



## **Improving Motor Activity in Young Basketball Players at the Initial Stage of Training using Sets of Stretching Exercises**

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**Abstract:** *In this paper, the question of the development of joint mobility (flexibility) in 10-11 year old athletes involved in basketball is considered. The importance of the applied stretching technique is described, for young basketball players it is one of the most effective methods for developing flexibility. This type of specialized system is recommended for targeted stretching of the muscles of the body, the development of mobility in the joints and elasticity. Exercises in this system allow you to control the processes in muscle tissues, their tension and relaxation, which leads to the rapid removal of fatigue in the muscles and the restoration of their functions. We have developed a set of stretching exercises and tested them in the training process of young basketball players. The results of the study of our methodology, which is recommended to be used both in the training and in the educational process, were also presented.*

**Keywords:** *basketball, joint mobility, flexibility, stretching.*

Modern basketball is a game that requires high physical performance, which is determined by high muscle activity in intense game situations, requiring athletes to maximize the mobilization of speed-strength qualities, high motor activity and functionality. The game of basketball requires the development of physical qualities from athletes to ensure the necessary sports results. The player must be able to think over the game situation and make decisions, be psychologically stable and resistant to external stimuli.

To preserve the health of the athlete and reduce the number of injuries, the coach must take all necessary safety measures. In basketball, as in any other sport, an athlete must develop all the basic physical qualities (flexibility, agility, speed, strength, endurance). Flexibility as a general physical quality is essential in the training process.

Flexibility - characterized by the movement of the links of the human body with a maximum amplitude. It is determined by the degree of joint mobility, the expression of which is the range of motion (in degrees).

Features of the development of flexibility are largely determined by the age characteristics of the formation of the body. The elasticity of the articular-ligamentous apparatus and muscles is directly dependent on the content of dense substances, structural features of the musculoskeletal system, water, and a number of other factors [1].

At 10-12 years old, young basketball players continue to ossify joints, ligaments and tendons are plastic, the amount of water in the muscles is optimal for their activity, which reduces their viscosity, which leads to an increase in the growth rate of passive and active flexibility. At the age of 10-12, the extensibility of the muscular-ligamentous apparatus in young basketball players is well

developed. The reason for this is the active growth of the human body in length, the reduction of intermuscular diameters, the lack of high strength indicators and muscle mass, which allows the athlete to show flexibility. At this age, we can observe the age-related patterns of the body, indicating the further development of elasticity and mobility of the musculoskeletal system.

It has been proven that the development of flexibility can be influenced by external factors. Using special systems, various methods of physical exercises and simulators, it is possible to influence the level of development and improvement of flexibility.

At a young age, it is especially effective to use special exercises to develop and maintain a sufficiently high level of flexibility. Taking into account the main factors influencing the development of flexibility, it is necessary to use precise criteria for assessing the indicators of the development of physical quality, using this it is possible to determine the quality of the training sessions.

The changes taking place today in the system of the training process are aimed primarily at improving its quality. As practical experience shows, one of the possible ways to increase flexibility is to saturate training sessions with new, modern forms and methods [2].

One of the most effective methods, the development of flexibility, in our opinion, is stretching. The term "stretching" comes from the English word "stretching" - "stretching". This is a type of health system aimed at stretching the muscles of the body, developing flexibility and elasticity. Also, this system allows you to alternate tension and relaxation of muscle tissues, which contributes to the rapid removal of tension in the muscles and restoration of strength [3].

The use of stretching in basketball helps to improve physical abilities - to a greater extent develop mobility in various joints (flexibility), plasticity, as well as coordination abilities, muscle strength, and other qualities [4].

Stretching is used as an excellent means of increasing agility, improving movement to the maximum large amplitude, moving in a protective stance and wide lunge to the side, thus improving physical performance contributes to improving technique and, in turn, increasing tactical interactions.

The relevance of our study is that under conditions of high competitive loads, it is necessary to use modern and effective methods for developing physical qualities and improving joint mobility (flexibility) accordingly.

The reason for choosing this topic is the issue of training athletes using the latest methods, health fitness, stretching exercises, which has not been sufficiently considered both in the literature and in the practice of the training process.

The novelty of the study lies in the use of author's stretching techniques in the training process, which improve the physical fitness of basketball players.

The object of the study is the mobility of the joints (flexibility) of basketball players.

The purpose of the study is to increase joint mobility (flexibility) by means of stretching exercise complexes.

The developed complexes of stretching exercises were tested during the training process of the combined team of the Tashkent region in the city of Chirchik, in 24 schools. In the experimental group of initial training, the process was carried out using the developed set of stretching exercises. The effectiveness of this complex was confirmed by comparing the initial indicators with subsequent ones and the data obtained from the study with the control group, where basketball training sessions were conducted according to the usual, generally accepted methodology for the development of physical qualities.

Methods and organization of the study. We used the following control tests to determine changes in joint mobility after using a special set of stretching exercises:

1. Mobility of the spinal column (cm). It is determined by the degree of tilting the torso forward and stretching the arms to the bottom. The subject is in a standing position on the platform, performs the maximum possible forward tilt, without bending the legs at the knees, directing the arms parallel to the legs. Flexibility is determined using pre-drawn lines along the distance in centimeters from zero to 30 centimeters.
2. "Extension of the spinal column in the opposite direction." It is determined by the degree of extension of the trunk and spinal column in the opposite direction. The result (cm) is measured from the fingertips to the heel of the subject. A good level of development of joint mobility is determined by a smaller distance from the fingers to the heels and vice versa.
3. Mobility in the shoulder joint (cm). the subject holds on to the ends of the gymnastic stick and performs the movement of straight arms from the belt back. To measure the mobility of the shoulder joint, it is necessary to measure the distance between the hands during twisting: the smaller the distance, the higher the flexibility of this joint, and vice versa [5].

