

THEORETICAL BASIS OF SPECIAL LEG STRENGTH EXERCISES IN DEVELOPING YOUNG VOLLEYBALL PLAYERS' JUMPING SKILLS

Sabirov Aloviddin Abdurakhmonovich

Chirchik State Pedagogical University Teacher of the Department of Theory
of Physical Culture

Abstract. This article discusses the theoretical basis for the effective use of special exercises in volleyball through special exercises to improve the jumping skills of young volleyball players, gradually identifying the loads on the leg muscles during running and jumping.

Key words. Young volleyball players, jumping, strength, special exercises, technical movements, methodology, loads.

Introduction

For young volleyball players, jumping is an integral part of volleyball in performing technical and tactical movements performed in space in game and competition conditions. Because almost all technical and tactical movements in volleyball are performed in space (putting the ball into play, attacking blows, blocking), that is, jumping. Therefore, the development of leg strength in young volleyball players at the initial training stage, taking into account the sensitive period, through special exercises without overloads, is a pressing problem of the article. Because during traditional training at the initial training stage, the sensitive period of some young volleyball players is not taken into account, and exercises that develop leg strength are not applied to each volleyball player at the end of the training.

Special exercises are divided into two groups: preparatory exercises; approximation exercises. Preparatory exercises are mainly used to develop

special physical qualities. Approximation exercises are used in the process aimed at mastering specific technical movements.

In modern volleyball, the performance skills associated with hitting, blocking, passing, and scoring from various areas are represented by jumping ability and jumping endurance. Jumping ability is the ability to overcome vertical or horizontal distances with a high level of muscular and volitional strength[1].

One of the main physical qualities for volleyball players is jumping ability. Jumping ability belongs to the speed-strength qualities and is characterized by a strong contraction of the leg muscles in a short period of time. It is precisely this quality that is at a high level that allows relatively short players to compete with tall players and effectively perform basic game skills.

In today's volleyball practice, the development of volleyball players' jumping ability and jumping endurance is carried out using jumping exercises with and without a ball, standard exercises with weights, equipment or simulators. The main exercises to improve jumping ability include: single-leg and double-leg hopping, jumping jacks, high jumps, serial jumps with two gymnastic benches stacked on top of each other, serial jumps while moving through obstacle areas, and jumps when performing an attack strike[2].

When studying the literature related to the article, it became clear that today almost all game skills are performed in the air in most situations, that is, jumping (hitting, blocking, scoring, passing, receiving the ball, catching the ball while falling). The emergence of this situation not only increases the attention paid to the qualities of jumping and jumping endurance in volleyball practice, but also requires the creation of new scientific technologies aimed at the intensive development of these qualities.

Therefore, the effectiveness of training qualified volleyball players in the process of many years of sports training is directly dependent on the priority of comprehensively perfecting the qualities of jumping and jumping endurance.

The range of scientific studies and scientific literature covering the problems of developing jumping and jumping endurance in volleyball players is very wide [3].

When developing the leg strength of volleyball players, it is necessary to take into account all the leg muscles involved in jumping. The muscles involved in jumping in volleyball include:

- the anterior 3-headed muscle of the thigh;
- the posterior 2-headed muscle of the thigh;
- the 2-headed muscle of the calf;
- the muscles of the heel and pelvis.

Taking into account these muscle groups, engaging in specific special exercises for leg strength and constantly checking and taking into account the effectiveness of these exercises will develop jumping ability in children to a high level. As a result of the study of the literature, the problem of correctly taking into account the loads on the leg muscle groups when using special exercises to develop leg strength in young volleyball players, and the use of modern sports equipment is not taken into account, which is an unexplored gap in this article.

Using the above problems and unexplored gaps, this article can be aimed at the theoretical importance of developing young volleyball players in the process of developing leg strength through the use of effective types of special exercises, effective training methods and tools.

