

THE DEVELOPMENT OF THE SPECIFIC SPEED WITHOUT A BALL IN VOLLEYBALL PLAYERS

Nenad Marelić, Vladimir Janković

Faculty of Physical Education, University of Zagreb, Croatia

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Abstract

Volleyball is a game that is played on a rather small court, demanding a considerable speed level of the top players. The speed in volleyball becomes apparent mostly in the performance of the technical-tactical elements and specific movements aiming at attacking quickly and efficiently (especially in a combination and feint attacks) or at covering optimally the largest possible part of the court in defense actions (block or field defense).

By suggesting a number of exercises, the authors wish to draw attention to the development of the specific speed of volleyball players without the ball as well as to the specification and regularity of the technique of movements around the volleyball court ("backing off" the block to defense, defenders moving from Tempo 1 to Tempo 2 defense, "backing off" the net and run-up for a spike, etc.). A certain number of exercises suggest a different approach to the development of the specific speed in volleyball players (exercises stressing the "step hop"¹ movements and "foot fire"² exercises) and can by all means be considered a novelty in volleyball training. They are the result of empirical knowledge exclusively.

Key words: volleyball, specific speed, training

Zusammenfassung

Die Entwicklung von Bewegungsleistung der Volleyballspieler ohne Ball

Der Volleyball ist ein Mannschaftssportspiel, auf einem relativ kleinen Spielfeld gespielt, wobei von den Leistungssportler ein beneidenswertes Höchstmaß an Schnellbewegungen erwartet wird. Die Schnellbewegungen im Volleyball zeigen sich bei der Durchführung von technisch-taktischen Elementen und spezifischen Bewegungsarten aus, wodurch beabsichtigt wird, den Angriff möglichst schnell und effektiv zu machen (besonders im kombinatorischen und fintierten Angriff) oder optimal einen größeren Spielfeld beim Gegenangriff zu verteidigen (Blockade oder Feldverteidigung).

Durch die vorgeschlagenen Übungen soll die Aufmerksamkeit auf spezifische Schnellbewegungen der Volleyballspieler ohne den Ball gelenkt werden wie auch auf die richtige Bewegungstechnik auf dem Spielfeld (Übergang von Blockade auf Feldverteidigung, Übergang von Feldverteidigung im Tempo I. zum Tempo II., Übergang vom Netz und Aufschwung zum Schmetterschlag, u.ä.).

Schlüsselwörter: Volleyball, spezifische Schnellbewegungen, Training

Introduction

Speed is a motor ability very closely related to genetic determinants. Therefore, the development and improvement of speed are more limited than the development of endurance or strength. This regularity should be taken into consideration even with beginners, in the phase of selection.

Most sports, including volleyball, do not demand extreme demonstration of speed and this ability is developed through rational and methodologically balanced training.

In the process of natural development of speed abilities, it can be said that the highest speed increase and the most promising ultimate speed level are achieved if the training starts before puberty (at the age of 10 in girls and around 12 in boys).

It should be pointed out that the improvement of speed is achieved not only by acting on particular speed mechanisms, but also by developing strength and speed-strength abilities, speed endurance as well as by improving the running and moving techniques, all of which depend a great deal upon the correct manifold preparation of a sportsperson (especially in younger categories).

¹ "Step hop" is a specific way of moving in volleyball, recognizable as 2-step semi-sideways movement of the player not involved in the block into the defense zone, or moving two steps in defense from Tempo 1 defense to Tempo 2 or Tempo 3 defense.

² "Foot fire" is better known as a basketball exercise and could be described as maximum fast skipping in stance performed in the low volleyball posture.

In volleyball, speed is above all improved in the context of compound technical-tactical complexes (of the attack and defense, respectively). Consequently, the demonstration of speed in volleyball is almost exclusively connected with the technical and tactical actions. The improvement of reaction speed (in volleyball: a visual reaction to the ball) and the execution of exercises having different structures (e.g. conditioning exercises, plyometrics, flexibility exercises, etc.) are more significant for the increase of speed.

