists and base them on research.

Goals of the experiment:

1. On the basis of theoretical and practical knowledge, the study of the structural features and content of training processes in the strength training of cycling students was carried out.

2. Identify weightlifting exercises that teach cyclists the qualities of strength, and develop a training program that develops the quality of strength.

3. Test and base your Cycling students on the experience of a style designed to improve their strength qualities through weightlifting exercises.

Methods

The analysis of scientific and methodological literature is carried out in order to determine the factors that increase the efficiency of movement on a bicycle path in control and measurement training. The method of theoretical analysis included the study of scientific and methodological literature and the processing of the results of the entire study. The theoretical analysis was expressed in the search for the problem, its goals and objectives, the object and subject of research, the logical construction of a scientific article, the method of collecting factual material, a theoretical review of the ways of interpreting the collected materials. In this scientific article, the opinions of mature specialists in the field of theory and practice of physical education, scientific, theoretical and practical information of specialists in cycling, weightlifting were effectively used. The dissertation, authorship, article, educational and methodological manuals on the topic of this article are analyzed. In total, 12 scientific and methodological sources were studied, 3 of which are foreign, and 9 are local literature.

Pedagogical observations were carried out in January and December at all stages of training in the preparation process and at the stages of strength training of cyclists on the track. In the course of pedagogical observations, students of the cycling specialty studied the stage of strength training and control and measuring exercises, the volume of training, the duration of movement along the bicycle-highway corridor during competitions.

During the training process, the following indicators were recorded and analyzed: the program of special strength training of cyclists from January to December, as well as the methods and means used; it was studied whether the applied loads affect the special performance of the athlete. In the control and measurement training, the rationality and reliability of strength training and the performance of movements by athletes, control was achieved. The data obtained as a result of pedagogical observations were recorded and analyzed. The results of the observations showed that the degree of dependence of the bicycle chassis on the dynamics of the growth of strength qualities during competitive exercises was studied.

We have developed a training program aimed at developing strength training in cycling training. This training program was conducted in January 2021 on the basis of control measurements of students in the specialty cycling. 8 students of the State University of Physical Culture and Sports of Uzbekistan, specializing in cycling, were attracted to participate in the pedagogical experience. The examiners were trained 3 times a week, 2-3 academic hours (depending on the size of the planned academic load) continued in natural learning conditions.

Members of an experienced group of cyclists participated in the training program developed by US. In the mathematical processing of data obtained in the course of scientific research, generally accepted statistical characteristics were taken into account: the arithmetic mean () was calculated in percentage terms (%), the average value.

In order to determine the dynamics of changes that occurred as a result of the introduction of a new methodology developed in the process of training students of the specialty cycling to improve their sports and pedagogical skills, two arithmetic averages were also compared.

Results and discussion

As you know, such qualities as strength and endurance are important for a cyclist to achieve high results. But in order for the cyclist's muscles not only to withstand loads, but also to stand out at high speed in the prologue of road cycling, it is certainly advisable to use kettlebells in the correct order and in training in accordance with the instructions. Thus, strength is also important for a cyclist, that is, specific endurance.

Therefore, the training of a cyclist should be organized in such a way that when considering various physical indicators, aspects of endurance and strength should be prioritized. The strengthening of the technique and its improvement regularly continues in the practical activity of the cyclist. Failure to comply with the technical regulations for conducting competitions and special auxiliary classes may subsequently negatively affect sports training.

For many years, relentless exercises have been the key to the constant growth of a cyclist's athletic skill and, accordingly, the quality of strength. The correct organization of such training will become the basis for long-term planning. However, many coaches incorrectly organize the general physical preparation of their own squats.

Based on the analysis of the long-term plans of other sports classes, as well as the many years of preparatory experience of Uzbekistan State University of Physical Culture and Sports students in cycling, the coaches, in cooperation with the students themselves, reflect from all sides and develop plans for the future for the next few years, will help the trainees prepare for Responsible competitions on a clear and planned basis.

