

Original Article

Effectiveness of backhand with one and two hands in teaching adult men beginners in tennis

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Abstract:

Purpose: The aim of this study was to compare the effectiveness of the backhand (bh) stroke with one and two hands during the initial teaching in adult men beginners.

Methodology: The sample consisted of 24 adults, aged 18-20 years old, who were divided into two equal groups of 12 people each. The first group was taught bh exclusively with one hand, while the second one was taught bh exclusively with two hands. Both groups used the same exercises. The program lasted 3 weeks with a frequency of a two-hour lesson per week. One week after the last training session the measurement from a specific test of accuracy followed. The test included 3 sets of 10 strokes.

Results: The credibility of the measurements in terms of points (depending on the ball landing area) which was obtained from the test, ranged in satisfactory statistical levels ($r=.773$, $p=.000$). The measurement results showed differences in the effectiveness between the two ways of executing the stroke. The subjects who were taught bh with two hands showed better results both in successful strokes and total amount of points. These results were near the limits of the statistically significant difference ($p=.066$) only in the second parameter.

Conclusions: It was found that executing bh with two hands in the process of initial learning in adult male beginner players produces better results.

Key words: tennis, teaching, backhand with one and two hands, effectiveness.

Introduction

The backhand (bh) is one of the two strokes in tennis made after bouncing the ball off the ground. The second stroke is the forehand (fh). The bh is a stroke -with a racket swing- from the left side of a right-handed player to handle the shots coming to this side. Bh is an equally important stroke to fh for the progress of the match. The fact that fh is executed from the same side (right or left) from which the player holds his/her racket, usually makes it easier to learn (Roetert & Groppel, 2001). Without a doubt bh is the benchmark for every coach. The most common advice given to players by their coaches is to guide the ball to the opponent's bh side, both in ground strokes and in services. The bh stroke should be performed with accuracy and consistency similar to that of fh, so that the player will not be vulnerable to the opponent. The bh, compared to the fh, does not seem to be lacking in speed but only in control (Bahamonde, 1999; Mavvidis, Koronas, Riganas & Metaxas, 2005). Nonetheless, it is the stroke that presents more difficulties in learning (Groppel, 1992) and appears to have more frequent injuries.

Nowadays the number of players who perform bh with one hand is decreasing more and more, mainly due to the difficulty of the "reverse" side. On the other hand, the percentage of players, particularly women, who perform this stroke with two hands, is increasing. The bh therefore is a more difficult stroke than fh because it is in contrast with the natural, ergonomic motion. Bh is a more difficult stroke than fh in the coordination of movements during the transfer of body weight. According to researchers (Akutagawa & Kogima, 2005) in the use of two hands, the player can remain more on the "back" foot and thus have a better contact point of the ball with the racket, in relation to the body. In other words, the bh with two hands is more of a fh of a non dominant hand (Hauer, 1987) and the participation percentage of the dominant hand varies according to the grips used by the player (Schoenborn, 1998). Evidence for this active participation of the non-dominant hand is the fact that in players who use the bh with two hands, this is the one that often gets injured (Young, Raasch & Geiser, 1995). However, the execution with one hand, besides the difficulties in learning and controlling, is characterized by several advantages, such as freedom of body movement and covering a greater sideways distance. For this reason it continues to exist as a stroke for high level players. Indeed there are researchers who believe that one hand bh

follows better the biomechanical laws of movement (Raftopoulos, 2007). Irrespective of whether it is performed with one or two hands, the bh technique is largely determined by the appropriate grip(s) (Elliott, Takahashi & Noffal, 1997; Reid, Campbel & Elliott, 2012; <http://www.optimumtennis.net/tennis-backhand-grip.htm>).

The purpose of this study was to compare the effectiveness of the bh stroke with one and two hands in initial learning in adult male beginners. The evaluation of a sample of athletes, in technique matters, can be done by video analysis, by observation from at least two coaches or with the application of tests (Purcell, 1981). For the purposes of the current study the test application method was selected, as a more reliable and valid assessment for the adult beginner level.

