



ANALYSIS OF THE INDICATIONS OF THE SPECIAL FORCE WITH YOUNG VOLLEYBALL PLAYERS

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ABSTRACT

Physical preparation of volleyball player is one of the factors the efficiency of the team, group and individual technical-tactical actions are dependent on. Nevertheless of the level of technical preparation of a competitor, he could hardly reach success, if he doesn't have good and versatile physical preparation. Volleyball becomes more and more athletic game – saturated with great number of single combats at the net, jumps, movements and etc., and that is why, the good speed-force preparation is an obligatory quality of the professional volleyball player. At the base of the efficient execution of the technical elements of the game are the coordination capabilities. According to a number of authors, an important peculiarity of the sports, characterizing with a complex manifestation of motor qualities, the volleyball being one of them, is that the special physical preparation is realized basing the special force preparation, requiring a complex development of explosive force, speed-force (jump) endurance, force dexterity and etc. The aim of this investigation is to increase the efficiency of the work for development of the special force in volleyball, through establishment of the variability of its main indications with young female volleyball players in the age limit 15-17 years.

Key words: physical preparation, volleyball, growing ups

INTRODUCTION

The process of force preparation in contemporary volleyball is directed towards development of various force qualities, increasing the muscle mass activity, strengthening of connective and bones tissue, improvement of the figure (1, 2).

In parallel to the development of force, preconditions are created for increasing the level of the speed qualities, jumping, flexibility, coordination capabilities of the contestant. Important part of the force preparation is the increasing of the capabilities of volleyball player for realizing the force qualities at the conditions of the training and competitive activity, and also the optimum interrelation of the force, through the technique of the game (2).

According to the eminent expert on condition preparation, Y. Karabiberov, going deep in the

essence of muscle work, engaged in specific movements, reveals that the same has its own specifics and forms a specific (muscle) spectrum, in which the quality force is a basic element, mutually potentiating on manifestation with the speed, endurance and dexterity. It means that the physical (motor) qualities should not be considered as separate, functionally isolated parameters of the physical preparation system, but as mutually potentiating in functional entity, subjected to conditioning (3).

The special motor preparation is among the main themes in the scientific developments of the sport teachers and trainers. Petar Ivanov (4) investigates the level of special motor fitness of volleyball competitors of the UNWE, and basing it defines trends for optimization of physical preparation, both of the team as a whole, and the separate competitors for forthcoming matches of student's championship. The author outlines main trends for additional independent work for improvement of the indications dropped behind.

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In his monograph, Zheliazko Georgiev (5, 6) considers the issues of the physical capacity of students. He is of the opinion that the results of such investigations have enormous practical significance, presenting the passing state of the capacity, revealing the relations and regularity of physical qualities and building up of models for their development and perfection. Also, in another scientific investigation, Georgiev deems that a great number of scientific surveys in the field of Physical education and sports, are connected with experimenting of new means and methods for influencing, and having a favourable effect on the physical development of grow-ing ups. According to him, the proper physical development and high level of physical capacity are an obligatory basis for building up of them, as socially active persons.

The motor qualities of students are also the subject of research in the scientific developments of the specialists Spas Stavrev, Ivan Stoilov, Ivanka Stavreva. In their works, they apply tests for general physical training of students practicing basketball and football (7-10).

Milena Ignatova (11) also works on the problems of the physical fitness of female students. She implements a strength training program for students in order to develop speed and endurance.

According to a number of authors (1, 2, 12), an important peculiarity of the sports, characterizing by complex manifestation of the motor

qualities, the volleyball being such, is that the special physical preparation is realized basing the special force preparation, requiring a complex development of an explosive force, speed-force (jump) endurance, force dexterity and etc. Something more – gaining of high sport achievements, at a significant level is deter-mined by the possibilities of constant perfection of the methods for cultivating the physical qualities, which is the aim of our investigation.

The aim of this investigation is to increase the efficiency of work for cultivating the special force in volleyball, through establishing the variability of its basic indications, with 15-18 years old female volleyball players.

METHODS

Subject of the investigation is the physical preparation of female volleyball players in the age limit 15-18 years.

Target of the investigation are female volleyball players (15-18-years old), competing for the teams of CSCA, Levski, Lokomotiv, Maritsa, Septemvri.

For the needs of the investigation, the female volleyball players are subjected to sport-pedagogical testing by means of 12 indices (**Table 1**), carrying information of the level of de-velopment of the special force, both of the upper and lower limbs of torso. The observed target group is distributed into 2 groups — 15-16-years old female contestants and 17-18-years old ones.