Cyclists of the I and II categories can give some tips on how to make a long-term plan to coaches who work with students. First of all, the results that an athlete has achieved in one season should be strengthened and further improved in the next season. If the training plan is correctly distributed, then a properly structured multi-year training plan eliminates any short-term rapid training to achieve high results in the shortest possible time. Only as a result of many years of continuous training, the physical and technical training of a cyclist improves, willpower improves and the highest technical and sports results are achieved.

In the development of the overall quality of strength of students of the specialty cycling, training creates an opportunity to properly plan the content of training, choose exercises that correspond to the topic of the lesson, increase the effectiveness of training, as well as organize training on a scientific basis. It is important that the physical and technical-tactical exercises used in training are planned and applied in accordance with the size and age, physical and

Table 1. Indicators of physical development of students-cyclists of the experimental group before the start of the study.

№	Full name	Height (sm)	Weight (kg)	VCL (l)	Chest width (sm)
1.	RR	1.76	69	3.7	89
2.	TL	1.78	77	3.9	93
3.	DD	1.76	66	3.4	95
4.	NG	1.80	67	4.0	88
5.	AO	1.75	71	3.8	97
6.	OO	1.74	78	3.7	95
7.	SS	1.73	72	3.8	99
8.	SA	1.70	73	3.7	101

Table 2. Indicators of physical fitness of students-cyclists of the experimental group before the start of the study.

№	Full name	Running for 100 meters *(s)*	Jump from the standing position to the length *(sm)*	Pull ups
1.	RR	13.3±0.1	210±1	9±1
2.	TL	13.4±0.3	200±5	8±2
3.	DD	13.0±0.1	209±4	10±1
4.	NG	12.9±0.4	220±1	12±2
5.	AO	12.8±0.2	224±2	8±2
6.	OO	13.0±0.1	210±1	7±1
7.	SS	13.1±0.1	205±1	9±1
8.	SA	13.5±0.2	205±2	8±1
X- average		13.1±0.1	210±4.5	8.7±4

Table 3. Indicators of special physical training of students-cyclists of the experimental group before the start of the study. *Note: The average weight was set at 50 kg.*

№	Full name	Twisting the legs while lying on the simulator	Squats with a barbell on the shoulders	Squats with a barbell on the chest	Deadlift	Lifting the barbell while lying down
1.	RR	14±1	12±1	10±1	12±2	10±2
2.	TL	15±2	13±1	11±1	11±2	10±1
3.	DD	17±2	14±2	12±2	10±1	11±2
4.	NG	18±2	14±1	11±3	10±1	12±2
5.	AO	15±1	13±2	10±3	10±2	11±2
6.	OO	13±4	11±2	10±2	11±2	9±2
7.	SS	14±3	11±2	9±1	8±3	9±2
8.	SA	12±3	10±2	9±2	7±3	8±1
X- average		14±3	12±3	11±4	9±2	10±1

functional capabilities of the student. The size of this exercise, the intensity of the time for returning and continuing should be based on biological laws. If the load from the exercise is extremely high for cyclists, then such a load can negatively affect the body of this athlete. On the contrary, it is inevitable that the formation process will slow down if there is less chance of loading. All types of strength qualities (general and special, speed-explosive, strength endurance) can be crucial in the activities of cyclists and, in particular, in competitive competitions. Taking into account the above, the examiners were able to determine their physical development and physical fitness before the experiment.

Endurance, which is necessary in cycling practice, is the quality of strength and all its types differ in their specific characteristics. In the scientific, methodological and educational

literature published on cycling, little attention is paid to the classification essence of the types of strength and endurance that play an important role in this sport, as well as special situational and simulated exercises that develop them. Based on the experience of highly qualified athletes in cycling, competitions at the national and world championships for the preparation of champions, including the use of physical, technical and tactical exercises in training, it can be noted that in this sport, regardless of the categories of cyclists, the qualities of strength, especially endurance, explosive power play an important role. But this idea does not mean that other types of force (absolute, relative, static types) are not crucial. On the contrary, such strength types and endurance also enrich the technique of cycling in the performance of almost all tactics and techniques, and not just the skills of a wide range of athletes. It can be argued that the use of a specialized and special training program, which develops exactly such qualities as strength and endurance in training aimed at training qualified athletes on a bicycle, leads to a favorable result.

