



The Study of Technical-Tactical and Physical Parameters of Modern Volleyball Through Specific Models in the Defense Element

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Abstract

The topic that I have prepared has as its object the influence of the physical-technical and functional parameters on the technical-tactical ones of defense in modern volleyball. In this study, I have tried to have as an objection, the theoretical developments and the practical explanations in the preparation process of volleyball players. On this basis, the premise and possibility for the effective construction of a training methodology through which it is possible to improve the physical parameters have been created. technical and functional and uninterrupted mobility in defense. It was for this reason that I undertook this work which will shed light on the problems of organizing the training process to increase these indicators of preparation through tests in the specific conditions of the volleyball game. The aim of the study is to improve the physical-technical and functional indicators through tests, specific recommended exercises during the training process with the women's teams. New, which will undoubtedly affect the tactical activity of the game in attack and defense. On this basis, the opportunity for a contemporary training methodology has been created. To undertake this study, we selected a contingent of 32 volleyball players aged 19-23 years, where 16 volleyball players were treated as an experimental group and the other 16 as a control group relatively in a period of 12 months.

Keywords: volleyball, methodology, parameter, models, defense

1. Introduction

The study aims to make a complete and deep analysis of all aspects of the volleyball game, which are related to defensive tactical actions, the degree of influence of physical and functional parameters on the efficiency of the sports result, as well as their improvement to a higher degree, as a result of applying a moderate exercise program. The program has worked and is mainly based on the physiological and specific requirements of the defensive game in volleyball. To achieve this basic goal, several tasks are set:

- Updating with the basic directions of the contemporary training process in the framework of the development of physical-technical and functional qualities and our positive experience in this field.
- The study of the theoretical and practical bases for the development of physical and functional preparation in accordance with the requirements of the game in defense.
- Practical development of training models for physical-technical preparation during the periods and stages of the training process.
- Generalization of data on physical-technical and functional indicators for the creation of new concepts, for the organization and effective development of training in accordance with our conditions and possibilities.

2. The Methodology of the Study

With the realization of the scientific, methodical and organizational parameters, it became our task to follow a special methodical procedure.

- Recent achievements in the field of organization and development of physical-technical, functional, coordination, and tactical preparation in defense were studied and analyzed.
- An important place in this framework is the analysis of the plans and educational-training programs of the FSHV teams, problem scientific articles by several authors and the Institute of Sports Science near the University of Sports.
- I have supported my views and practical applications in the knowledge gained at UST, in international seminars during the "Shape" project, as I am currently also the coordinator of the group.
- Testing and modeling of indicators is done in accordance with contemporary requirements, for each physical quality and etc.
- Methodology of using tests
- Evaluation
- Material basis

Tests used:

1. Weight
2. Height
3. Touch of height with one hand from place.
4. Touch of height with one hand jumping from the place
5. Touch of height with two hands jumping from the place
6. One-handed high jump touch.
7. Maximum power relative to that of the Leonardo platform.
8. The time of Completing the 92 meters test running on the volleyball court
9. Illinois Test Completion Time
10. Hexagon Test Completion Time.
11. L-Test Test Completion Time.
12. T-Test Test Completion Time
13. Number of jumps in 20 seconds in the touch test of the bottom corners of a basketball backboard in 20 seconds.

II. Modern sport is an all-encompassing and multi-dimensional activity where all the most essential elements of human being, such as functional, physical and social unity, are combined in a unique complexity. On the other hand, sport is today, no longer a phenomenon localized only in a certain group of society or a certain social stratum. Modern sport is the property of the whole society, it is present in all layers and levels, in all age groups and geographical areas. Along with the popularity and flourishing of the game of volleyball, the technical level of the game has also progressed rapidly. From one world championship to another that takes place every 4 years as well as from one Olympic tournament to another, the technical values of the participating teams have been improved and today this finding is very difficult to distinguish the best teams in the world.

The advancement of the technique of the volleyball game is closely related to the advancement and improvement of the technical elements of the game as well as the elaboration and improvement of new techniques and the execution of technical elements or new procedures.

This progress should be seen under the prism of the war that takes place between the two opposites of attack and defense, a war that is the engine of the development of technique and the game of volleyball in general. In this context, the evolution of the attack surpasses the defense and at this moment, in order to balance the ratio of forces between the attack and the defense to a certain extent, as well as to ensure the very existence and progress of volleyball, changes to the regulation of the game of volleyball have intervened, which have especially enriched the defense technique and raised the power of the defense next to that of the attack. The training process of modern volleyball has undergone radical changes compared to that of a few years ago. And in this context it must be admitted that the rhythms of these radical modifications have also changed. If the introduction of a new methodology was much slower a few years ago, today everything, even in terms of the training process, moves much faster and spreads much more intensively.

The main element of today's training process, in its long-term perspective, is based on some basic principles, which constitute the pillars of the conception of the actuality and perspective of this sport.

