



Science, Movement and Health, Vol. XIX, ISSUE 2 Supplement, 2019
September 2019, 19 (2 supplement): 184-191
Original article

THE STUDY OF SPEED DEVELOPMENT IN 14-15 YEAR-OLD PLAYERS IN THE VOLLEYBALL GAME^A

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Abstract

Problem. Volleyball, being an explosive game, requires maximum and submaximal efforts, interleaved with moments of relative relax. The many dynamic stereotypes that make up the multitude and variety of actions have support for acyclic and cyclic movements.

Objective. The purpose of this paper is to study the manifestation of speed and the possibilities of improving it in a team of hopes, as this level represents the beginning of the performance in the volleyball game and implicitly the structure on which the great performance will be built.

Methods. The study was conducted at the junior team of the Dinamo Bucharest club and we used, bibliographic documentation; interpretation of statistical and mathematical method; graphical representation method.

Results. Observing the results obtained after the last test, we can analyze the evolution of the athletes in our experimental team during the two tests and the relationship between the results of each and we can see that our players have made progress in terms of speed development..

Conclusions. The study confirmed the assumptions made, namely that there were positive differences between initial and final testing of up to 16%.

Key Words: volleyball, developing, speed, game, players.

Introduction

The volleyball game is, in turn, constantly changing. The requirements for great performance are very high and so both coaches and players have had to adapt quickly, change their training and contest patterns.

The volleyball game is in constant change. The requirements for great performance are very high and so both coaches and players have had to adapt quickly, change their training and contest patterns. Nowadays, volleyball is a game in which physical training is dominant. It is very clear that when two teams are at the same level from a technical-tactical point of view, then the difference makes them physical training.

Volleyball-one of the team games, where muscle work is mostly presented by speed-power and coordination. Speed-strength training of volleyball players is solved by means of specialization and individualization of preparation methods, optimization of correlation physical and technical training, taking into account age features, a condition and preparedness of volleyball players that causes need of carrying out additional researches.

At the moment, the game phases tend to drop in time, with faster and more agile executions being needed. Due to the change in technique and tactics, the volleyball player tends to become a perfect, strong, fast athlete capable of responding effectively to the increasing demands of the competition. Unfortunately, these qualities are also genetically conditioned, and to a great extent even speed. The question is: can we still develop this motricity? If so, how much and at what age?

Speed is classically defined as the shortest time required for an object to move along a fixed distance, which is the same as velocity, but without specifying the direction (Harman & Garhammer, 2008). In practical terms, it refers to the ability to move the body as quickly as possible over a set distance. However, in reality, the issue is slightly more complex because speed is not constant over the entire distance a can therefore be divided into several phases: acceleration, maintenance of maximum speed and deceleration (Plisk, 2008). Agility is most often defined as the ability to change direction rapidly (Altug et al., 1987).

The basic definition of agility is too simplistic,



because it is now thought to be much more complex involving not only speed, but also balance, coordination, and the ability to react to a change of the environment (Plisk, 2008). Měkota (2000) considers agility to be physical capability, which by its essence belongs among „mixed“ physical capabilities. It is determined by the quality of regulation (CNS) and analysers, as well as the type of muscle fibers. Therefore, agility should be superior to speed, quickness and coordination abilities. In the past, this term used to be understood as the ability to change direction, or to start and stop the movement quickly (Gambetta, 1996; Parsons & Jones, 1998).

Hypotheses research

By applying programs, speed can be improved by specific and non-specific means of volleyball, over a relatively short period of time.

Applying the means of speed development, the differences between the results of the tests performed at the beginning and at the end of the experimental period are significant.

Methods

The subjects used were from the pre-youth team of the Dinamo Bucharest club, born 2004-2005.

- The working methods were:
- Study of bibliographic material
- Observation method
- Experimental method
- Graphic representation method

It was assumed that the group on which specific and non-specific means of action would be employed, appropriate and guided for speed development during training, would accumulate a wider technical tactical baggage and a faster execution capacity.

- Independent variable (VI):

This is represented by specific and non-specific action systems for volleyball consisting of: games and exercises performed at a minimum of 40% and a maximum of 60%.