Based on our topic, it should be noted that the development of strength and endurance qualities by means of weightlifting in combination with the correct organization of cycling training leads to a positive increase in the volume of loads, taking into account the physical fitness of the athlete, as well as a positive effect of training. In athletes, the manifestation of muscle strength is associated with the accumulation of the nervous system, which controls muscle activity. At the same time, it should be taken into account that the parameters of the working power of a cyclist with categories I-II are small. Given this, the development of strength in cyclists should be carried out carefully and gradually. To do this, it is desirable to use weights with a maximum result of no more than 75-80%, used in training.

It should also be recognized that every coach who conducts training with qualified athletes-cyclists, had to study in detail the neurophysiological essence of all types of strength qualities. Only then will the coach be able to effectively formulate what quality of strength is his vocation or the possibility of using it in the case of a combination of several types.

Jerky lifting is not only dynamic, but also associated with the static performance of work. For example, cyclists experience static tension after half the distance on the highway, especially at the waist and legs. Holding the squat in any position will cause static tension of the athlete's muscle groups of strength. Taking into account the need to develop muscle strength and endurance to static loads, cyclists are introduced to exercises with static characteristics using exercises with weights. The training process is aimed at developing strength qualities. Thanks to the research conducted by many experts, it has been proved that such exercises provide great advantages for increasing strength and special endurance in athletes (Gorodnichenko, 1994; Dvorkin et al., 2002; Dvorkin, 2017; Toshturdiyev et al., 2020; Matkarimov, 2020). It is important for cyclists to choose such static exercises, this should contribute to the development of muscle strength when performing special auxiliary exercises. Due to this, the task of correctly normalizing the load when performing static stresses is minimized. In the development of the quality of strength of cyclists, attention is mainly paid to the strength of the waist, legs, arm muscles, the main qualities of strength and endurance play a huge role while driving on the negaki bicycle chassis. Taking these aspects into account, we have developed a 1-month training plan aimed at improving the strength qualities of cyclists with the help of weightlifters, developed for cycling students (see tables 4-7).

Based on the above programs, the cyclists were presented with a training plan for January-December and they were involved in practice, it should be noted that the cyclists mainly focused on the development of leg and waist muscles in the exercises. In the same series of exercises, we noticed this aspect, in the middle of the exercise, which was devoted to the same muscular forces of the legs, exercises were used that were distributed to the strength of the muscles of the arms and waist. Because when the leg muscles change the position of the exercise, a state of recovery occurs, even if it is not much, until the exercises are distributed to the next leg muscle. In the 1stweek training plan, we see that the NBL reached 580, in the 2ndweek 772, in the 3rdweek 862, and in the 4thweek this indicator reached 800. For cyclists, sitting with a barbell on the shoulder for 1stweek started with 50 kg, and for the 4th week it rose to 65-70 kg.

Walking with a barbell on the shoulders, lifting to the tip of the foot with a barbell on the shoulder, squats with a barbell on the shoulders, squats with a barbell on the chest are mainly aimed at developing the muscular strength of

Table 4. 2-month training plan for developing the quality of strength through weight-lifting exercises (1st week). *Note: NBL- the number of barbell lifts, , 30-weight, 6-number of repeats, 1-number of tries, at the beginning 10 minutes are allocated for general physical training, at the end, 10 minutes are allocated for bending exercises of gymnastics.*

