ACUTE EFFECTS OF FATIGUE ON MARKERS OF SERVICE PERFORMANCE IN YOUNG TENNIS PLAYERS

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Introduction

The acute effects of fatigue on serve speed, accuracy, and consistency were examined over consecutive days of prolonged tennis match play (2,3) or when a fatiguing exercise protocol was performed (1,4) in college or high-standard tennis players. However, these previous studies showed a lack of consensus in their results. For this reason, the aim of the study was to examine the effects of fatigue in the markers of serve performance in young tennis players after performing a fatiguing intermittent exercise protocol (FITEP).

Conclusion

According to Rota et al. (4), FITEP elicits a significant decrease in serve speed, accuracy, and consistency. Overall, our results showed a tendency towards decreasing the markers of serve performance. However, the accuracy values were greater after the FITEP, as Maquirriain et al. (3) reported. These findings suggest that a FITEP may reduce the serve speed, accuracy, and consistency in young tennis players, but this kind of protocol must be designed following the demands of the sport and individualized with the level of the participants.

Methods

Ten young tennis players (age = 14.80±1.24 y, height = 1.63±0.05 m, weight = 54.24±9.24 kg) were recruited to perform a serve speed velocity test before and after a FITEP (Figure 1). During the FITEP the players performed 1 set of 12 repetitions of one serve followed by 5 forehand and 5 backhands drives. Each repetition lasted about 20 s with 20 s to recover. The players performed 24 first services during the serve speed test. The players were instructed to serve first serves as strong as possible and put the ball inside the score zones (Figure 2).

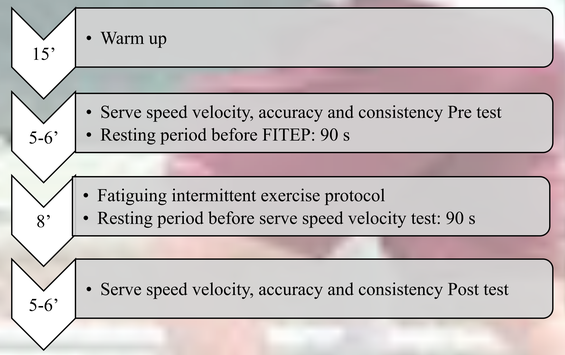

Figure 1. Flow chart

A radar gun was used to measure the serve speed (Pocket Radar Inc., Santa Rosa, CAN). Also, the accuracy and consistency were assessed using the following index:

Accuracy index = sum of coefficient (0 = ball outside; 1 = ball landing inside the serve square; 2 = ball landing inside the score zone) / total number of strokes

Consistency index = total number of balls inside the score zones / total number of strokes

In order to determine the FITEP effects on serve speed, accuracy and consistency a paired samples T-test were carried out.

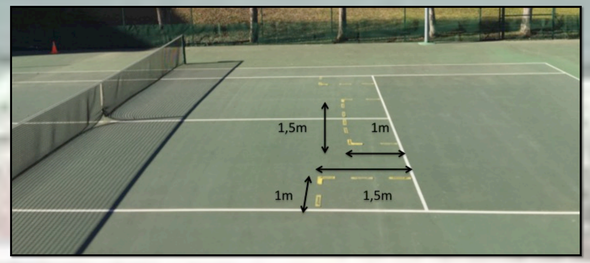

Figure 2. Score zones: T and the corner of the serve square

Results

For the analysed markers of serve performance, the serve speed, accuracy and consistency showed a decrease in their performance after FITEP in respect to the performance achieved before the test (Table 1).

Table 1. Serve speed, accuracy and consistency values comparison before and after the FITEP. Values expressed as mean ± SD.

	SCORE ZONES	Serve Spedd (Km/h)		Accuracy (a.u.)		Consistency (a.u.)	
		Pre	Post	Pre	Post	Pre	Post
SERVE	T_deuce	137.86 ± 6.87	136.96 ± 8.20	0.43 ± 0.48	0.46 ± 0.13	0.16 ± 0.20	0.13 ± 0.07
	Corner_deuce	137.13 ± 8.61	135.33 ± 5.81	0.60 ± 0.38	0.66 ± 0.11	0.20 ± 0.18	0.16 ± 0.11
	T_advantage	136.50 ± 14.13	134.27 ± 5.39	0.36 ± 0.38	0.33 ± 0.42	0.13 ± 0.21	0.10 ± 0.14
	Corner_advantage	135.50 ± 12.11	133.56 ± 8.86	0.33 ± 0,27	0.33 ± 0.42	0.14 ± 0.13	0.10 ± 0.14

*_ Significant difference between pre and post (p<0,05); a.u._ Arbitrary units.

References

1. Davey et al. (2003). *J. Sport. Sci., 21*, 459-467
2. Gescheit et al. (2015). *Int. J. Sport. Physiol., 10*, 913-920
3. Maquirriain et al. (2016). *Eur. J. Sport. Sci., 1391*, 1-5.
4. Rota et al. (2014). *J. Electromyogr. Kinesiol., 24*, 90-97

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