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**THE INFLUENCE OF SPEED-STRENGTH TRAINING ON THE MOTOR
ABILITIES OF COLLEGE STUDENTS**

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Over the course of three years, the dynamics of the speed and speed-strength abilities of college students (15-17 years old) involved in athletics was determined in comparison with the da-

ta of their peers who do not engage in sports. It is shown that additional and targeted training effects for young men of different ages contribute to a faster increase in the level of necessary motor qualities, and the predominant effect on motor abilities at the stage of accelerated age development leads to significant shifts in the development of the latter.

The results of the conducted research have a certain practical significance for physical education teachers, as well as for selecting students and monitoring their readiness in the educational and training process.

Keyword: *students, motor skills, involved and not involved in sports, dynamics, fitness.*

ВЛИЯНИЕ СКОРОСТНО-СИЛОВЫХ ТРЕНИРОВОК НА ДВИГАТЕЛЬНЫЕ СПОСОБНОСТИ СТУДЕНТОВ КОЛЛЕДЖА

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На протяжении трех лет определялась динамика скоростных и скоростно-силовых способностей студентов колледжа (15-17 лет), занимающихся легкой атлетикой, в сравнении с данными их сверстников, не занимающихся спортом. Показано, что дополнительные и целенаправленные тренирующие воздействия для юношей разного возраста способствуют более быстрому повышению уровня необходимых двигательных качеств, а преимущественное воздействие на двигательные способности, находящиеся в стадии ускоренного возрастного развития, приводит к значительным сдвигам в развитии последних.

Результаты проведенного исследования имеют определенное практическое значение для преподавателей физической культуры, а также для отбора учащихся и мониторинга их подготовленности в учебно-тренировочном процессе.

Ключевые слова: *студенты, двигательные способности, занимающихся и не занимающихся спортом, динамика, подготовленность.*

Relevance. In the harmonious development and upbringing of the younger generation, an important place belongs not only to schools, but also to gymnasiums and colleges. At the same time, numerous medical and biological studies prove that adolescent education has become stressful, and in critical periods of adulthood it is accompanied by a decrease in the adaptive capabilities of the body, the development of a number of nosological conditions [3, 4]. This problem is especially relevant for students in large cities, where physical education classes eliminate motor needs by only 11%, and natural motor activity steadily decreases as they move to an older age [4, 5]. The correct formulation of physical education contributes to the preparation of physically healthy, comprehensively developed, hardworking and cheerful young people.

Numerous scientific studies by domestic and foreign scientists indicate that each age period has its own characteristics, which must be taken into account when developing methods and organizing classes, selecting means of pedagogical influence and their relationship [1, 2, 5]. In this regard, one of the most urgent scientific problems is the identification of effective means and methods that promote the rational development of motor qualities in the most favorable age periods for this.

The purpose of this study is to study the dynamics of the speed and speed-strength abilities of college students (15-17 years old) involved in athletics, in comparison with the data of peers who do not engage in sports.

Methods and organization of research. The research was conducted with college students in Quanzhou, Fujian Province. 62 students were involved in the tests, including 15 students from this college who are involved in athletics. The subjects, regardless of their physical fitness, were

divided into 3 age groups - 15, 16, 17 years old. The studies were conducted from October 2023 to June 2024.

To observe changes in speed and strength abilities, the subjects were offered the following exercises:

1. Running for 20 m on the move (the ability to show maximum movement speed was determined).
2. Running for 30 m from a high start (the ability to develop acceleration in the initial part of the distance).

The dynamics of speed and strength abilities were determined using the following tests: long jump and triple jump from a standing position, Abalakov high jump and long jump from a running start. Such tests are widely described in the specialized literature and are recommended for assessing the physical fitness of individuals of different ages [3, 4].

The results of the study and their discussions. Running 20 m on the move, which characterizes the ability to move as quickly as possible in space, increases only up to the age of 15, and then the results stabilize even among those involved in sports. This type of dynamics of the result change in running for 20 m on the move is probably explained by the formation of a speed barrier, insufficient selection of means and methods of speed development. The influence of the individual characteristics of the students is also possible.

The analysis of the research results also shows the insignificant role of training in the development of speed abilities: the average increase in results during the academic year (from 15 to 16 years) It was 0.07 seconds (3%) ($p > 0.05$) for those involved in athletics and 0.04 seconds (2.3%) for those who do not practice this sport.

A decrease in the result gain in running by 20 m on the move by the age of 15 does not mean that an increase is impossible at this age stage. This once again indicates the need for careful selection of means and methods for the education of such qualities as speed. The total increase in the result over two years was 0.41 seconds (13.3%) for track and field athletes and 0.26 seconds (8.3%) for those who do not play sports. This indicates the most minor differences from all the exercises tested.