1st week	Sets	NBL	Total weight	Average weight/ kg
Monday				
Squats with a barbell on the chest	$\frac{45}{5}4,\ \frac{50}{4}3$	32	1500	46.8
Kettlebell Jerk	$\frac{8}{8}3,\ \frac{16}{6}3$	42	480	11.4
Lifting to the tip of the foot with a barbell on the shoulder	$\frac{30}{10}2,\ \frac{35}{8}2,\ \frac{40}{6}2$	48	1480	30.8
Squats with a barbell on the shoulders	$\frac{50}{5}4,\ \frac{60}{5}2,$	30	1600	53.3
Walking with a barbell on the shoulders	$\frac{20}{10}4,\ \frac{25}{8}2$	6	140	23.3
Twisting the legs while lying on the simulator	$\frac{30}{12}4,\ \frac{35}{6}2$	60	1860	31
Total:		**218**	**7060**	**32.3**
Wednesday				
Deadlift	$\frac{50}{6}1,\frac{55}{6}1,\frac{60}{4}4$	28	1590	56.7
Tilt forward with a barbell	$\frac{25}{5}2,\frac{30}{4}3$	22	610	27.7
Lifting back to 90° with a barbell on the shoulder	$\frac{10}{8}3,\frac{20}{6}3$	42	600	14.2
Lifting the barbell from the knees to the back in the position of bent knees	$\frac{30}{8}3,\frac{40}{4}3$	36	1200	33.3
Total:		**128**	**4000**	**31.2**
Friday				
Squats with a barbell on the shoulders	$\frac{50}{8}1,\frac{55}{6}2,\frac{60}{6}1,\frac{65}{4}2,$	34	1720	50.5
Developing the strength of the arm muscles with the help of dumbbells	$\frac{10}{12}3,\frac{12}{10}3$	66	720	10.9
Lifting the barbell while lying down	$\frac{50}{8}2,\frac{60}{6}2,\frac{70}{4}1$	32	1800	56.2
Squats with a barbell on the chest	$\frac{45}{10}1,\frac{50}{8}1,\frac{55}{6}1\frac{60}{6}1,\frac{65}{4}2,$	38	2060	54.2
Working on the simulator “X” method	$\frac{15}{10}4,\frac{25}{6}2,\frac{30}{4}1$	56	1020	18.2
Walking with a barbell on the shoulders	$\frac{20}{10}4,\frac{25}{8}2$	56	1200	21.4
Total:		**234**	**8520**	**36.4**
Total for week:		**580**	**19580**	**99.9**

Table 5. 2-month training plan for developing the quality of strength through weightlifting exercises (2nd week). *Note: NBL- the number of barbell lifts, , 30-weight, 6-number of repeats, 1-number of tries, at the beginning 10 minutes are allocated for general physical training, at the end, 10 minutes are allocated for bending exercises of gymnastics.*

2nd week	Sets	NBL	Total weight	Average weight/ kg
Monday				
Squats with a barbell on the chest	$\frac{50}{10}4,\ \frac{55}{6}1,$	46	2330	50.6
Kettlebell Jerk	$\frac{8}{8}3,\ \frac{16}{6}2,$	36	384	10.6
Lifting to the tip of the foot with a barbell on the shoulder	$\frac{30}{10}3,\ \frac{35}{8}2,$	46	1460	31.7
Squats with a barbell on the shoulders	$\frac{20}{10}4,\ \frac{25}{8}1$	48	1000	20.8
Walking with a barbell on the shoulders	$\frac{30}{12}3,\ \frac{35}{6}2,$	48	1500	31.2
Total:		**224**	**6674**	**29.7**
Wednesday				
Deadlift	$\frac{50}{8}1,\frac{55}{6}2,\frac{60}{4}3$	32	1780	55.6
Tilt forward with a barbell	$\frac{25}{5}2,\frac{30}{4}3$	22	610	27.7
Lifting back to 90° with a barbell on the shoulder	$\frac{10}{12}3,\frac{15}{8}3,\frac{20}{6}3$	78	1080	13.8
Lifting the barbell from the knees to the back in the position of bent knees	$\frac{35}{10}3,\frac{40}{8}3$	54	2010	37.2
Squats with a barbell on the chest	$\frac{45}{12}4,\ \frac{50}{10}1$	58	2660	45.8
Total:		**244**	**8140**	**33.3**
Friday				
Squats with a barbell on the shoulders	$\frac{50}{12}1,\frac{55}{8}2,\frac{60}{6}1,\frac{65}{4}2$	42	2360	56.1
Developing the strength of the arm muscles with the help of dumbbells	$\frac{8}{12}3,\frac{12}{10}3$	66	648	9.8
Lifting the barbell while lying down	$\frac{40}{12}2,\frac{50}{6}2,\frac{60}{4}1$	40	1800	45
Squats with a barbell on the chest	$\frac{50}{8}1,\frac{55}{6}1\frac{60}{6}1,\frac{65}{4}2$	28	1610	57.5
Working on the simulator “X” method	$\frac{15}{12}4,\frac{25}{6}2,\frac{30}{4}1$	64	1140	17.8
Walking with a barbell on the shoulders	$\frac{20}{12}4,\frac{25}{8}2$	64	1360	21.2
Total:		**304**	**8918**	**29.3**
Total for week:		**772**	**23732**	**92.3**