For 6 months, we studied the indicators of body mobility of athletes. The training consisted of several parts, which took place three times a week. Тренировочные части одного занятия:

- ✓ Introductory part (warm-up) – 10-15 min.
- ✓ The main part (which masters technical and tactical training, strength training) - 45-50 min.
- ✓ Final part - 10-15 min.

**Table 1. The level of development of flexibility in the initial experiment**

Month	Control group			Experimental group		
	Mobility in the shoulder joint (cm)	Mobility of the spinal column (cm)	Extension of the spinal column in the opposite direction (cm)	Mobility in the shoulder joint (cm)	Mobility of the spinal column (cm)	Extension of the spinal column in the opposite direction (cm)
February	95	13	75	97	14	77

**Table 2. The level of development of flexibility after the experiment**

Month	Control group			Experimental group		
	Mobility in the shoulder joint (cm)	Mobility of the spinal column (cm)		Mobility in the shoulder joint (cm)	Mobility of the spinal column (cm)	Extension of the spinal column in the opposite direction (cm)
July	90	15	70	85	20	68

As a primary task, we determined the initial indicators of the development of joint mobility using control tests conducted at the beginning of the experiment. (February, table No. 1)

When measuring the level of flexibility at the beginning of the experiment, the results in both groups were approximately the same.

In the training sessions of the experimental group, a set of stretching exercises used in the water and the final part was introduced. Accentuated twice a week in the final part, PNF stretching was carried out.

Re-measurement of the level of mobility of the joints of young basketball players involved in basketball at the end of the experiment on the same tests showed that the level of indicators increased significantly (June, table No. 2).

To confirm the results obtained, we used the formula according to Student's t-test

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sigma_1^2}{m_1} + \frac{\sigma_2^2}{m_2}}} \quad m = \frac{\sigma}{\sqrt{n}} \quad m = \frac{\sigma}{\sqrt{n}}$$

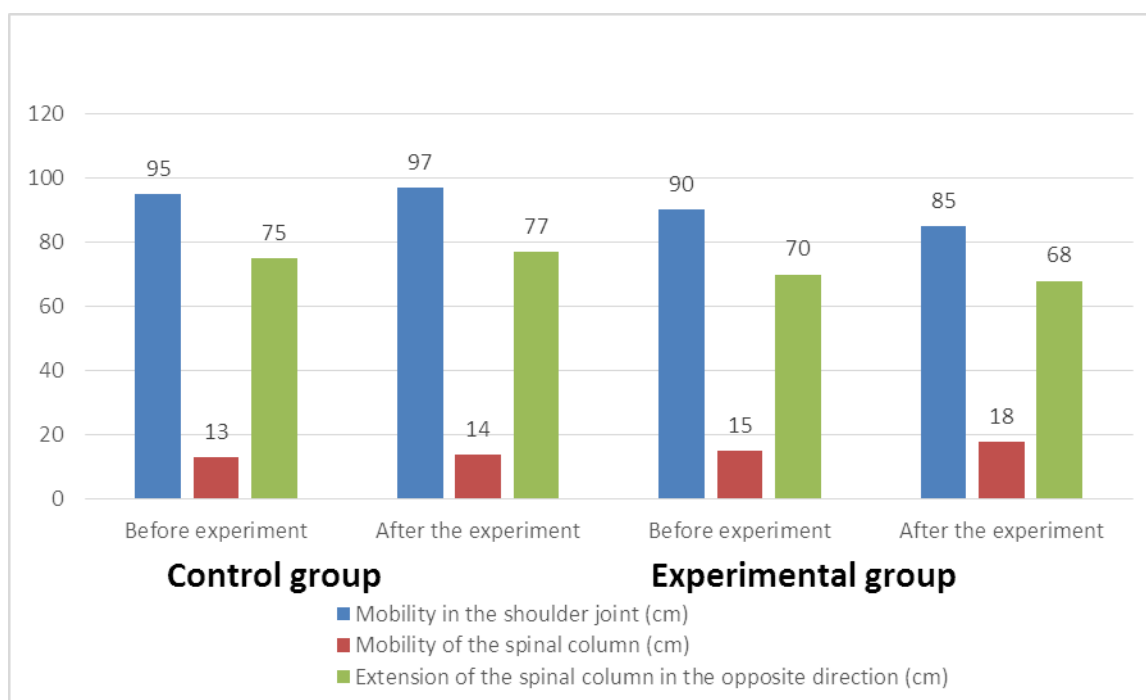
During the pedagogical study, the subjects of the experimental group showed a more significant improvement in the results in the performance of control tests. The change in indicators of the level of flexibility at the end of the pedagogical experiment indicates a positive dynamics, and all changes were significant ( $p < 0.05$ ).

The flexibility indicators of basketball players of the experimental and control groups at the beginning and at the end of the experiment are shown in Figure 1.

For all three tests in the experimental group, a significant improvement is observed: in test No. 1 by 5.6%, in test No. 2 by 15 %, in test No. 3 by 2.9%. The increase in flexibility in the control group is significantly lower: in test No. 1 by 2.1%, in test No. 2 by 7.6%, in test No. 3 by 2.6%, and in test No. 1 and 2, the differences were unreliable.

Thus, the study revealed that the level of development of joint mobility (flexibility) in young subjects of 10-11 years old, involved in basketball with the introduction of stretching exercises into the training process, can more effectively improve flexibility. This is an integral part of achieving the highest level of skill in toning and competitive activities. The proposed methodology can be adopted both in the training and in the educational process of developing flexibility.

**Rice. №1 Indicators of flexibility in basketball players of the experimental and control groups**



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