Method

Subjects

Twenty four subjects (N=24) who never before had any contact with tennis whatsoever participated in the study. The subjects were divided into two groups. The first was taught bh exclusively with one hand, while the second one was taught bh exclusively with two hands. Subjects' details are presented in Table 1.

Table 1. Anthropometric characteristics of the subjects

Groups	Average weight	Average height	Average age
Backhand(bh) with one hand (n=12)	79,3(+2,8)kg	1,79(+0,12)m	19,3(+1,6)years
Backhand(bh) with two hands(n=12)	73,6(+3,2)kg	1,76(+0,14)m	19,4(+1,7)years

Procedure and Measurement

In both groups the same exercises were applied, which followed all the principles of methodical teaching. The program lasted three weeks with a frequency of a two-hour lesson per week. A total of three lessons were applied in each group with a different content in each lesson. The key feature of the first course content involved feeding by hand with an increasing distance (from 6 to 10 meters) on the side of the bh in a tennis court. In the second session the subjects were performing fh and bh strokes with sideways and forward movement. Finally the scope of the third course involved the feeding of the ball from the students holding a racket, not directly but after they stopped the ball with the racket (intermittently). One week after the last training session a measurement of a specific accuracy test followed. The results were recorded in specific protocols.

The subjects were performing 10 strokes after being fed by a trainer, who was 1,5 meters in front of the service line as shown in Figure 1 (Weber & Hollmann, 1984; Boeseler, 2006). Every participant had 5 trial attempts according to the corresponding group (bh with one or two hands). This one stood one meter behind the service line and performed 3 sets of 10 strokes, a total of 30 strokes. The duration of the break between the sets was 1/3, i.e. after each one there were two others who were tested. The strokes of each participant, in order to be considered as successful, had to pass over the net but under the ribbon which was 3 meters above the net (determination of a satisfactory speed of the ball). The ball should also land in one of the four zones in the opposite court (Figure 1). Each of these zones is corresponding to one, two, three and four points. All the successful attempts and also the score resulting from the sum of the well-targeted strokes in the corresponding zones were recorded. Before the beginning of the measurements a five-minute warm-up was permitted. Two assistants took part in the measuring procedure, one of whom was checking if the ball passed between the net and the ribbon, while the other one was checking the validity of the stroke and at the same time recorded the points according to the zone in which the ball landed.

Statistics

Data are presented as means and standard deviations. The results of the two groups were checked using one way-ANOVA, while the correlation between points and the valid strokes using the Pearson correlation factor. Statistical significance was set at $P < .05$.

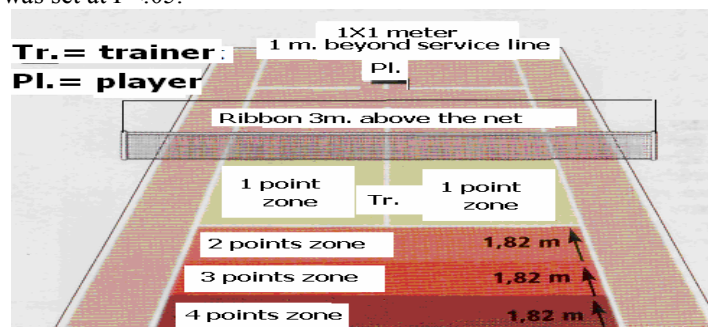


Fig.1- Evaluation process of the test

The credibility of the measurements (test-retest method) in terms of points (depending on the landing area of the ball) varied in statistically satisfactory levels ($r=.773$, $p=.000$).

Results

The analysis of the data shows that the two-handed bh outperforms both in valid strokes and success in all total points (Figure 2 and Table 1). The standard deviations in Table 2 also show that the valid strokes of those with two hands differentiate less than those with one hand (3.28 versus 5.18, respectively).