Table 6. 2-month training plan for developing the quality of strength through weight-lifting exercises (3rd week). *Note: NBL- the number of barbell lifts, , 30-weight, 6-number of repeats, 1-number of tries, at the beginning 10 minutes are allocated for general physical training, at the end, 10 minutes are allocated for bending exercises of gymnastics.*

3rd week	Sets	NBL	Total weight	Average weight/ kg
Monday				
Squats with a barbell on the chest	$\frac{45}{10}4,\ \frac{50}{8}2$	56	2600	46.4
Kettlebell Jerk	$\frac{8}{12}3,\ \frac{16}{8}2$	52	544	10.4
Lifting to the tip of the foot with a barbell on the shoulder	$\frac{30}{12}2,\ \frac{35}{10}2,\ \frac{45}{6}2$	56	1960	35
Squats with a barbell on the shoulders	$\frac{55}{10}3,\ \frac{60}{8}2$	46	2610	56.7
Walking with a barbell on the shoulders	$\frac{20}{12}4,\ \frac{25}{10}2$	68	1460	21.4
Twisting the legs while lying on the simulator	$\frac{20}{14}1,\frac{30}{12}4$	62	1720	28.9
Total:		**340**	**10894**	**32**
Wednesday				
Deadlift	$\frac{30}{6}1,\frac{35}{6}1,\frac{40}{4}4$	28	1030	36.7
Tilt forward with a barbell	$\frac{25}{12}2,\frac{30}{10}3$	54	1500	27.7
Lifting the barbell while lying down	$\frac{50}{8}2,\frac{60}{6}2,\frac{70}{4}1$	32	1800	56.2
Lifting the barbell from the knees to the back in the position of bent knees	$\frac{30}{8}3,\frac{40}{4}3$	36	1200	33.3
Lifting back to 90° with a barbell on the shoulder	$\frac{10}{8}3,\frac{20}{6}3$	42	600	14
Total:		**192**	**6130**	**31.9**
Friday				
Squats with a barbell on the shoulders	$\frac{50}{12}1,\frac{55}{6}2,\frac{60}{8}1,\frac{65}{4}2$	40	2260	56.5
Developing the strength of the arm muscles with the help of dumbbells	$\frac{18}{14}3,\frac{12}{12}3$	78	1188	15.2
Lifting the barbell while lying down	$\frac{55}{8}2,\frac{60}{6}2,\frac{70}{4}1$	32	1880	58.7
Squats with a barbell on the chest	$\frac{45}{14}1,\frac{50}{12}1,\frac{55}{10}1\frac{60}{8}1,\frac{65}{6}2$	56	3040	54.2
Working on the simulator “X” method	$\frac{20}{12}3,\frac{25}{8}2,\frac{30}{4}1$	56	1240	22.1
Walking with a barbell on the shoulders	$\frac{20}{12}4,\frac{25}{10}2$	68	1460	21.4
Total:		**330**	**11068**	**33.5**
Total for week:		**862**	**28092**	**97.4**

Table 7. 2-month training plan for developing the quality of strength through weight-lifting exercises (4th week). *Note: NBL- the number of barbell lifts, , 30-weight, 6-number of repeats, 1-number of tries, at the beginning 10 minutes are allocated for general physical training, at the end, 10 minutes are allocated for bending exercises of gymnastics.*