- Dependency Variable (VD):

Represented by the players on the speed aspects and indicating whether there is any effect of the VI change.

VD values were obtained from the subjects through the measurements made using the tests.

Control samples.

1. Attack jump.
2. Lifting the trunk from the back of the back.
3. Side travel on the 4 m distance.
 - Running on the 4m distance. The Executor will touch the two strokes of each execution with one hand. The working time is 45s.
4. Triple jump.
 - Run 3 jumps of squatting squatting without stopping. The length is measured. The test will be supported twice. The best performance will be considered.
5. Move 5x6m.
 - The Athlete departs from the bottom line of the field and executes the movement to the attack line. The two lines will be reached at each execution. Five repeats at maximum speed are performed. Execution time is being timed.
7. Consecutive attacks over the net.
8. Consecutive blocking actions over the net.
 - The Athlete will execute 10 freeze-break actions between repeats in zones 3 and 4 or in zones 3 and 2. On the opposite side of the net, two athletes will suspend and hold above the top of the net a ball at which the performer will block effective. The distance between the ball will be 4.5 m. The jam move will be done specifically with the added or crossed step at the choice of the contractor. Timing is executed.
9. Run speed.
 - The distance that the sample is running is 20 m. The start is done from the feet to the sound signal.

The applied program consisted of exercise, speed, movement, reaction and execution speed, specific and non-specific to volleyball

Results

The first test in the test was the jump with an attack. Here we can see the very good evolution of the athlete no. 6 which obtains the highest values for both tests. As can be seen in chart no. 1 four athletes managed to add 4-5 cm to the initial value, which represents considerable progress.

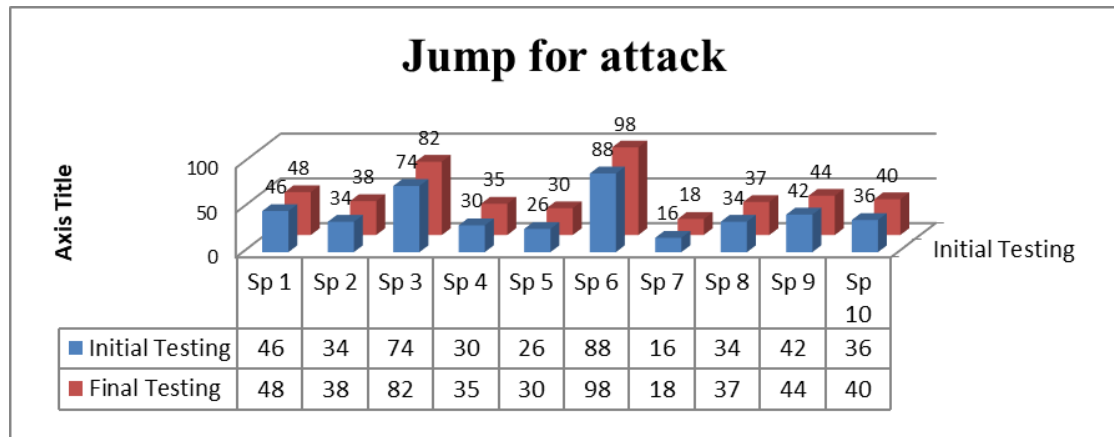


Figure 1. Jump for attack

The second test in our test battery is the lifting of the dorsal trunk. It is a tough, difficult task to accomplish by subjects, but which is indicated in this form in the mandatory tests of the specialized

federation. We consider working time to be relevant, especially as the tests are applied in this form to the senior teams as a benchmark).