Table 1. List of indices of special physical preparation of female volleyball players

№	Indices / Parameters	Measurement units	Accuracy measurement	Growth increase
1.	Dynamometry – strong hand	kg	0,100	+
2.	Dynamometry – weak hand	kg	0,100	+
3.	Solid ball catch – strong hand	m	0,05	+
4.	Solid ball catch – weak hand	m	0,05	+
5.	Solid ball catch – two hands	m	0,05	+
6.	Volleyball ball – striking hand	m	0,05	+
7.	Abdominal presses	number	1,0	+
8.	Standing position vertical jump	cm	1,0	+
9.	Vertical jump after gaining strength	cm	1,0	+
10.	Standing position long jump	m	0,05	+
11.	Long jump (triple)	m	0,05	+
12.	Squatting to give up	number	1,0	+

For realization of the aim set and tasks of the investigation, the following methods of investigation have been applied: literature survey, sport-pedagogical testing.

Results from the survey have been subjected to mathematical - statistic processing through variation analysis. Calculations have been made by means of the statistic programme SPSS.

RESULTS

Results from the variation analysis of the outcoming data of the carried out by us sport-pedagogical testing, characterizing the level of the speed-force preparation of the investigated female volleyball players, are presented on **Table 2 and Table 3.**

Table 2. Average values and variability of the indications of special force preparation – 15-16- years old

№	Indices / Parameters	X	S	V	min	max
1.	Dynamometry – strong hand	34,26	5,62	16,39	25	46
2.	Dynamometry – weak hand	31,18	4,91	15,74	19	43
3.	Solid ball catch – strong hand	5,24	0,89	17,05	4	7
4.	Solid ball catch – weak hand	4,73	0,73	15,40	3,8	6,74
5.	Solid ball catch – two hands	8,07	1,24	15,33	5,5	11
6.	Volleyball ball – striking hand	8,29	1,05	12,71	6,5	10,2
7.	Abdominal presses	28,45	3,30	11,60	22	34
8.	Standing position vertical jump	35,21	7,24	20,56	22	49
9.	Vertical jump after gaining strength	40,45	8,58	21,21	26	57
10.	Standing position long jump	1,85	0,16	8,78	1,5	2,15
11.	Long jump (triple)	5,78	0,51	8,90	4,3	6,6
12.	Squatting to give up	76,97	17,74	23,05	45	120

As it is aware, per the norms of the sport statistics with coefficient of variation between 10 % and 30 % it could be deemed that the respective index is relatively stable, and the investigated aggregate relatively – homogeneus as regards the indication, of which this index carries information. Therefore, with high guarantee probability (Pt \geq 95 %), it could be deemed that the group of the investigated by us young female volleyball players is relatively homogeneous as regards the level of development of the hold force and explosive force of upper limbs and shoulder girdle.

As indicated on **Table 1**, for establishing the level of development of the torso explosive force (mainly of the abdominal muscles), Test 7 has been applied (“abdominal presses”).

Analysis on **Table 2** and **Table 3** shows that the investigated contestants have performed between 20 and 35 lifts from occipital position. Coefficient of variation with it is 11,60 % with 15-16-years old, and 16,01 % with 17-18-years old ones, which gives a reason for this index to be attached to the group of the stable ones, and the investigated aggregate to be deemed as homogeneous also

as regards the level of development of the explosive force of the abdominal muscles of the included in it female volleyball players.

Analysis of indices 8 and 9, carrying information of the level of development of the explosive force of lower limbs shows, that these two indices are relatively stable, with a coefficient of variation V out of 16,49 % up to 21,21 %.

Analysis of indices 10 and 11, also carrying information of the level of development of the explosive force of lower limbs at muscle efforts on horizontal plane, shows that these two indices are the most stable ones. With them, the values of coefficients of variation V are 8,78 % and 8,90 % respectively and 7,71 % - 9,84 %. It means that there are no significant individual differences at the level of development of the explosive force of lower limbs at muscle efforts, on the horizontal plane, that gives a reason for the investigated aggregate to be deemed as homogeneous as regards this index of the special speed-force preparation.