4th week	Sets	NBL	Total weight	Average weight/ kg
Monday				
Twisting the legs while lying on the simulator	$\frac{30}{12}3,\ \frac{35}{6}2$	48	1500	31,2
Kettlebell Jerk	$\frac{12}{8}3,\ \frac{16}{6}2$	36	480	13,3
Lifting to the tip of the foot with a barbell on the shoulder	$\frac{30}{12}3,\ \frac{35}{8}2$	52	1640	31,5
Walking with a barbell on the shoulders	$\frac{20}{10}4,\ \frac{25}{8}1$	48	1000	20,8
Squats with a barbell on the shoulders	$\frac{50}{12}4,\ \frac{55}{8}1$	50	2840	56,8
Total:		**234**	**7460**	**31,8**
Wednesday				
Deadlift	$\frac{50}{8}1,\frac{55}{6}2,\frac{60}{4}3$	32	1780	55,6
Tilt forward with a barbell	$\frac{25}{5}2,\frac{20}{8}3$	34	730	21,4
Lifting back to 90° with a barbell on the shoulder	$\frac{10}{12}3,\frac{15}{8}3$	60	720	12
Lifting the barbell from the knees to the back in the position of bent knees	$\frac{30}{12}3,\frac{40}{8}3$	60	2040	34
Squats with a barbell on the chest	$\frac{45}{12}4,\ \frac{50}{10}1$	58	2660	45,8
Total:		**244**	**7930**	**32,5**
Friday				
Squats with a barbell on the shoulders	$\frac{50}{12}1,\frac{55}{10}2,\frac{60}{6}1,\frac{65}{4}2$	46	2580	56
Developing the strength of the arm muscles with the help of dumbbells	$\frac{8}{12}3,\frac{12}{10}3$	66	648	9,8
Lifting the barbell while lying down	$\frac{40}{12}2,\frac{50}{8}2,\frac{60}{4}1$	44	2000	45,4
Squats with a barbell on the chest	$\frac{50}{12}1,\frac{55}{8}1\frac{60}{6}1,\frac{65}{4}2$	34	1920	56,4
Working on the simulator “X” method	$\frac{20}{12}4,\frac{25}{6}2,\frac{35}{4}1$	64	1400	21,8
Walking with a barbell on the shoulders	$\frac{20}{12}4,\frac{25}{10}2$	68	1460	21,4
Total:		**322**	**10008**	**31**
Total for week:		**800**	**25378**	**95.3**

the legs, this will not only have an effect on increasing the number of turns of the pedals on the bike highway , but also, as the number of repetitions increases, will have a positive effect on speed and endurance. Exercises lifting to the tip of the foot with a barbell on the shoulder are a type of exercises that aimed at developing the musculature of the foot. Deadlift, tilting forward with a barbell, lifting back to 90° with a barbell on the shoulder and lifting the barbell from the knees to the back in the position of bent knees will have a positive effect on the strength of the lumbar muscle, the reason why these exercises are given is that cycling requires an athlete to sit in the saddle for a long time on the same track, which, in turn, leads to static tension of the waist muscles.

As can be seen from the tables above, we see that after the study, the indicators of physical fitness and specific training of cycling students in the experimental group increased significantly, If before the experiment, the 100-meter run X-averaged 13.1±0.1 seconds, then after the experiment we could see that this indicator improved to an X-average of 12.6±0.2 seconds. If before the experiment, the jump

Table 8. Indicators of physical fitness and special training of students-cyclists of the experimental group before and after the study.

№	Full name	Running for 100 meters *(s)*		Jump from the standing position to the length *(sm)*		Pull ups	
		BE	AE	BE	AE	BE	AE
1.	**RR**	13.3±0.1	12.9±0.1	210±1	215±2	9±1	12±1
2.	**TL**	13.4±0.3	13.1±0.2	200±5	207±2	8±2	10±2
3.	**DD**	13.0±0.1	12.8±0.1	209±4	214±2	10±1	12±1
4.	**NG**	12.9±0.4	12.5±0.2	220±1	226±2	12±2	14±1
5.	**AO**	12.8±0.2	12.4±0.2	224±2	229±3	8±2	11±1
6.	**OO**	13.0±0.1	12.5±0.3	210±1	217±4	7±1	10±1
7.	**SS**	13.1±0.1	12.6±0.2	205±1	212±2	9±1	11±2
8.	**SA**	13.5±0.2	12.7±0.5	205±2	214±3	8±1	11±2
X-average		**13.1±0.1**	**12.6±0.2**	**210±4**	**216±1**	**8.7±4**	**11.6±2.1**