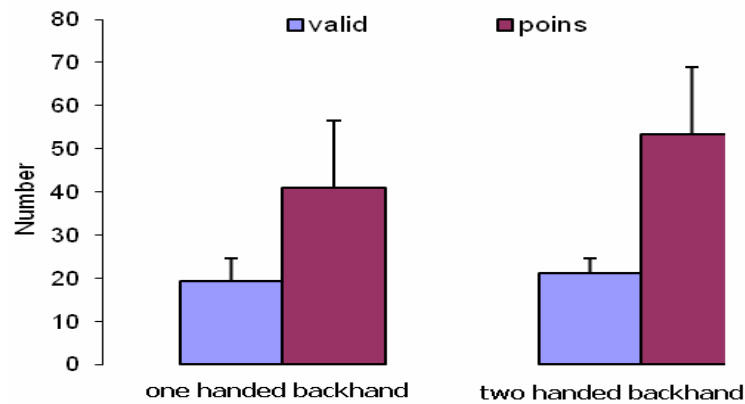


Fig. 2 - Aggregated results of the two methods of implementing the stroke

Table 2. Validity and score during the measurement in backhand with one and two hands

Strokes	Measure	Mean	St. Deviation
One-handed backhand	valid (number of successful strokes)	19.33	5.18
	score (total points)	41.00	15.50
Two-handed backhand	valid (or number of successful strokes)	21.25	3.28
	score (total points)	53.25	15.56

From the statistical analysis of one way-ANOVA can be observed that the difference in performance between the two ways of the stroke, regarding the total number of points, is real and varies within the limits of a statistically significant difference ($p=.066$). Finally, the relationship between the valid strokes (targeted strokes) and the total points (score) with one and two hands was statistically highly significant (one handed: $r=.904$, $p=.000$; two handed: $r=.823$, $p=.000$).

Discussion

The analysis of the results shows that the bh with two hands is clearly more effective than the bh with one hand in the initial learning phase in adult male beginners. These results confirm the currently accepted view of the primacy of the bh with two hands (Akutagawa & Kogima, 2005). This may occur because the two-hand bh has a better racket control during the stroke and as a result it has greater accuracy. As it is well known, this is also observed in younger ages and perhaps it is the reason why the vast majority of children are executing bh with two hands. Consequently, there is a higher percentage of players who select this stroke. At this point it is necessary to mention that the results in both parameters, i.e. the validity (number of successful strokes) and score (total points gathered) showed interdependence in both strokes. In the future similar studies both ways of measuring are suggested with the same validity. The bibliography indicates that most players nowadays use bh with two hands, probably because they used this stroke at a younger age and thus had better results ever since (Schoenborn, 1981; Roetert & Groppel, 2001; Wang et al., 2010). However, today some of the best players according to the men world ranking, including the player with the most Grand Slam titles ever, Federer, play excellent bh with one hand. All the experts agree that both techniques have their advantages and disadvantages (Groppel, 1978; Knudson, 1991; Stepien, Bober & Zawadzki, 2011), when they are executed correctly of course (Wu et al., 2001). The dominant hand outweighs the other hand in all tennis players (Ellenbecker et al., 2006), but the participation of two hands allows not only the guidance by the dominant hand, but also obtains additional strength and grip control from the other hand. The gender also plays a role in the selection of the bh with one or two hands. This can also be noticed by the percentage of women who prefer playing with two hands, which is greater than that of men (94% to 74% accordingly, Strakerjahn, 2009). Their selection is based on the difference of strength compared to men (Reid & Elliott, 2002). Moreover, bh with two hands is a more frequent choice in tall players because their edges are longer so they can reach more wide shots during a match, which is one of the drawbacks of bh with two hands (Akutagawa & Kojima, 2005).

However, many experts suggest learning both ways of the stroke as two different stroke techniques

(Kawasaki, Imai, Inaoka, Masuda, Ishida, Okawa & Shinomiya, 2005). This approach helps the smooth learning of slice strokes and also allows for the appropriate choice of technique by each player in the future according to which one suits his/her style of play.

Conclusions

The results suggest that backhand with two hands gives quicker and better results in initial teaching of adult males beginners. Based on the results, a suggestion is learning of two-hand backhand can be used with success in the recreational tennis area. A second study would be useful with the same athletes as subjects, after a 4-6 years timeframe in order to compare the results and the development in players who trained with either stroke (one or two hands) from both studies, but with parallel recording and analysis of all parameters that might affect this development. Additionally, further research in this area among adult women is clearly required in order to compare the effectiveness of bh with one and two hands in initial learning between the two genders.

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