The growth rate in 30 m running from a high start increases only up to the age of 16, and by the age of 17 it decreases markedly (unreliably, for 5% of the significance level). This is especially noticeable for those who do not exercise.

In the course of the study, the influence of a subjective factor, as well as the characteristics of the contingent of the studied, is not excluded. Nevertheless, it is becoming obvious that the most favorable age for the development of speed in adolescents is under 15 years of age. The advantage in the results of this exercise for those involved in athletics over those who do not train can be explained by the more advanced mastery of the starting technique among young athletes.

The speed and strength abilities of adolescents aged 15-17 years are constantly changing during the age period under consideration, and the latter occurs unequally and unevenly.

The results of the long jump study are constantly increasing among students aged 15-17. However, these increases are uneven. Thus, the greatest increase in those involved in athletics was recorded at the age of 16 to 17 years and is 27.2 cm, and for those not involved in sports, the greatest increase was recorded at the age of 15 to 16 years and the improvement was 12 cm.

As evidenced by the results of numerous studies [2, 3, 4, 5], under the age of 16, the body of young men is most sensitive to physical activity, which indicates the lowest increase in results for both those who practice and those who do not practice sports.

In general, over the period from 15 to 17 years, the shifts in this test for young athletes amounted to 45.4 cm, and for their peers – 33.8 cm (19.2%). Thus, it can be assumed that the gain in jumping from a place, determined by training, was 3.1%.

The results between the ages of 15 and 17 in the triple jump are continuously and evenly increasing. The total increase in the result in the triple jump over two years was 81.8 cm for those who practiced, and 47.4 cm for those who did not practice, that is, a shift of 5.2% can be explained by the influence of training. However, it should be noted that the result in jumping is

significantly influenced by the technical readiness of those involved, their mastery of modern jumping techniques.

An analysis of the dynamics of results in jumping up from a place shows that from the age of 15 to 17, there is a steady increase in the ability of young men to exert maximum muscular effort in minimal periods of time, that is, "explosive force." In the first year, this indicator of athletes increases from 35.7 to 42.0 cm, an increase of 6.4%. For those who do not play sports, the changes from 15 to 17 years in the high jump from a standing position amounted to 11.4 cm. Thus, if the initial result was almost the same at the age of 15, then the impact of the specialized load in this test was 1.5%.

The change in long jump results for college students aged 15-17 looks somewhat different. The total increase in results in the long jump from the run was 74.9 cm for athletes involved in athletics and 60.1 cm for non-athletes. It can be assumed that the impact of the training load in this test may be 2.6%. A particularly intense increase in results was recorded among athletes aged 16 to 17 years – 54.4 cm.

Conclusion. The results of the conducted research allow us to draw the following conclusions:

1. It has been established that the speed and speed-strength abilities of adolescents aged 15-17 years vary unevenly and unequally. In particular, the rate of increase in speed abilities reaches their maximum values up to 15 years, and then stabilizes or begins to decrease (it was observed only in non-athletes).

The dynamics of speed-force manifestations varies unevenly. The greatest increase in performance among athletes is observed at the age of 16-17 years, the lowest - at 15-16 years. Testing of four jumping types showed that the greatest "impact" of specialized training is observed in triple jumps from a standstill. The total increase is 5.2%.

In running at 20 m per stroke, only 0.21 s of result gain can be determined by playing sports, and achieving high results in high-speed running requires, first of all, genetic data.

2. Studies have shown that the age of 15-17 years for adolescents is the most optimal for the development, first of all, of speed and strength abilities. The leading role of sports training in the development, first of all, of speed and speed-strength abilities has also been established. The additional and purposeful motor regime of young men of different ages contributes to a faster mastery of the required level of physical fitness.

3. A comparison of the data of adolescents who do not engage in sports with the results of other authors obtained in the 80-90 years of the last century showed that the recorded results are slightly lower than those presented in the literature, especially in terms of growth rates at this age. The differences can be explained by the currently lower level of physical fitness of students and the difference in the statistical sample. The reason for such results, in our opinion, is the insufficient volume of regulated physical education classes (4 hours per week) and the orientation of all physical education institutions towards the average student.

4. The level of speed and speed-strength abilities of college students who are not involved in athletics generally meets the regulatory requirements of the physical education program. The highest percentage of those who fulfilled the requirements of the established program was observed among older students involved in athletics. The latter confirms the working hypothesis that an additional and purposeful motor regime of students of different ages contributes to faster mastery of the required level of physical fitness, and the predominant effect on motor abilities that are in the stage of accelerated age development leads to significant shifts in the development of these abilities.

The results of the conducted research are of some practical importance for physical education teachers, as well as for the selection of students and monitoring their readiness in the educational and training process.

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