One should not forget that the speed abilities of volleyball players depend greatly on the level of the development of the basic speed components, such as the reaction speed and the speed and frequency of movements.

The reaction speed in volleyball follows the fastest anticipation of the opponent's action and evaluation of the actual position in the game. In a match, the reaction speed is recognized as a reaction to a visual signal - the ball, to a sound signal - a co-player's shout, or to changes of different situations in the play.

The speed of movement is apparent in a game during the performance of particular volleyball elements, such as: the speed of a hand stroke in a spike or contact speed in a floating "whip-serve".

In a match, the frequency of movement is observed in defense sprints on the court, especially when the ball rebounds from the block and goes far out of bounds.

The Purpose

This paper attempts to work out in detail and systematize the current exercises as well as to present some new exercises to improve the speed of movement of volleyball players without a ball. These new exercises have proven in the training process as the ones best contributing to the improvement of the movement of volleyball players and as the ones that explain and train most usefully the *obligatory play in actions without the ball*. The paper also points out the character of exercises, their duration and intensity as well as the resting time between them, which will surely help volleyball coaches in developing specific speed. Special emphasis will be put on the specific structure of movements in the transition from defense into attack action and vice versa.

Specific speed of movement of volleyball players

The specific speed of volleyball players can be defined as an ability to perform technical and tactical elements or movements on the volleyball court in minimum time.

The basic methodical precepts of the *specific speed* development in volleyball players refer to the planning of the basic load components, which are similar to improving the components of speed development, i.e. the character and duration of the exercise, performance intensity, the character and duration of the rest between exercises and the number of repetitions.

It should be pointed out that specific exercises for the development and improvement of speed in volleyball are most often performed in the specific pre-competition phase of the preparation period, whereas in the competition phase the stress is on maintaining the achieved speed level.

When structuring the microcycle, it is desirable to divide the days of the week as follows:

- 1st day - alactate orientation (e.g. specific speed development)
- 2nd day - aerobic orientation
- 3rd day - lactate orientation

In an individual training session the work on the development and improvement of speed is regularly done just before the main part of the training, when a player is well warmed-up and fresh. If several motor abilities are developed in one training session, it is useful to know and it has been proven that :

- you first work on the development of the alactate orientation (e.g. specific speed) and then on the development of the lactate endurance (e.g. speed endurance),
- you first work on the development of the alactate orientation and then on the development of the aerobic orientation,
- aerobic orientation is never performed before the alactate, lactate or mixed orientations, which is different from the beginning of a year's cycle, when the preparation period always starts with the development of the aerobic orientation.

Character of exercises

The exercises we are dealing with here are, first of all, various specific preparatory and competitive exercises, stressing the starting-speed training (e.g. exercises imitating the volleyball technique, the start from different positions, acceleration and court sprint exercises or jumping exercises, aiming at resembling as closely as possible the exercise structure for practicing volleyball technical elements). Such exercises are directed towards the improvement of specific speed abilities in various phases of starts for short-distance running (5-15 sec).

One of the basic demands that should be met in speed exercises is a good mastering of the performance technique. In that case a coach can concentrate on the movement technique and not exclusively on the speed of exercise performance.

Duration of exercises

When improving the particular speed components (*reaction time, speed of movement*), the exercises are short - they last less than 1 second - and are repeated during the period of 10-15 seconds. Such exercises improve the complex speed abilities of volleyball players. In general, speed exercises do not last for more than 25-30 sec, since during that period the working abilities do not decline.

Intensity of exercise performance

In performing the speed exercises a volleyball player should try to provide a demonstration of speed rather than maximum strength mobilization, frequency and amplitude of movement. The exercises should be performed at the highest or nearly the highest intensity, but those performed at somewhat lesser intensity (85-95%) are also used and surely help.