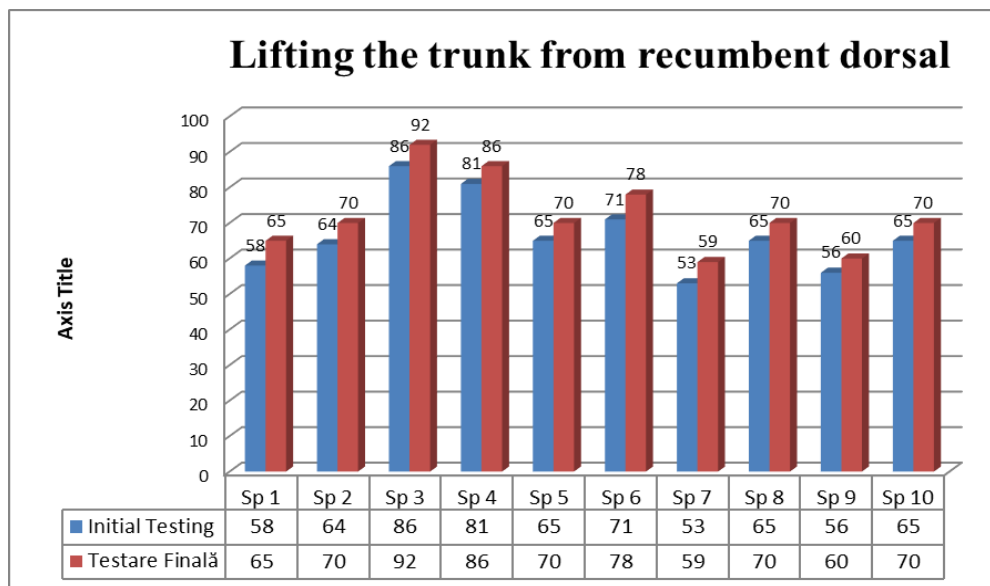


Figure 2. Lifting the trunk from recumbent dorsal

The third test exercise is the lateral displacement of 4 m (Figure 3). It is a test that

corresponds to an important technical structure in the volleyball game.