They are:

1. *Height shift of the net game.*
2. *Maximum dynamism in tactical actions.*
3. *High technique and freely adoptable in conditions of undetermined alternatives of the game situation.*
4. *Matching the possible limits of body size with maximum coordination.*

Specifically:

1. *Height shift of the net game.*

It is clear that the increase in the height of the net volleyball game is a product of a combination of the increase in the body height of the volleyball players, on the one hand, and the increase in the functional indicators of strength and power that produce a greater jumping performance. Numerous studies show that there is a clear connection between body height indicators and the elite level of athletes. A better team has taller athletes. On the other hand, the vertical jump is also very related to the quality of the result. The challenge of modern volleyball today is to find and train athletes who have these two elements, i.e. body height and jump height in the most optimal ratio. This has led to the fact that today we have touch heights in the limits of 3.70 m for men and 3.30 for women, while the height of 3.30 m was a very ambitious target for elite men only 20 years ago.

2. *Maximum dynamism in tactical actions.*

The challenge of today's volleyball is to combine the physical height of the athletes with the demand of an increasingly maximum dynamism in the game. It has already been established that body height is an indicator that does not have a high correlation with agility. Meanwhile, when the demand for tall players is an imperative, this is also accompanied by the demand that, at the same time, these players possess as much dynamism as possible. This contradiction is solved or is intended to be solved first, through the selection of athletes with these characteristics.

3. *High technique and freely adoptable in conditions of undetermined alternatives of the game situation.*

Volleyball is a sport that presents very high demands for the technical execution of specific sports gestures. But, like any situational sport, the conditions in which this technique is executed are variable and unpredictable. This means that mastering the technique of the fundamental elements of the volleyball game should not only be in the classical conditions of the game but also in variable and unexpected conditions.

Believing that the first three elements are easily understood in their definition, I am further discussing the fourth point. Today it is clear that volleyball requires a considerable body height which is a condition for success, but we must take into account what the first point of the above list also defines (Height shift of the net game).

This request has two main problems. First, height is usually inversely proportional to coordination skills, which means that a tall body is a prerequisite for less developed coordination skills. Deficiencies in coordination skills, or not reaching their optimal level, has consequences in all elements of the volleyball game: in attack, in the block and especially in defensive actions in the second line.

If each player does not have a level of all-round preparation that is satisfactory and sufficient for the level of volleyball that their team must produce, then this would create significant technical deficits in results.

On the other hand, length can help to achieve height but if it is not accompanied by a satisfactory display of jumping then it is not enough. A volleyball player who is 10-15 cm shorter but has 10-15 cm more jumpiness than the one who is taller, not only has the opportunity to compensate for the lack of height, but also has a lot of chances to be more effective if we take into account that the increase in height is almost always accompanied by a decrease in the level of relative jumpiness.

Modern volleyball, or the goal of being a part of it, is a very difficult goal that cannot be achieved unless all the aspects that condition its development are taken into consideration.

And seeing the vitality and adaptive and changing power of volleyball, this is a very crucial but at the same time achievable objective.

1. The scientific literature on the problems of evaluation, analysis and study of the most important parameters of the sport of volleyball is numerous and exhaustive on these topics. However, from its analysis, it is clear that the sport of volleyball needs to continue a more complete and deeper study of its most important aspects, which have a direct impact on the quality of sports activity.
2. The scientific literature on volleyball and other aspects closely related to it, deals with a wide spectrum of factors, where the main place is occupied by technical and training aspects. Among the technical aspects, defense and the elements that make it up, are present in many studies, which also supports our intention to carry out a doctoral study on this topic.
3. Defensive actions have a clear impact on the quality of the result and the performance of volleyball teams.

4. Defense as an important part of the volleyball game is based on:
 - a. *Technical aspects*
 - b. *Tactical aspects*
 - c. *Physical aspects*
 - d. *Anthropometric aspects.*

Each of the above aspects are important and should be handled carefully.

5. Volleyball can guarantee success when all the elements that make up the game are handled as effectively as possible in the training process while keeping as faithful as possible the scheme of actions that are characteristic of the game.

2.1 *Defense in the Game of Volleyball*

The game of volleyball starts with serving, then we have possession - pass - attack - block - defense and again serve - possession....etc. In this chain of successive actions, the main connecting action is defense. The realization of the volleyball game means the sports struggle between attack and defense.

The spectacular aspect of volleyball is not possible without a good defense. The better the defense, the more interesting and lively the game. The attraction that players and spectators feel for the game depends a lot on the quality of the defense.

In a more concrete analysis of the technical elements in the game of volleyball we can distinguish:

- techniques without the ball (movement and displacement of attack and defense)
- techniques with the ball (serves, possessions, passes, shots, blocks).

2.2 *In the content of the technique belong:*

- *technical element*
- *execution variants of technical elements*
- *each player's personal style.*

During the observation of volleyball matches in the framework of this study, we can conclude that in sports games, the correct technical execution is inextricably and directly linked to the fairest and most rational solution of the tactical situations presented to the player in the game.

Tactics can be defined as the set of individual techniques and collective play to achieve the maximum result ().

