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Differences in young tennis players´ agility depending on their playing level

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ABSTRACT

This research aims to evaluate young tennis players' agility and to analyze the differences depending on their playing level. 24 male tennis players, aged between 8 and 10 years old were involved in this research and completed three different agility tests (the 5x10m test, the spider test and the hexagon test). The findings revealed that more advanced players reached significantly higher scores in each agility test.

Key words: Physical conditioning, agility, playing level.
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INTRODUCTION

The speed of tennis strokes has increased, particularly over the last few years, so, players have to move quickly in different directions to be able to reach the ball and to hit it in the best possible conditions (Domínguez, 2011; Sánchez-Alcaraz, 2013).
Thus, agility is a very important component in those sports that demand a direction change (Jones, Bampouras, & Marrín, 2009), defined as "a rapid movement of the whole body changing direction as a response to a stimulus" (Sheppard, & Young, 2006).
Different findings from different research show that 60-80% of the motion/ movement during a tennis match is lateral, between 10- 30% is linear and forward, and between 8-10% is linear and backwards (Pieper, Exler & Weber, 2007). Besides, tennis players change direction an average of 4 times per point (Roetert, Ellenbecker & Chu, 2003), but it is possible to change from just one movement to more than 15 changes of direction during a point (Kovacs, 2009).
So, initial acceleration and deceleration or stopping phase, and the capacity to make multi-directional explosive movements will be vital components for tennis players, and will determine their performance (Kovacs, 2007; Sánchez-Alcaraz, 2015).
Therefore, this research tries to know the values of young tennis players´ agility and to analyse the differences, depending on their playing level.

METHOD

Sample

24 male tennis players aged between 8 and10 years, were supported by their national tennis federation (average age = 8.97 ± .83 years/ weekly training= 6 hours) and 13 were not (average age = 9.17 ± .68 years/ weekly training= 3 hours).

Instruments

5x10 test: For this test, the player will stand behind the starting line, in a high starting position, and towards a line which will be 5 metres away. Given the signal, the player will have to run as fast as possible towards the next line, he has to step on it with one foot. They will immediately change direction to go back to the starting line, which they will have to step on. They will have to do this 5 times, completing a total of 50 mts. (Galiano, 1992). The stopwatch will stop when the player crosses the starting line and will register the time that they took for the test.

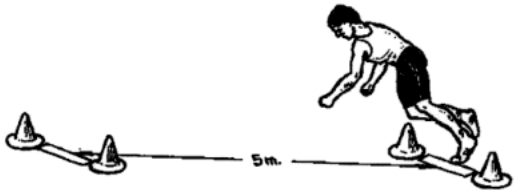

Image 1: 5x10 test (Martínez, 2008).

Hexagon test: For this test, the player will be at the centre of a 60 cm side hexagon. Given the signal, they will jump forward over the line and return to the centre of the hexagon. Looking in the same direction, they will repeat the action on each side of the hexagon clockwise. The stopwatch will stop when they have finished three complete turns, and their feet are at the centre of the hexagon again. The time that will be registered, will be the better of their two attempts.
Image 2: Hexagon test (Roetert & Ellenbecker, 2008).

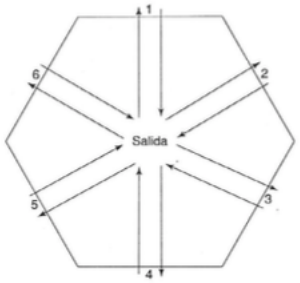

Image 2: Hexagon test (Roetert & Ellenbecker, 2008).

Spider test: Having positioned the tennis balls in the corners and centre of the longest side of an 8.23 x 5.49m rectangle, the player will start from the centre of one of the sides, and will take each ball returning to the starting point "J" and will leave them as the next image indicates. When all balls are taken, the watch

will stop and the time for the test will be registered.

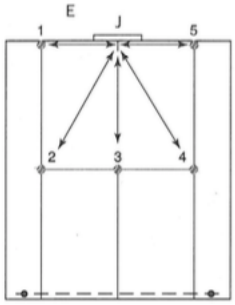

Image 3: Hexagon test (Roetert and Ellenbecker, 2008).

Procedure

For this procedure used for the execution of the tests, the researchers had to go to the clubs. After obtaining the consent of the families and clubs, the players completed the different physical tests voluntarily and anonymously. One researcher was present on-court during the test and no players withdrew. Finally, the statistical analysis of the data was made using an SPSS 21.0. IT package. Descriptive statistics were made after each test and the different variables of the groups were compared by means of Mann-Whitney U tests for independent tests.

RESULTS

Table 1 shows the descriptive statistics for all participants, for each agility test, (5x10m, hexagon and spider test), getting media values between 20 and 30 seconds, in all three tests.

	Minimum	Maximum	M	TD
5x10m test	18,17	33.19	23.93	3.73
Hexagon test	14.19	40.17	20.67	8.01
Spider test	23.67	40.83	29.18	3.28

NB: M = Media; TD = Typical deviation.

Table 1. Descriptive statistics per each agility test

Table 2 shows the relative results of the different agility tests in tennis players depending on their level of playing. As can be noticed, those players with higher playing levels, achieved significantly higher scores in agility tests.

	Expert		Beginners		
	M	DT	M	DT	Sig.
5x10m test	21.15	2.39	24.41	3.72	.004**
Hexagon test	17.45	3.91	21.23	8.33	.048*
Spider test	26.40	1.85	29.66	3.24	.001**

NB: M = Media; TD = Typical Deviation; * p < .05; ** p < .01.

Table 2. Agility difference between federation and non-federation players.

COMMENTS

To comply with the first objective, the agility level of tennis players was evaluated. In this aspect, tennis players scored worse in the 5x10, spider and hexagon tests when compared to the research made by Sánchez, Yagüe, Fernández and Petisco (2014), Le Deuff (2003), and Reid, Quinn and Crespo (2010), respectively, although these studies utilised 12U athletes.

On the other hand, depending on their playing level, more advanced players scored significantly better in each agility test, this coincides with other tennis research that compared beginner and experienced players. More advanced players displayed a greater level of declarative, procedural and tactical knowledge (García, Moreno, Moreno, Iglesias, & Del Villar, 2008) apart from a greater accuracy when hitting strokes (Vergauwen, Madou, & Behets, 2004).

CONCLUSIONS

Better level players achieved better agility scores in each test. Therefore, the findings from this research can be useful for coaches and trainers for the conditioning, coaching and evaluation of their tennis players.

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