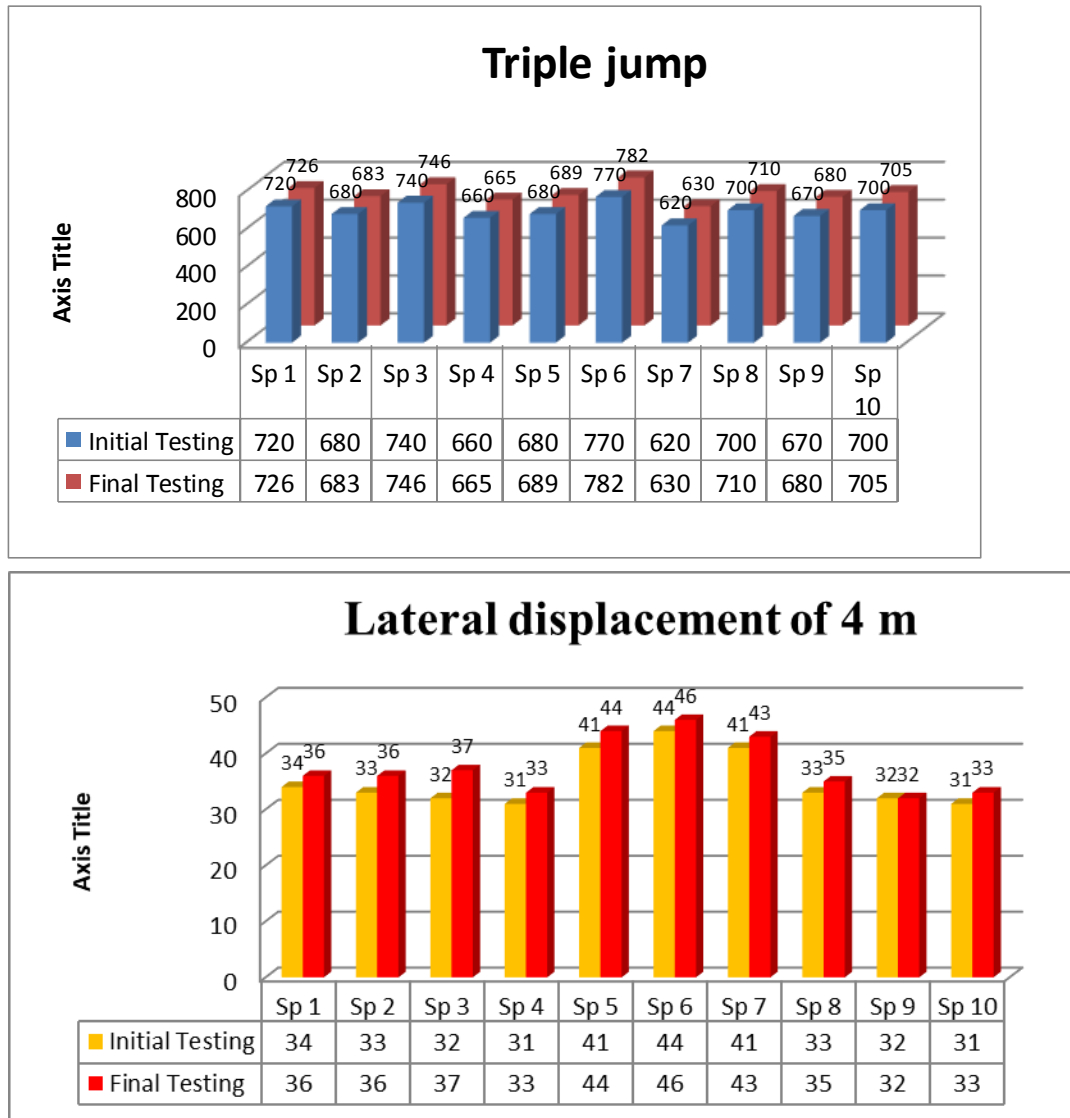


Figure 3. Lateral displacement of 4 m

The fourth sample on the list is the triple jump trial. It is part of the evidence required by the specialized federation. An important aspect of this test is the execution technique. Repeats are required to be paused without interruption. The fourth sample

on the list is the triple jump trial. It is part of the evidence required by the specialized federation. An important aspect of this test is the execution technique. Repeats are required to be paused without interruption

Figure 4. Triple jump

Sample no. 5 is also a displacement sample: 5x6 m. This is a more difficult test, as the displacement runs from the side in the basic position with the

added step. The distance is identical, the number of repetitions differs only.

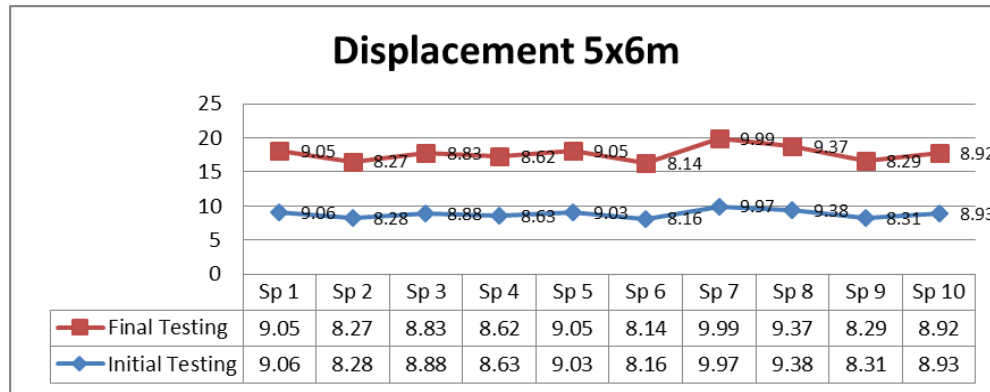


Figure 5. Displacement 5x6 m

In this test, a 10-shot hit from the coach's ball is executed. It is a difficult, tiring test, which also requires jump resistance, not only execution speed.

specific means. In this test and the technique has a limiting role, because at this level the attack strike is an execution that is not fully automated.