Table 3. Average values and variability of the indices of special force preparation – 17-18 years old

№	Indices / Parameters	X	S	V	min	max
1.	Dynamometry – strong hand	31,72	4,23	13,33	26	40
2.	Dynamometry – weak hand	29,63	4,08	13,77	24	37,3
3.	Solid ball catch – strong hand	5,17	0,82	15,83	3,8	7
4.	Solid ball catch – weak hand	4,78	0,81	17,03	3,7	6,5
5.	Solid ball catch – two hands	8,34	1,01	12,17	6,5	10
6.	Volleyball ball – striking hand	8,76	1,24	14,11	6,5	12
7.	Abdominal presses	27,75	4,44	16,01	20	35
8.	Standing position vertical jump	37,89	8,19	21,61	22	50
9.	Vertical jump after gaining strength	42,79	9,61	22,46	23	60
10.	Standing position long jump	1,87	0,14	7,71	1,6	2,15
11.	Long jump (triple)	5,83	0,57	9,84	4,5	6,9
12.	Squatting to give up	76,36	24,55	32,15	35	130

The last index investigated by us (12th), carries information of force endurance of lower limbs. It becomes clear that it is the most variable index, included in our test battery. With it, the achievements of female volleyball players are between 35 and 130 squats and quite naturally, the coefficient of variation is the highest ($V = 23,05\%$ and $32,15\%$). But in spite of this, as it has been indicated above, values of the coefficient of variation within the range up to 30% give ground for the respective index to be deemed as relatively stable, and the investigated aggregate – as relatively homogeneous, as regards the assessed

indication. Therefore, the investigated aggregate is relatively homogeneous also as regards the level of development of the force endurance of the included in it female volleyball players.

The comparative analysis of the achievements of 15-16-years female competitors with those of 17-18-years old **Figure 1** shows that on 7 of the indices the advantage is in favour of the higher age group, and on 5 indices – younger female volleyball players have shown better achievements.

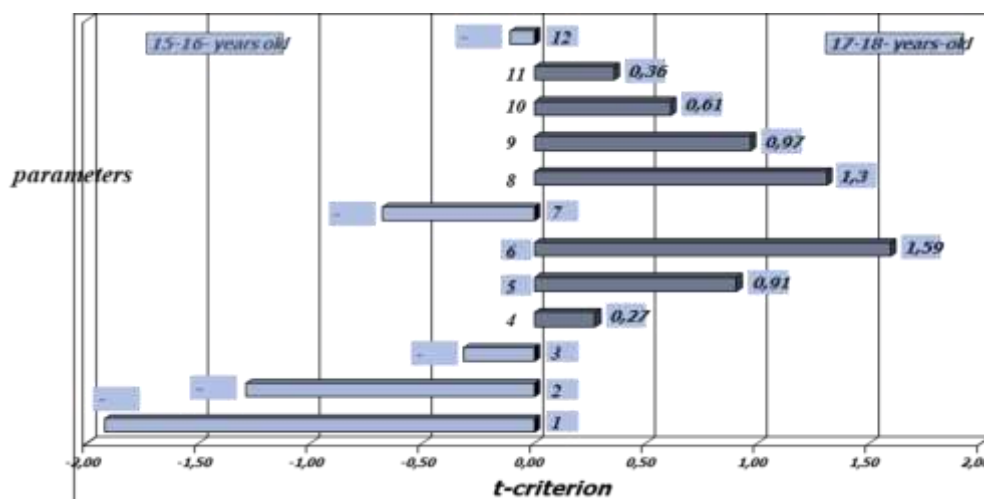


Figure 1. Significance of differences between the average levels of indices of sport-force preparation of 15-16 – years old, and 17-18-years old female volleyball players

However, from the figure, it is seen that the values of t-criterion with all investigated indications are under the critical ones and consequently, here with a high guarantee probability the zero hypothesis could be

confirmed, referring the significance of the investigated differences between the average levels of the indications of speed-force preparation, with both groups which means

that these differences are insignificant and probably accidental.

However, in spite of this, the coefficients of variation V, with all investigated speed-force indications are within the limits up to 23,05 %, as only the last one – the 12th index is 32,15 %, i.e. these indications are relatively stable. It allows the using of a collective approach with applying the training influences, directed to cultivating of sport-force qualities.

CONCLUSION

The indices investigated by us are stable and relatively stable, and the investigated aggregate is homogeneous and relatively homogeneous as regards the indications of the special force preparation of the included in it female volleyball players.

The most variable are the indices, characterizing the level of development of the force endurance of lower limbs.

The focus in the future work for development of force endurance of lower limbs to be directed towards the female contestants, having the lowest achievements, on index 12th .

With work for cultivating the special force of upper limbs, an individual approach is to be applied.

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