Based on the goal, the following tasks can be set:

- use a newly developed special exercise complex to develop the jumping ability of young volleyball players;
 - provide additional exercises to develop explosive leg strength at the end of the main part of the training.
- The following research methods can be used to solve the applied tasks: analysis and generalization of literature, pedagogical observations, pedagogical experiments and mathematical statistics methods. The

experimental basis for the study was the training sessions held in the primary preparatory groups of the first year of study at the youth sports school for volleyball. This study is conducted in two stages. The first stage is the methodological substantiation and theoretical analysis of the available data on the research topic of interest. The first stage includes a training period for the experimental methodology. The main goal of this period is to study the possibility of using the methodology in the training process in the youth sports school for volleyball and to develop a new content for improving jumping ability based on this methodology. The second stage is the development and testing of the experimental methodology during training sessions in the primary preparatory groups of youth for volleyball. The main pedagogical experiment is carried out in the process of lessons and training of teenagers in volleyball. The experimental group and the control group are formed on the basis of children aged 11-13. The experimental group consists of young athletes who are engaged in the volleyball section based on the developed methodology. The control group conducts training according to the generally accepted methodology. Each group will consist of 10 participants. None of the participants in the experimental and control groups should have been involved in volleyball.

Volleyball players in the experimental group are initially given theoretical information developed on the basis of the experiment. In the second stage, a specially developed methodology is used to solve the research problem during one average training cycle and at the initial preparatory stage. It is carried out as follows. To solve the initial task of using a newly developed special exercise complex to develop the jumping ability of young volleyball players, the following set of exercises is given at the beginning of the main part of the training of volleyball players in the experimental group:

1. Jumping and hitting a ball hanging from the waist on a jumping expander and along the floor with a shock absorber

Jumping over obstacles at different heights.

Jumping on boxes at different heights.

Table 1

	Test exercise set	Group	Before the study $X \pm \sigma$	After the research $X \pm \sigma$	Difference
	Jumping and hitting a previously inflated ball on a jumping trampoline (10 times).	$\frac{N}{T}$	$\frac{4 \pm 2}{4 \pm 1}$	$\frac{6 \pm 2}{8 \pm 1}$	$\frac{2}{4}$
	Jumping over obstacles of different heights (cm).	$\frac{N}{T}$		$\frac{44 \pm 3}{40 \pm 5}$	$\frac{4}{9}$
	Box-jump[4] (sm)	$\frac{N}{T}$	$\frac{30 \pm 5}{30 \pm 4}$	$\frac{43 \pm 4}{50 \pm 5}$	$\frac{13}{20}$

Note. The changes in the high jump exercises given to children in the T-experimental and N-control groups.

At the end of the main part of the training, the following exercises are proposed to be given to solve the task of developing explosive leg strength:

1. Sitting on one leg, quickly jump to a height and hit the ball.
2. Touching the knees to the chest 10 times, then touching the toes with a jump to the tips of the toes 10 times.

The results of this study confirm and supplement already known observations, and also help to obtain completely new data on the studied issue. However, it may be that if the coach conducts training using outdated methods, such as physical exercises based on simple repetition of movements related to

general and individual abilities, the level of growth of athletes will be low. This method is ineffective, because “these skills can be considered not as muscle training, but as knowledge that needs to be acquired and implemented” (Beerli, 2000)[5].

The results of the study show that the above-mentioned special exercises in a single average cycle of training can develop the quality of jumping ability of young volleyball players related to their technical and tactical movements:

- exercises in jumping on an unknown ball with a shock absorber on the waist and floor in advance improve the quality of jumping and accuracy, develop leg strength, and help in the short-term use of attack or counterattack methods with great force;

- jumping over obstacles at different heights improves jumping endurance, leg strength, and harmoniously develops other physical qualities;

- jumping on boxes at different heights increases and improves agility, explosive power, and is associated with movement skills performed on a speed-strength basis develops endurance.

At the end of the main part of the training, by solving the task of developing explosive leg strength, the following conclusions were reached:

- sitting on one leg, quickly jumping to a height and hitting the ball is a successful factor in performing an attack shot over the net;

- touching the knees to the chest 10 times, then touching the toes 10 times while jumping on the toes develops general endurance at an average intensity, which was found to be a fundamental task for developing special endurance, especially for young volleyball players at the initial training stage [6].

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