Duration and character of the rest between exercises

According to what we know at present, the necessary time for the recovery of a player's organism after speed training is 12 to 24 hours. On the other hand, after a 2-hour medium-intensity volleyball training, the total recovery of the aerobic and anaerobic productivity of a player is achieved in about 10 hours (V.P. Lugovcev, A.I. Podilin, 1975 according to Volkov). The intervals between the individual specific speed exercises should lead to a relatively total recovery of the working abilities (the player's pulse can be used as an indicator - it should be around 110 beats/min before exercising).

If the resting time is shortened, the working abilities will decline, affecting to a great extent the improvement of the anaerobic (glycolitic) abilities, rather than the improvement of speed, which is one of the frequent errors made by coaches.

Multiple repetition of speed exercises, even with optimum rest periods, causes the accumulation of physical and chemical changes and reduces the level of psychological readiness to perform exercises at maximum intensity.

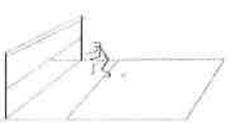
Serial performance of exercises helps to increase the working volume in the development of specific speed. Therefore, we suggest : 5-6 x 5-10 sec; 2-3 x 25-30 sec. The rest between exercises usually lasts for 2-5 minutes, depending on the character, duration and intensity of the work as well as on the level of the preparation of volleyball players.

Number of repetitions

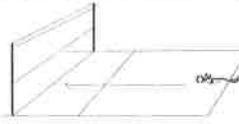
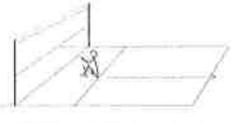
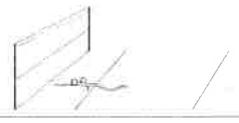
The basic rule for the number of repetitions in the development of the specific speed abilities of

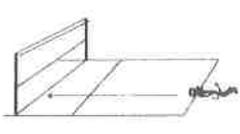
volleyball players is the maintenance of working abilities at the planned level, depending on the level of preparation, individual abilities, character and duration of speed exercises.

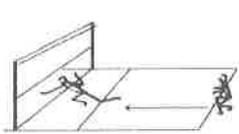
Exercises for the improvement of the specific speed of volleyball players without a ball

1.	A player stands behind the endline in the medium high volleyball posture, facing the net. At the coach's signal he runs 8 m and stops suddenly in the medium high volleyball posture at the repeated signal.	
2.	A player stands behind the endline in the medium high volleyball posture, facing the net. At the coach's signal he runs 8 m and stops suddenly in the low volleyball posture.	

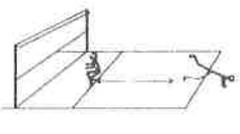
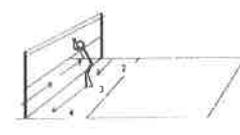
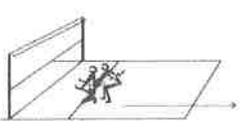
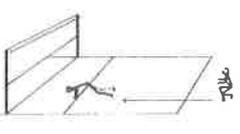
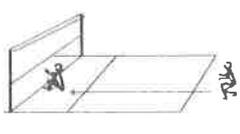
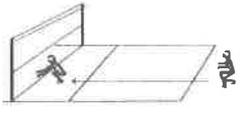
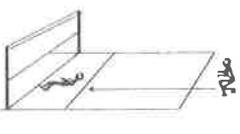
During these exercises special attention should be paid to the stopping technique and the body posture at the repeated signal.

3.	A player lies prone on the endline. At the coach's signal he gets up quickly and sprints to touch the net.	
4.	A player lies on the attack line (prone or supinely). At the coach's signal he gets up quickly, turns around 180° and sprints 9 m towards the endline.	
5.	A player sits on the attack line. At the coach's signal he gets up quickly, turns around 180° and sprints 9 m towards the endline.	
6.	A player lies sidewise on the attack line. At the coach's signal he gets up quickly, turns around for 90° and sprints 9 m towards the endline.	
7.	A player is either in the front or the back support on the attack line. At the coach's signal he gets up quickly, turns around for 180° and sprints 9 m towards the endline.	

