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## **DEVELOPMENT OF GENERAL AND SPECIAL PHYSICAL QUALITIES OF 15-16 YEAR OLD VOLLEYBALL PLAYERS THROUGH SPORTS SECTION TRAINING**

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### **Abstract**

The article discusses the methodology of developing general physical qualities in 15-16-year-old volleyball girls through volleyball training. At this age, the basic physical parameters that need to be developed, such as strength, endurance, speed, flexibility and coordination, are studied. Special exercises and educational programs aimed at increasing these qualities, as well as recommendations for organizing the educational process, are described.

**Keywords:** Athletes, age, physical, qualities, strength, endurance, agility, skills, flexibility, speed, training, volleyball.

### **Introduction**

Physical training of young athletes is one of the most important components of sports training and is understood as a process aimed at the comprehensive development of the body, strengthening health, improving physical abilities and creating a solid functional base for all other types of training.

Modern sport places high demands on the physical fitness of athletes. This can be explained by the following factors:

- 1) The growth of success in sports always requires a new level of development of physical abilities from the athlete;
- 2) A high level of physical fitness is a prerequisite for increasing training and competition loads.



According to the nature and direction of the effects of the means used, physical training is studied as general physical training (GPT) and special physical training (SPPT) [1].

### **Relevance of the study**

Based on the results of his research, M.I. Popichev emphasizes that in order to apply exercises that develop jumping ability in young volleyball players, it is necessary to divide their body joints into four groups depending on their length [2]. 1 - children with short legs, long hips and torso; 2 - children with long hips, torso and short legs; 3 - children with long legs and short hips; 4 - children with short hips, long torso and long hips. The author admits that the use of jumping exercises taking into account these morphological features gives progressive results in children belonging to group 1. After a certain period of time, their jump height and landing force increased, and their time decreased. According to a number of authors, when developing strength in young volleyball players, it is important to know which group of “muscles” performs which technique of game loads. They identified 8 muscles of the executive organs:

- 1) flexors of the wrists;
- 2) flexors of the elbows;
- 3) flexors of the shoulders;
- 4) flexors of the trunk;
- 5) flexors of the trunk;
- 6) flexors of the thighs;
- 7) flexors of the calves;
- 8) flexors of the feet.

In this regard, the authors recommend taking into account the sensitive periods of development of strength types: the development of the wrist flexors is at 11-12 years old, the elbow flexors - at 12 and 14-15 years old, the trunk flexors - at 11-12 and 14 years old, the trunk flexors - at 11 and 13-15 years old, the toe flexors - at 11 and 14-16 years old.

According to the opinions of A.V. Sukhanov, E.V. Fomin, L.V. Bulikina, in the practice of training volleyball players, it is important to take into account the share

of each joint in the jumping movement in the development of jumping ability and jumping endurance (Table 1.8).

According to E.K. Akhmerov, it is important to use exercises taking into account the age and physical capabilities of the participants in the long-term training process of volleyball players. He emphasizes that, especially when using strength-building exercises, firstly, these exercises should be adapted to the technical and tactical methods specific to volleyball, secondly, effective use of recovery tools between exercises, and thirdly, the content, direction, and specialization of the exercises should be consistent with the annual training cycles [3].

**Table 1.4.1 The percentage of joint involvement in the jumping movement typical of volleyball players**

№	Body joints	Percentage of body joints involved in jumping movements (%)
1	Muscles that flex the toes	22%
2	Muscles that straighten the knees	56%
3	Muscles that straighten the torso	10%
4	Muscles that raise the head	2%

**Table 1.4.2 Normative requirements for physical training for teenage volleyball players (according to Yu.D. Zheleznyak)**

№	Test exercises	11	12	13	14	15	16	17	18	19-20
1	Body length, (cm)	160	165	157	180	184	190	192	195	198
2	30 m. run, (sec)	5,3	5,2	5,1	5,0	4,8	4,7	4,6	4,6	4,5
3	6x5 m. run, (sec)	12,0	11,5	10,5	10,2	10,0	10,0	9,7	9,5	9,2
4	“Arch-shaped” run – 92 m. (sec.)	29,0	28,0	27,0	26,5	26,0	26,0	24,8	24,0	23,2
5	Vertical jump from a place, (cm.)	45	50	60	65	70	80	84	86	90
6	Vertical jump from a running position, (cm.)	50	56	66	72	78	88	94	96	100
7	Throwing a 1 kg. soft ball behind the head with both hands while sitting, (m.)	5,0	6,2	7,2	8,0	9,0	10,0	13,0	14,5	16,0



**The purpose of the study.** The use of exercises that develop physical fitness in volleyball players throughout the year should not only be adapted to the goals of the training sessions planned in the training cycles and the nature of the competitions, but also be based on the physical abilities that are priority for players specializing in various game functions (roles). In particular, it has been proven by experts that for passers, speed ability is 94.6%, speed endurance is 83.8%, jumping ability is 59.5%, for attackers, jumping ability is 91.9%, jumping endurance is 86.5%, quickness of the hand during the shot is 81.1%, and speed for the libero is 97.3%.

