Proposal of a specific test in tennis: Test of shot speed and precision

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ABSTRACT

Tennis is a sport in which various variables related to performance influence the final result of a match. The speed and precision of the shots are among the most decisive of them. The objective of this study was to develop a test to assess the performance in terms of the speed and the precision of the forehand, backhand and serve of tennis players. The sample consisted of 4 amateur players. The analysis of the data obtained in the test provides the coach with information about the level of performance of the players and their progression.

Key words: tennis, performance, speed, precision.

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INTRODUCTION

Tennis is a sport that is characterised by a great variety of strokes, among which, due to its greater frequency, the serve, the forehand and the backhand stand out (Baiget, Iglesias, Vallejo, and Rodríguez, 2011; Kovalchik and Reid, 2017). Tennis competition demands from players a high degree of technical precision in stroke production, being a fundamental component to achieve good performance (Haake, Chadwick, Dignall, Goodwill and Rose 2001; Menayo, Fuentes, Moreno, Clemente and García, 2008). Different studies have shown a direct relationship between technical ability (measured through the level of precision and speed of the shots) and the competitive level of the tennis player (Kovacs, 2007; Reid, Crespo, Lay and Berry, 2007; Urbán, Hernández-Davó and Moreno, 2012).

With the aim of understanding the technical ability of the players, the literature has proposed a wide variety of tests to evaluate the precision and speed of tennis shots in different game situations, considering parameters of shot resistance and performance (Ferrauti Kinner, and Fernández-Fernández, 2011; Lyons, Al-Nakeed, Hankey and Nevill, 2013; Vergauwen, Madou and Behets, 2004). These studies have allowed to design instruments for the evaluation of the player's technique, simulating the physical demands of tennis competition. These instruments are of special interest when designing specific tennis training sessions (Fernández-Fernández et al., 2012). Therefore, the objective of this study was to design a test to assess the performance in terms of speed and precision of the forehand, backhand and serve of tennis players.

METHODOLOGY

Participants

The study sample consisted of a total of 4 amateur junior tennis players with ages between 11 and 14 years (mean age 12.75 ± 1.50 years).

Protocol for the development of the test

The development of the test of speed and precision in tennis strokes is presented. This test evaluates the variables of speed and precision in the forehand, backhand and serve in prolonged playing situations. The design of the test has been based on similar previous research in tennis (Fernández-Fernández et al., 2012). Prior to the test, the players must perform a 5 minute general warm-up and a 10 minute specific warm-up (Alfonso-Asencio and Menayo, 2019).
The test procedure consists of conducting three blocks of exercises for each stroke (Figure 1). In block I the player performs forehands, in block II performs backhands, and in block III performs serves. The player rests 90 seconds between each block of exercises, and 20 seconds between each series of strokes. Before performing the test, the players should be instructed to try to achieve the highest speed in their strokes while maintaining precision. In addition, players should be instructed to recover to the centre of the court after each forehand and backhand hit.

The points of maximum precision for the shots are: i) forehand, backhand and serve in tennis.

Test of precision and speed of tennis shots

<table>
<thead>
<tr>
<th>Warm up</th>
<th>Block I: Forehand</th>
<th>Block II: Backhand</th>
<th>Block III: Serve</th>
</tr>
</thead>
<tbody>
<tr>
<td>General warm up</td>
<td>Serie 1. 6 crosscourt FHs</td>
<td>Serie 1. 6 crosscourt BHs</td>
<td>Right side</td>
</tr>
<tr>
<td>Joint mobility</td>
<td>Serie 2. 6 crosscourt FHs</td>
<td>Serie 2. 6 crosscourt BHs</td>
<td>Series 1. 10 wide serves</td>
</tr>
<tr>
<td>Movement</td>
<td>Serie 3. 6 crosscourt FHs</td>
<td>Serie 3. 6 crosscourt BHs</td>
<td>Wide serves</td>
</tr>
<tr>
<td>Jumps</td>
<td>Serie 4. 6 crosscourt FHs</td>
<td>Serie 4. 6 crosscourt BHs</td>
<td>Left side</td>
</tr>
<tr>
<td>Specific warm up FH &amp; BH shadows</td>
<td>Serie 5. 6 crosscourt FHs</td>
<td>Serie 5. 6 crosscourt BHs</td>
<td>Series 1. 10 “T” serves</td>
</tr>
<tr>
<td>FH &amp; BH with movement</td>
<td>Serie 6. 6 crosscourt FHs</td>
<td>Serie 6. 6 crosscourt BHs</td>
<td>Series 2. 10 “T” serves</td>
</tr>
</tbody>
</table>

Figure 1. Development protocol of the speed and precision test of the forehand, backhand and serve in tennis.

The radar is placed on a 1-metre high tripod behind the player, at a distance of 3 metres from the baseline, 2-metres from the singles line and directed towards the direction of the shots. This radar placement is used on both the left and right sides of the court. A coach or an assistant will be placed besides the radar to write down the ball speed of each shot on a log sheet. On the other hand, the video camera is placed on a tripod 1 metre from the extension of the singles line and 4.5 metres from the baseline. Finally, the ball machine is placed on the baseline and 2 metres from the singles line. Figure 2 shows the placement of the radar, the ball machine, the video camera and the directions of the shots during the test.

<table>
<thead>
<tr>
<th>Radar</th>
<th>Videocamera</th>
<th>Ball machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from the instrument</td>
<td>Ball fed</td>
<td>Player shot</td>
</tr>
</tbody>
</table>

Figure 2. Position of the instruments used and the directions of the shots in block I - forehand (court below) and block II - backhand (court above).

In block III, the radar is placed on a tripod 2 metres high behind the player and at a distance 1.5 metres from the centre line and 3 metres from the baseline. To avoid measurement errors, the radar is oriented in the direction of the serves. On the other hand, the video camera is placed on a tripod at a height of 2 metres, above the baseline. When hitting wide serves, the player stands at the intersection of the baseline and singles line. When serving “T” serves, the player stands on the central service line. Figure 3 shows the placement of the radar, the video camera and the direction of the serves during the test.

Instrument placement during the test

Block I - Forehand and Block II - Backhand
The objective of this test was to register the speed and precision of the forearm, backhand and serve shots in tennis through a simple protocol with inexpensive instruments. These variables are determinant in the player’s performance (Menayo et al., 2008) and their progression, allowing to determine the suitability of the training programs developed. Finally, future studies are encouraged to implement this test to find out the speed and precision values of the players according to different variables such as age, gender or level of play.

REFERENCES


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