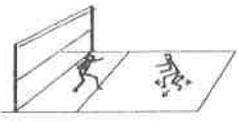
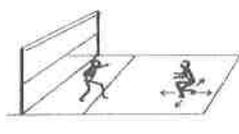
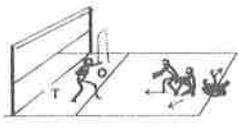
8	A player lies prone on the endline. At the coach's signal he rolls around the longitudinal axis, gets up quickly and sprints to touch the net (imitation of rolling).	
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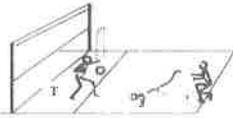
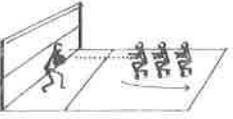
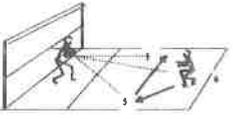
16	A player stands behind the endline in the low volleyball posture, facing the net. At the coach's signal he sprints, stops, makes a lunge sideways and sprawls immediately in front of the net.	
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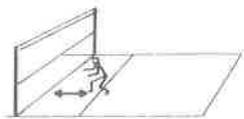
The previous exercises are useful for the development of agility and getting up and running techniques.

9	A player assumes the low volleyball posture, facing the net. At the coach's signal he turns around 180° and sprints to the endline, where he makes a dive.	
10	A player kneels on both knees on the attack line. At the coach's signal he gets up, turns around 180° and sprints 9 m into the serve area (behind the endline).	
11	A player kneels on one knee on the attack line, the other leg extended. At the coach's signal he gets up, turns around 180° and sprints 9 m into the service area (behind the endline).	
12	A player stands 3 m behind the endline in the low volleyball posture, facing the net. At the coach's signal he sprints 9 m, stops in the low volleyball posture and makes a forward sprawl.	
13	A player stands behind the endline in the low volleyball posture, facing the net. At the coach's signal he sprints, stops and sits immediately in front of the net.	
14	A player stands behind the endline in the low volleyball posture, facing the net. At the coach's signal he sprints, stops and squats immediately in front of the net.	
15	A player stands behind the endline in the low volleyball posture, facing the net. At the coach's signal he sprints, stops and lies supinely immediately in front of the net.	

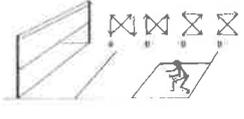
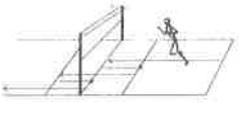
The above exercises are also useful for the development of specific agility, aggressiveness and the ability of timely reaction in a volleyball court.

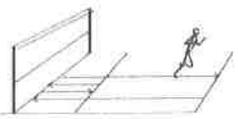
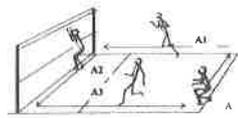
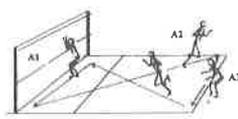
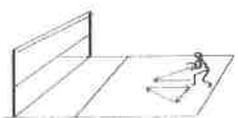
17	A player assumes the medium high volleyball posture. The coach points to the direction in which the player should move. When the coach lowers his hand, it is the signal for the player to perform a defined landing (dive, sideways sprawl, forward sprawl, rolling, sliding dive ("pancake dig" according to J. Hastingsu, 1990)), to get up immediately and continue moving (20-25 sec).	
18	A player assumes the low volleyball posture. The coach points to the direction in which the player should move. When the coach lowers his hand, it is the signal for the player to perform a defined landing (dive, sideways sprawl, forward sprawl, rolling, sliding dive), to get up immediately and continue moving (20-25 sec).	
19	A player assumes the low volleyball posture. The coach has the ball and points to the direction in which a player should move. When he drops the ball, it is the signal for the player to perform a dive, when he throws the ball up, it is the signal for the player to make a sideways sprawl and when he spikes the ball on the floor, it is the signal for the player to make a forward sprawl. After landing, the player gets up immediately and continues moving (20-25 sec).	