**Research results and discussion.** The author's research revealed that the share of leading physical qualities in volleyball has different scores. For example, in the first place are speed-strength qualities - 6.5 points, in the second - speed - 6.2 points, in the third - endurance - 5.9 points, in the fourth - power abilities - 5.8 points. He proves the need to rely on such data with such factors as the fact that as the competition period ends, these basic physical abilities gradually weaken in players, especially attackers and passers. For example, it was found that their power abilities decrease to 18.9%, speed - 21.0%, speed-strength - 22.2%, and endurance - 22.0%. In the libero, the triple jump on the ground can be reduced by 18.1%, agility by 23.0%, vertical jump from the ground by 24.1%, agility endurance by 19.4%. Similar opinions were also supported by V.Yu. Zubkov (2000). In addition, the same author admits that in the first stage of the preparatory period, the qualities of agility-strength, agility and agility are developed, in the second stage - agility-strength, jumping ability, agility and jumping endurance; in the third stage - agility, jumping ability, agility and agility endurance. During the competition period, it is advisable to develop: in the first intermediate stage - speed, jumping endurance and agility, in the second stage - speed-strength, speed, in the third stage - speed, jumping endurance, in the fourth stage - speed-strength, speed and special jumping ability. According to the recommendations of A.P. Grigorev et al., in the process of training volleyball players, along with the development of physical qualities and the formation of technical and tactical movements, it is important to emphasize the development of complex movement reactions, especially the ability to react to a moving ball through specialized exercises. In recent years, in the literature published



within the framework of the theory of physical education, including the theory and methodology of sports, types of jumps, jumping ability and jumping endurance have been widely studied as an object of research (Yu.V. Verkhoshansky, 1988; V.P. Filin, 1995; L.P. Matveyev, 1999, 2005; L.P. Volkov, 2002; V.N. Platonov, 2004, 2013, 2015; Zh.K. Kholodov, V.S. Kuznetsov, 2008, 2014; Yu.D. Zheleznyak, 1998, 2005; A.V. Belyayev, M.V. Savin, 2000, 2009; Yu.N. Kleshev, 2002, 2003; L.R. Ayrapetyans, 2006; L.R. Ayrapetyans, A.A. Pulatov, 2012; A.A. Pulatov, M.A. Kdirova, 2018; S. Boychenko, YU. Voynar, A. Smotrisky 2002). At the same time, in these sources, the phases of the jump, coordination, height (or length) and biomechanical laws corresponding to the technical and tactical methods performed by jumping in each sport, especially in sports games, have not been studied in detail and are not scientifically substantiated [4].

## Research Results

From the analysis of the above data and opinions, it is clear that training young volleyball players, especially 15-16-year-old volleyball players who are just starting out in professional volleyball, requires compliance with the specific features of annual training cycles in the formation of their physical and functional capabilities, in other words, general and special physical performance. In this regard, knowing the real capabilities of children involved in this area by conducting tests that give objective results and basing the use of exercises on these capabilities ensures the effectiveness of the ongoing pedagogical process.

In modern volleyball, special endurance of various contents (jumping endurance, speed and speed-strength endurance, game endurance) is recognized as a decisive factor. Because the concept of endurance, including the above types of endurance, means the effective performance of this quality or game skill at a high level of performance without getting tired for a long time.

As described in the literature of Professors L.R. Airapetyants, A.A. Pulatov, speed and speed-strength endurance are the ability to move around the court and perform game skills effectively many times at high speed. They emphasized that the development of these qualities is carried out using repeated repetitions of special exercises performed at high speed [5].



In order to prevent excessive fatigue or strain when developing these qualities, it is advisable that one repetition of exercises (or sets of exercises) performed at high speed be 20–30 s, the interval between exercises (rest) is 1–3 minutes, and the number of repetitions is 4–10 times. Jumping endurance. In modern volleyball, almost all game skills (scoring, receiving and passing, hitting and blocking) are most often performed by jumping. So, during one match (game), the performance of the jumping game skill is repeated many times. Therefore, although this quality actually expresses the speed-strength quality, it is advisable to pay special attention to its development and exercises that educate this quality.

Game endurance - includes all the above-mentioned types of endurance and, due to this, creates the basis for volleyball players to work throughout the game without reducing the level of effectiveness of technical-tactical skills.

Sample exercises specially selected for the development of endurance quality:

Jumps with both legs on the side while standing on a gymnastic bench placed lengthwise for 15-20 sec. Jump as much as possible in the first attempt. Jump as high as possible in the second attempt. 1-1.5 min in the 4-5th series.

## CONCLUSION

In conclusion, it should be noted that the importance of a systematic approach to the physical training of 15-16-year-old volleyball players was emphasized. Based on the study and analysis of practical data, it was concluded that in order to achieve optimal results, it is necessary to combine special volleyball exercises with general physical activity. It is recommended to pay special attention to individualizing training, constantly monitoring physical condition, and regularly updating training programs based on the latest scientific data and practical achievements. This will create conditions for the comprehensive development of the physical qualities of young athletes, preparing them for successful participation in competitions of various levels.



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