Table 9. Indicators of special physical training of students-cyclists of the experimental group before and after the study. *Note: BE- before the experiment, AE- after the experiment.*

№	Full name	Twisting the legs while lying on the simulator		Squats with a barbell on the shoulders		Squats with a barbell on the chest		Deadlift		Lifting the barbell while lying down	
		BE	AE	BE	AE	BE	AE	BE	AE	BE	AE
1.	**RR**	14±1	17±1	12±1	16±1	10±1	14±1	12±2	15±1	10±2	13±2
2.	**TL**	15±2	18±1	13±1	17±3	11±1	16±2	11±2	14±2	10±1	13±1
3.	**DD**	17±2	22±2	14±2	19±1	12±2	16±2	10±1	14±2	11±2	14±2
4.	**NG**	18±2	22±1	14±1	19±2	11±3	15±1	10±1	13±1	12±2	16±1
5	**AO**	15±1	19±2	13±2	19±1	10±3	15±2	10±2	14±2	11±2	15±1
6.	**OO**	13±4	17±2	11±2	18±1	10±2	16±1	11±2	15±2	9±2	11±1
7.	**SS**	14±3	18±2	11±2	19±2	9±1	15±1	8±3	13±1	9±2	12±3
8.	**SA**	12±3	16±2	10±2	16±2	9±2	14±2	7±3	11±1	8±1	10±1
X-average		**14±3**	**18±1**	**12±3**	**17±2**	**11±4**	**15±2**	**9±2**	**13±2**	**10±1**	**13±2**

from the standing position to the length was on X-average 210±4 sm, then after the experiment, the indicator increased to an X-average of 216±1 sm. Due to these facts, we can say that the program developed by us has had a positive impact on the development of the quality of power of cyclists. Weekly loads, that is, NBL, were compared with cyclists by the number of average loads, taking into account the state of his fatigue and recovery during training. 75-80% of the weightlifting exercises included in the training program are aimed at developing the strength of the lumbar muscles of the foot.

The minimum skill in each training session is about 4 points (average) and 8.5 points (high). It was considered 5.5 points (above the middle), 7.5 points (below the high).

(if the NBL is more than 300) decreased by 5.5 points, in the case of a small volume (NBL 130) increased by 8.5 points. Thus, from these indicators, we can conclude that the smaller the volume of loads (NBL) during training, the higher the specific performance of the athlete. If we use the criterion of subjective assessment of specific performance with the correct compilation and adjustment of training loads for weekly cycles.

Conclusion

It is established that training program loads have a positive effect on the specific working capacity of the body of young cyclists.
During the training of cyclists, highly effective