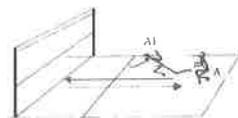
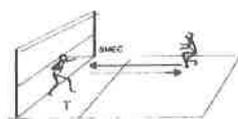
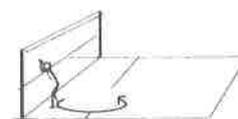
20	<p>A player assumes the low volleyball posture and does "footfire" (low skipping in stance). When the coach throws the ball up, the player makes a dive, gets up quickly and continues the exercise (20 sec).</p>	
21	<p>Three players stand in a row one behind the other in the low posture; one player stands opposite them 3 m away and has a medicine ball. At the signal of the coach the three players in the row do "footfire". The player opposite them passes the 2 kg -medicine ball with a powerful thrust from his chest to the first player, who throws it back and runs to the end of the line etc. When the first player reaches the beginning of the line again, the player who has been passing the medicine ball changes places with him. The exercise lasts till all the players have changed places.</p>	
22	<p>A player stands in the center of the court, in the 6 position area, facing the net. At the coach's signal he does "footfire" in the low posture. The coach passes him the medicine ball with a powerful thrust from his chest, the player throws it back and moves sideways to the 5 position area (left back), where he continues the "footfire". Having returned the medicine ball explosively to the coach, he moves sideways to the 1 position area etc. (20 sec).</p>	

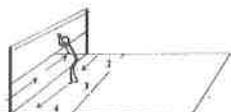
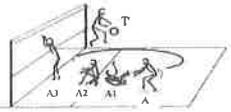
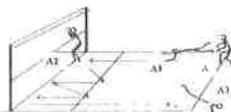
23	<p>A player stands on the attack line in the low volleyball posture semi-sideways to the net (as the backs are turned towards the center of the court during the game). At the coach's signal he approaches the net "step-hopping", touches the net and returns to the attack line in the same way (15-20 sec, 2-3 times).</p>	
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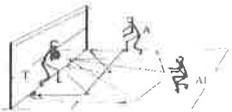
During these exercise, it is necessary to control the player's movements and posture all the time.

24	<p>A player assumes the low volleyball posture in the center of the court (hands on the floor). At the coach's signal he sidesteps in the low posture. On the sidelines he quickly sits down and gets up. He sits 5 times on the left and right sidelines alternately, or exercises for 20-25 sec.</p>	
25	<p>There are four marked points in a 3x3 m square in the volleyball court. A player stands in the middle volleyball posture and at the coach's signal "step-hops" semi-sideways in the given direction. He should step on each of the four points (15 sec).</p>	
26	<p>A player stands on the endline facing the net. At the coach's visual signal he sprints to the center line and touches it, returns to the attack line, touches it, sprints forward to the attack line of the opposite field, touches it and returns backwards to the center line. After touching it, he sprints to the endline of the opposite field (he runs 9-3-6-3-9 m). Each line should be touched by hand and leg simultaneously.</p>	

27	<p>A player stands on the endline facing the net. At the coach's visual signal he sprints and touches the center line and the attack line. Having touched the line by hand and leg each time, the player returns sideways to the endline (he runs 9-3-3-9 m).</p>	
28	<p>A player stands behind the endline, on the left side, facing the net. At the coach's visual signal he sprints sidestepping to the right side of the endline and along the right sideline to the net, where he assumes a blocking posture, sidesteps to the left side of the net and then sprints backwards along the left sideline to the end of the court.</p>	
29	<p>A player stands behind the endline, on the left side, facing the net. At the coach's visual signal he sprints diagonally to the right end of the net, then sidesteps in the blocker's posture along the net to the left side. On the left sideline he makes a turn and sprints diagonally to the right side of the endline. He then assumes the low volleyball posture and sprints sidestepping to the left side of the endline.</p>	
30	<p>A player is in the 6 position area, in the low volleyball posture, where two triangles are drawn (sides = 2m). The player imitates the center back's movements in the 6 position area after backing from 5.5 m semi-sideways to one side to 7.5 m. Exercise duration is 15-20 sec.</p>	