The test results require increased attention in future training, to improve the rehearsal speed with

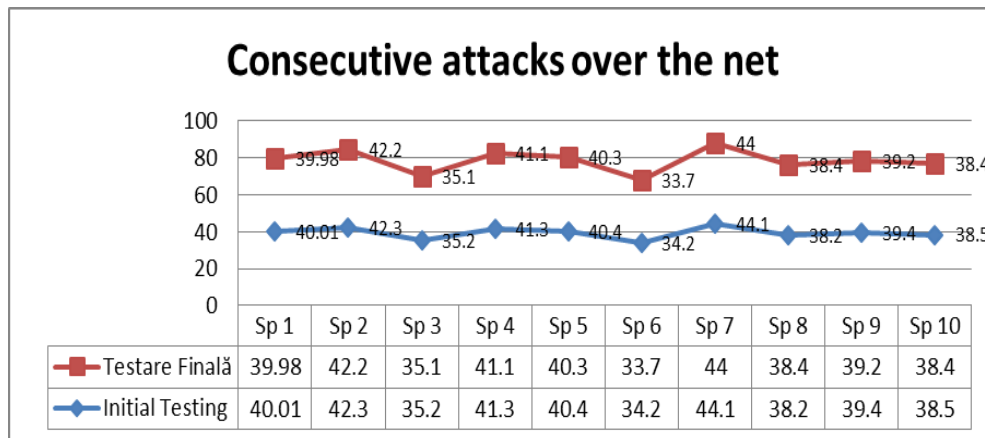


Figure 6. Consecutive attacks over the net

The sequential block action test is similar to the previous one as the number of executions. It is a

testing test especially for central jam players and requires adequate technical luggage.

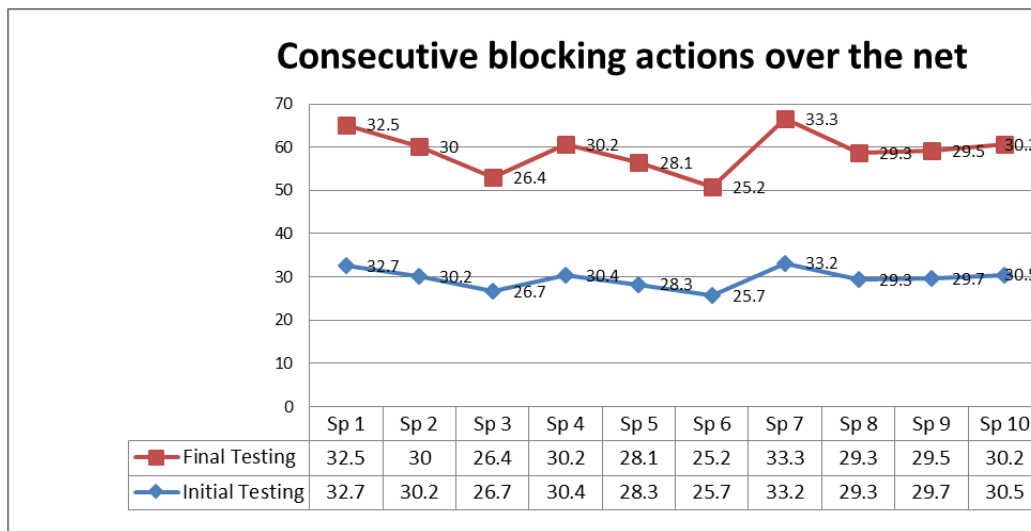


Figure 7. Consecutive blocking actions over the net

The last stage is the running speed of 20 m. It is a very important test in which the auditory stimulus

response speed, mobility processes the transmitted nerve afferent and efferent nerve impulse.