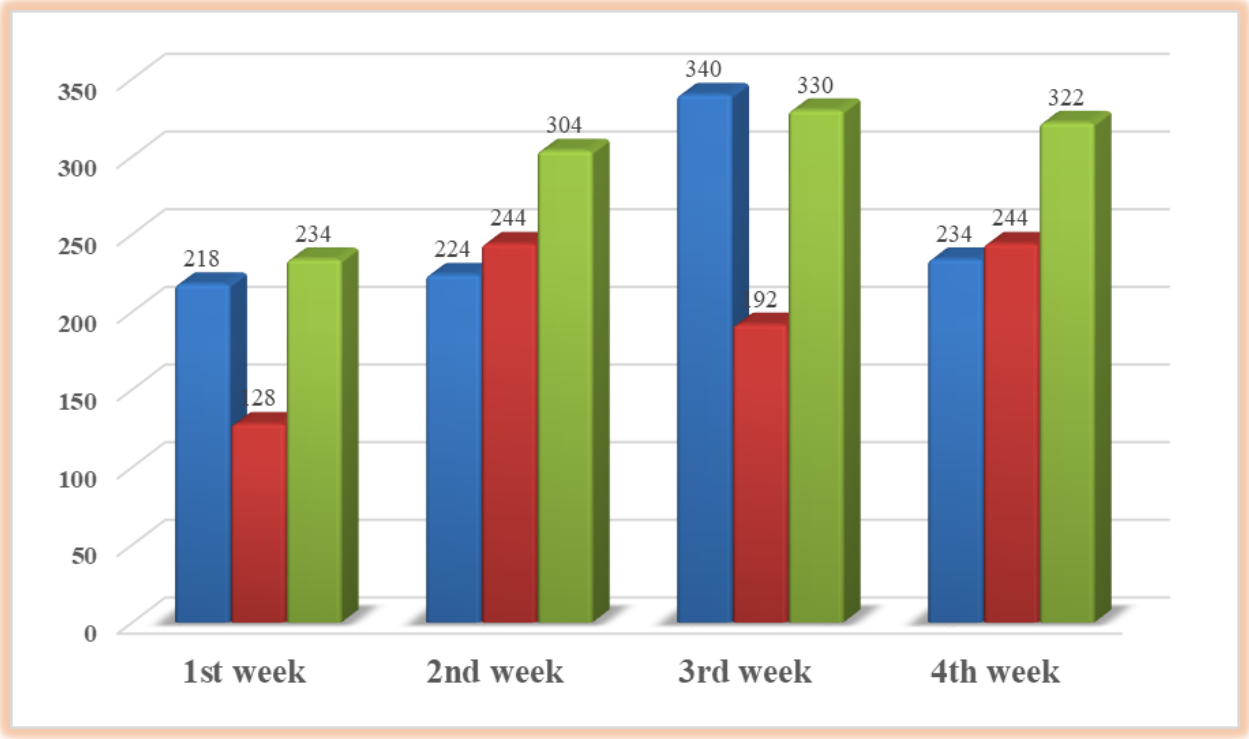


Figure 1. The rate of increase in training loads.

The figure showed the ability to work out the NBL 150-200, while the special ability to work out the NBL 300 was lower than the average.

This description indicates that the number of loads performed during training practically did not cause cases of fatigue in the athletes' body. It is known that cyclists performed training loads according to the plan without any difficulties.

In the experiment, the specific performance under the influence of a training volume

sports exercises in weightlifting were identified, aimed at developing strength qualities. A training program was developed for the identified exercises. Weekly and monthly training plans have been developed in the style of overcoming resistance with the help of barbells and simulators.

The program that we developed was implemented in the training of Uzbekistan State University of Physical Culture and Sports cyclists and cycling students and allowed us to achieve a high sports result.

Summing up the results of the training conducted on the basis of the program developed in the study, the program that we developed in the development of the quality of strength of cyclists had a positive impact on their physical development, as well as on the growth of the quality of strength.

In the course of the study, it was found that the correct distribution of NBL during training, a sharp increase in the dynamics of the cyclist's sports results and a positive effect on the special performance of cyclists were found. During the training of cyclists, highly effective sports exercises in weightlifting were identified, aimed at developing strength qualities.

The conclusions of the program, which are studied in our scientific article, will increase the strength and endurance of students of the cycling specialty of Uzbekistan State University of Physical Culture and Sports. The program, which is recommended for planning training sessions during the preparatory period, is convenient and effective in January training. In order to organize a training process aimed at improving the quality of strength of Uzbekistan State University of Physical Culture and Sports cycling students, we recommend that you use the following:

Based on the program developed by us, we recommend that cyclists use this program during the training of cyclists from the Children's and Youth Sports School and the Olympic Reserve College in order to improve the quality of their strength.

In addition, a reliable and effective set of exercises is recommended. (squats with a barbell on the shoulders, kettlebell jerk, lifting to the tip of the foot with a barbell on the shoulder, walking with a barbell on the shoulders, twisting the legs while lying on the simulator, deadlift, lifting the barbell while lying down, developing the strength of the arm muscles with the help of dumbbells, tilt forward with a barbell, lifting back to 90° with a barbell on the shoulder, lifting the barbell from the knees to the back in the position of bent knees, squats with a barbell on the chest). It is advisable to use this set of exercises during the training period. The exercises of this group will effectively help cyclists to increase their physical fitness in December, January.

The recommended physical activity (NBL) in this study will lead to the distribution of intensity zones during the weekly training period, which will significantly increase the quality of endurance and strength in cycling students.

It is necessary to make changes to the training plan, as a result of which it is necessary to increase the number of approaches to the raised weight and at the same time monitor the volume and intensity of physical exertion.

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