31	<p>A player stands in the back (or center back) position and does "footfire" in the given area. When the coach lowers his hand, he does a sideways sprawl, gets up quickly and sprints to the net, touches it and backs semi-sideways "step-hopping" to the starting position.</p>	
32	<p>A player is in the position of the back (at 7 m) and does "footfire" in the given area. As the coach lowers his hands he sprints forwards and imitates a spike on the attack line. Then he backs "step-hopping" to the starting position.</p>	
33	<p>A player is in the high posture in the basic blocker's position. At the coach's signal he jumps into the block correctly and maximally, lands and immediately turns over backwards over his shoulder. He quickly regains the basic blocker's position and repeats the exercise 10 times. <i>It is important that this exercise is performed quickly and correctly, i.e. that a player jumps into the block maximally each time and does not touch the net.</i></p>	
34	<p>A player is in the 2 position area (later in the 4 position area) in the basic blocker's posture. At the coach's signal he does a maximal jump into the block, lands and backs "step-hopping" behind the attack line at 3.5 m etc. The exercise lasts for 20-25 sec.</p>	
35	<p>A player is in the 2 position area in the basic blocker's posture. At the coach's signal he moves quickly and correctly along the net, jumps into the block in the 3 position area, lands and moves to the 4 position area, where he jumps twice and returns to the 3 position area, etc. (15 sec)</p>	

36	<p>At the ends and in the middle of the net on both sides there are 6 marked positions, from which a player jumps into the block. A player is in the 2 position area in the basic blocker's posture. At the coach's signal he moves quickly and correctly along the net, jumping into the block in the areas 3 and 4, crossing under the net and jumps into the block on the other side from all three positions (15-20 sec). (Players should practice moving to the opposite side, as well).</p>	
37	<p>A player is at 6 m distance from the net. At the coach's visual signal he starts doing "footfire", on the next signal he turns over forwards, comes to the net and jumps into the block; he then moves "step-hopping" back to the starting position, where he does "footfire" (20-25 sec).</p>	
38	<p>A player is in the 1 position area, behind the endline, facing the net. At the coach's signal he does a dive, sprints to the net into the 2 position area, where he jumps into the block. After landing, he moves backwards to the 3 position area, does a run-up and spike imitation and repeats it in the 4 position area. Then he turns around and sprints behind the endline (5 position area), ending the exercise with a dive.</p>	

39	<p>A player is in the 2 position area, behind the attack line, facing the net. At the coach's signal he does a spike imitation on the net and repeats it in areas 3 and 4. After the third imitation he moves backwards to the left back position (5 position area) and does "footfire". From the 3 position area, the coach passes him a medicine ball with a powerful thrust from the chest. The player throws the ball back and moves quickly sideways to the center back position (6 position area), repeats the exercise and finally moves sideways to the 1 position area and, returning the ball to the coach, ends the exercise. Repeat 2-3 times.</p>	
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Conclusion

The speed of the elite volleyball players should be primarily enhanced within the complex technical and tactical structures (the attack and the counterattack). Namely, the speed in volleyball becomes apparent almost completely within the playing actions as their substantial component, consequently the development and the improvement of that ability should be realised through specific volleyball exercises, upon which this paper is also based. However, when the speed enhancement in younger volleyball players or even beginners is concerned, the development should be founded on the manifold preparation or global conditioning and the emphasis should be on exercises generally used in fundamental running movements learning ("the school of running").

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