Tactics in the sport of volleyball consist of:

- *individual tactics;*
- *group tactics;*
- *team tactics.*

Therefore, we have individual tactics in attack and defense.

Attack tactics are related to and affect defense tactics and vice versa. As far as individual defensive tactics are concerned, it has to do with serving, blocking and low defense. When we analyze the tactical actions during the defensive game, we can find that the tactics in defensive groups are with players of the first line, of the second line, of the first line and partially of the second line, of the second line and partially of first line.

So it is said that it is generally impossible to separate technique from tactics, as it is difficult to say where technique ends and tactics begin. The individual tactic of the technical element is the use of all the physical, technical and mental abilities of the player for the benefit of the team, it is the best and most rational way of using the technical baggage of the player in function with teammates, the ball, the net, the opponents to solve the different game situations as correctly as possible in accordance with the team's tactics.

Defense is the technical response with which to stop a potentially winning attack. Defense synthesizes many characteristic aspects of volleyball. In general, in modern volleyball, defense is considered an essential phase of the game, and current trends are increasingly reinforcing the level and increasing influence of defense on the outcome of the match. The offense immediately grabs the attention of the fans, the defense wins games and ultimately wins the championship.

If we make a real concrete perception of this result, we come to the conclusion that:

1. The fact that we attack from the defense, so we counterattack shows the great importance of the back defense, which also plays a compensatory role for the low level of defense in the net - the block.

2. The best way to reduce the gap that exists between offense and defense is to improve the defense in practice, during practice and in the game, regardless of the results of the experiments.
3. Coaches must increase their efforts to perfect the strategy, the systems and formations of the game, the training methods and most importantly the attitude towards the defense and in particular the defense in motion.

3. Defense Training Experimentation

The study that I am presenting aimed to analyze and evaluate the impact that have on the training process, the improvement of the physical-technical elements in mobility and efficiency in defense in women's volleyball teams of the first category. Of course, I worked with two groups and trained for about 12 months, emphasizing defensive exercises. During the weekly training process, special attention was paid to the integration of specific exercises with a protective character with a relative time of 90 min (*one training session*). So, if the control group performed approximately a time of 120-150 minutes in a total of 500 minutes of training time per week, the experimental group performed a training time of 210-240 minutes in a training week. Of course, in the period of 12 months, these training times have been more elastic, but in all cases the experimentation has aimed to preserve this quantitative change of the time available for the training of defensive actions, through a program specifically dedicated to these actions.

The experimental group and the control group were evaluated in terms of the efficiency of defensive actions every 30 days in the matches played between them. The matches were held every 3 weeks between the experimental and the control team, where the composition of the first team and substitutions were also respected. Thus, the teams played with three stable formations. (game lasting two sets for each formation). Thus, in each match the experimental team's main line-up played against the control team's main line-up, followed by the second line-up against the second line-up and the experimental team's third line-up against the control team's third line-up.

For each match between the formations, the statistics of the defensive actions were kept as follows:

1. *productive and non-productive block*
2. *reception from shots in attack*
3. *reception from deadlock*

In the training program of the experimental team, a series of exercises focused on defense and its main technical elements were practiced. These exercises were distributed in three sessions of 30 minutes at an interval of 48 hours from each other to reach a total weekly time of 90 minutes extra over the duration of the normal training process. So, the experimental team realized in this extra time dedicated to defense a training program based on defense exercises. The didactic principle of the program was the transition from simple exercises to more complicated ones.

The training program with experimental exercises was realized as follows:

Team/days	Day 1	Day 2	Day 3
Experimental	Individual exercise	Exercise in group (2-3 players)	Defensive exercise game

4. Conclusions

Based on our achievements in volleyball matches, in the new forms of training as well as in the direction given by the literature of the specialty to the problems analyzed in it, we have reached the following conclusions:

- By alternating different types of exercises and variety of training forms, it helps in the progressive progress of the results in the match. The loads in the general, specific and game preparation should be taken into account.
- Importance should be paid to the loads that pass from one degree of adaptation to another, higher form, they comprise the increasing loads. The study data that we have presented have proven that with the gradual increase in loads, the results in endurance, speed, strength, jumping and the technical elements of the defensive game have progressed.
- Volleyball is a sport in continuous evolution towards the modernization of the game, which is developing faster and faster and higher, indicating that it should occupy an important place in training planning.
- The training process in women's volleyball should reflect the most important needs and demands of the game and be developed in conditions as close to it as possible.
- Defense is the determining element for the quality of the game and its result, therefore, it should be given priority.

- The training of protective actions should be a continuous process and built on the most scientific basis.
- In our experimental work, we are convinced that the use of physical tests makes it possible to eliminate subjectivity in the evaluation of the physical condition, the correct diagnosis of this condition, the discovery of strong or weak points in the preparation of each player.
- The game of volleyball does not have stereotypical frameworks, you cannot restrain the creativity of volleyball players, on the contrary, you must stimulate it. It should be based on the dynamics of actions, on the players' continuous mobility based on high physical-technical, intellectual and tactical preparation.

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