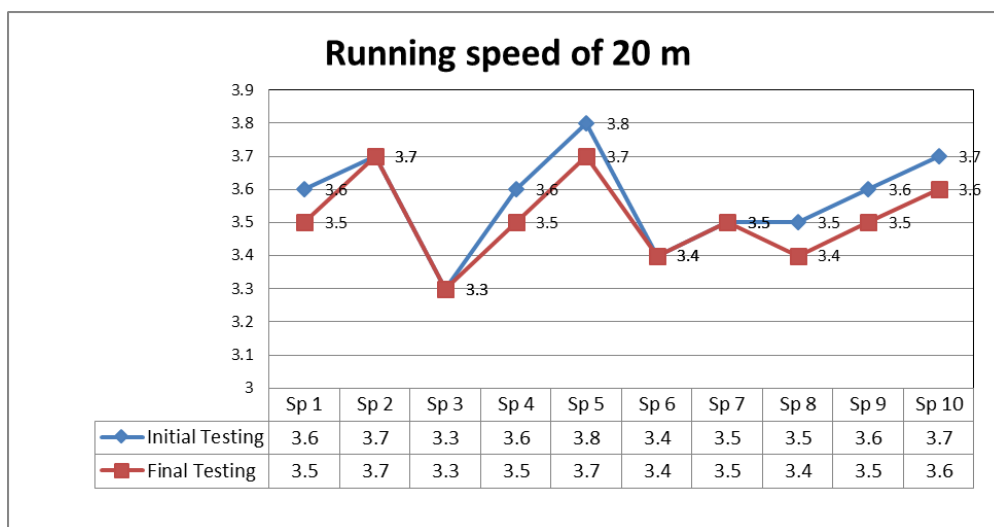


Figure 8. Running speed of 20 m

Discussion



Besides the general forms of manifestation, we also encounter specific forms of this game. The speed of direction change and stop are generally present in games without ball (agility). We can talk about lateral, backward, forward speed. This can be improved by improving the specific technique, developing the force-speed complex, by moving in the field.

Sheppard and Young (2006) also claim that speed and agility represent independent physical abilities and therefore their development requires high degree of neuro-muscular specificity. Perceptual components, which form their fundament and include also anticipation and decision-making processes, play also an important role in their development (Young et al., 2002). However, they are specific for various kinds of sports and players' posts.

After comparing the final results with the initial results for the dorsal lumbar trunk, there were positive results for all players performing on average 5 repetitions more than the initial test, the 4 m lateral displacement there are no differences between the two stages of the test, the players being close as repetitions, the best evolution being the athlete with no. 3. It should be noted that athletes no. 5 manage to make the most of their trips at both the initial and the final tests, achieving a breakthrough of 2 repetitions. at the fourth test, the sportive jump nr. 6 records the highest value dominating the first test (770cm) as can be seen in chart no. 4. Generally, subjects do not have any special evolutions, 12 cm being the greatest difference between the two tests. This at the second test achieves an improved 12 cm performance compared to the initial test.

Spectacular results between the two tests were not recorded in this sample, the 5x6m displacement. Athletic nr. 8 achieves the greatest progress (0.3 s). It is to be taken into account that, apart from a player, all progressed and only one regressed the first test (at No. 10).

Sample number 6, the consecutive attack strikes, shows the differences between the results, which are not significant, but it is gratifying that almost all have achieved positive performance.

The test results require increased attention in future training, to improve the rehearsal speed with specific means. In this test and the technique has a limiting role, because at this level the attack strike is an execution that is not fully automated.

For the consecutive blocking actions, the highest performances are recorded by the sportsman no. 6 (0.5 s), and sports no. 10 and 3 (0.3 s). Generally, differences in test results are not significant. It is

appreciated that there is no obvious regression in this test.

The longest test is the 20 m running speed, where all have better values of at least 0.1 sec.

Conclusions

Following the direct observation on the experimental group we encountered the following forms of velocity manifestation: reaction, execution, displacement (and change of direction), stopping, force - speed complex, speed - resistance complex.

The volleyball game is a dynamic game in which speed does not occur under its pure forms of manifestation but rather they are combined. Characterized as a fast game, performance is dependent on the development of this motoring quality.

Stopping speed is within the specific aspects given its importance. In volleyball, there is a basic requirement for certain executions that must be performed from stable, balanced positions (take-over, from attack) made by stopping fast after a move.

The development of the force-speed complex is important for volleyball. The close link between force and speed can be expressed by the notion of power (a mechanical work done in a time unit). The shorter the time (faster movements), the higher the power, and the more intense muscular stress.

It is necessary in volleyball to improve the speed-resistance complex, especially for jump resistance (a player also performs over 150 maximum jump in a match).

In all nine tests, more than 75% of subjects achieved superior performance, managing to improve speeds by as much as 16%, with the testing period being only 4 months.

Acknowledgments

I thank all students for participating in this study. No funding was used for this study.

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