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ANALYSIS OF THE SERVES IN THE MEN'S SEMI-FINAL AND FINAL COMPETITIONS OF WIMBLEDON TENNIS TOURNAMENT

ABSTRACT

Aim of this research is to identify the hitting areas of the serves in the competitions of men's two semi-final and final competitions at 2006 Wimbledon Tennis Tournament and from this viewpoint to determine whether or not they have an effect on gaining points during the competition. The research was started by receiving local ethical approval, and within this scope, two semi-final competitions, 1 final competition were evaluated. Serve areas of the tennis court were examined by being divided into 6 areas. The competitions which were recorded on DVDs (Digital Video Disc) were analyzed by Slow – Motion. At the end of this study, it was determined that most of the effective serves (on getting results) fell into the 2^{nd} and 4^{th} areas ($p<0.001$).

Keywords: Tennis, Competition Analysis, Service Notational Analysis, Wimbledon

WIMBLEDON TENİS TURNUVASI ERKEKLER YARI FİNAL VE FİNAL MÜSABAKALARINDAKİ SERVİSLERİN ANALİZİ

ÖZET

Bu araştırmanın amacı, 2006 Wimbledon tenis turnuvası erkekler yarı final ve final müsabakalarında atılan servislerin atılış bölgelerinin tespiti ve bundan yola çıkarak müsabaka içerisinde puan kazanımında etkisinin olup olmadığının belirlenmesidir. Araştırmaya yerel etik olur alınarak başlandı ve bu kapsamda 2 yarı final müsabakası, 1 final müsabakası değerlendirmeye alındı. Tenis kortu servis bölgeleri 6 bölgeye ayrılarak incelendi. DVD (Dijital Video Disk)' lere kaydedilen müsabakalar daha sonra (Slow – Motion) yavaşlatılmış hareket ile analiz edildi. Bu çalışma sonunda, sonuç alma (sayı kazanma)' da etkili servislerin çoğunun 2. ve 4. bölgelere düştüğü belirlendi ($p<0.001$).

Anahtar Kelimeler: Tenis, Müsabaka Analizi, Servis, Notasyonal Analiz, Wimbledon

1. INTRODUCTION (GİRİŞ)

Motor features constitute a very significant place for winning a competition at tennis. Besides, psychological and tactical (strategy) features are the factors that lead a tennis player to success [12 and 14].

The tactic that is to be developed in order to win the competition, the opponent's tactic, errors of the opponent and himself, the areas at which they are effective, game forms are very significant subjects that the sports scientists are closely interested in [3]. The tactic changes as to the opponent. We may develop an effective tactic by recognizing the opponent and our own sportsman. At this point, the importance of competition analysis comes up. General performance evaluation is possible only by competition analysis. While evaluating the performance, several factors that constitute it should be separated and studied regularly, and recorded [7]. To be able to be a performance sportsman at elite level, it is significant for performance development to make systematic analyses of matches at identifying the reasons of the inadequacies and at determining how he should be trained [4]. A comprehensive racket statistics was not available until 1973. At delivering a successful performance in this sport branch, an effective serve is highly significant [5]. Besides, it will not be wrong to say that the serve is the most significant hit within the game [1]. Downey developed a system. Downey's statistical system constituted the primary element at development of the system of other racket sports, too [8]. As for today, systematical competition analyses are made by means of computers due to the technological development. Analyses that are made by means of computers have been adopted as the error probability is very low and take their places in scientific studies. Dencer stated that he had analyzed the 1984 Wimbledon Men's competitions by means of video and computer [2].

The purpose of this study is to identify the areas of the serves hit at Semi-final and Final Competitions of Wimbledon Men's Tennis Tournament (2006) and based on this observation, to determine whether or not they are effective at gaining points during the competitions.

2. RESEARCH SIGNIFICANCE (ÇALIŞMANIN ÖNEMİ)

Service analyses of semi-final and final competitions and also world-ranking 1st and 2nd tennis players' playing in the final match of Wimbledon Tennis Tournament, one of the most important tournaments at international tennis organizations and also one of the biggest sport organizations in the world, prove the importance of this study.

3.STATISTICALLY ANALYSIS (İSTATİSTİKSEL ANALİZ)

The population was constituted by the tennis players who competed at Semi-final and Final competitions of 2006 Wimbledon Men's Tennis Tournament; they were those: number one tennis player in the world ranking, Roger Federer (height 1.86 m – weight 85 kg – age 25 – primer; right), number two Rafael Nadal (height 1.85 m – weight 85 kg – age 20 – primer; left), number eighteen Marcos Baghdatıs (height 1.83 m – weight 80 kg – age 21 – primer; right) and Jonas Bjorkman (height 1.84m – weight 85 kg – age 34 – primer; right). In the study, semi-final competitions of Federer-Bjorkman and Nadal-Baghdatis, and also the final competition between Federer and Nadal were analyzed.

This tennis tournament was received for consideration as the sample of 734 serves hit in total during 3 men's semi-final and final competitions.*

*: This study was performed recording by DVD recorder, the semi-final and final competitions of 2006 Wimbledon Men's Tennis Tournament which was broadcasted live by BJK TV.

In the study, nothing but the serves that the players hit during the competition (±) was received for consideration. For the competition analysis, television, DVD recorder, laptop computer and DVDs of the competitions were used. **

- **Type of Analysis:** In our study, notation (paper-pen) analysis method and video analysis method were used combining as analysis methods. In order to gather and evaluate the data taken from the competition, a pre-prepared pattern was designed and the techniques of forward-backward, freezing features of the computer were used while the raw data were being entered. Thus, entering of the data to the pattern was made easier and correct. Arithmetic averages, standard deviations and percent values of the data obtained were calculated. In comparison of the data, Chi-square test, Cohen Kappa (k) reliability statistics and Logistic Regression Analysis were used.

4. FINDINGS AND DISCUSSIONS (BULGULAR VE TARTIŞMALAR)

When each of the three competitions was analyzed, rates of entering to the game of the serves hit in total were as 76,7, 2% in the first serve and 23,3% in the second serve. In our study, when we looked at the rates of entering to the game of the 1st serves; they were registered as 69,7% ; as for the 2nd serves; they were 96,5% ; our findings concerning the serve errors; they were registered as 23,3% for the 1st serves; as for the 2nd serves, they were 0,82%.

- **According to Table 1;** a significant difference was found in favour of Federer at the relationship of serve-success between Federer and Bjorkman ($p<0.001$). A significant difference was found at serve-success relationship between them ($p<0.001$). A significant difference was not found at the relationship between the hitting of the serve directions and the opponent's serve box ($p=0.326$). A significant difference was found at the relationship between the areas where the serves hit and the points scored ($p<0.001$).

Table 1. Serve values of Federer and Bjorkman (Semi final)
(Tablo 1. Federer ve Bjorkman' in (Yarı final) Servis değerleri)

Serve-Success Relationship	Result (point)		P
	Unsuccessful serve	Successful serve	
1st Player (Federer)	24	48	<0.001
2nd Player (Bjorkman)	54	30	
1st and 2nd Serves' Relationship to the Result	Result (point)		P
	Serve not scored point	Serve scored point	
1st Serve (Successful)	28	63	<0.001
2nd Serve (Successful)	17	13	
The relationship between directions of serves and Hitting of the Opponent's Serve Box	Result (point)		P
	Unsuccessful serve	Successful serve	
Serves used from right (Advantage)	38	44	0.326
Serves used from left (Deuce)	40	34	
The relationship between the areas where the serves fell into and the result	Result		P
	Unsuccessful (no point)	Successful (point)	
1st Area	1	0	<0.001
2nd Area	9	24	

3rd Area	20	21	
4th Area	15	30	
5th Area	0	1	
6th Area	0	0	

p<0.05 was considered significant. and

- **According to Table 2;** a significant difference was found in favour of Nadal at the relationship of serve-success between Nadal and Baghdatis (p=0.047). A significant difference was found in favour of the player who hit serves at serve-success relationship (p<0.001). A significant difference was not found at the relationship between the hitting of the serve directions and the opponent's serve box (p=0.939). A significant difference was found at the relationship between the areas where the serves hit and the points scored (p<0.001).

Table 2. Serve values of nadal and Baghdatis (Semi final)
(Tablo 2. Nadal ve Baghdatis' in (Yarı final) servis değerleri)

Serve-Success Relationship	Result (point)		P
	Unsuccessful serve	Successful serve	
1st Player (Nadal)	63	68	0.047
2nd Player (Baghdatis)	79	52	
Their first Serves' Relationship to the Result	Result (Point)		P
	Serve not scored point	Serve scored point	<0.001
1st Serve (Successful)	42	84	
2nd Serve (Unsuccessful)	30	36	
The relationship between directions of serves and Hitting of the Opponent's Service Box	Result (Point)		P
	Unsuccessful Serve	Successful Serve	0.939
Serves used from right(Advantage)	71	61	
Serves used from left (Deuce)	70	69	
The relationship between the areas where the services fell into and the result	Result		P
	Unsuccessful (no point)	Successful (point)	<0.001
1st Area	0	1	
2nd Area	19	43	
3rd Area	11	22	
4th Area	40	53	
5th Area	0	0	
6th Area	2	1	

p<0.05 was considered significant.

- **According to Table 3;**

A significant difference was not found in favour of Federer at the relationship of serve-success between Federer and Nadal (p=0.427). A significant difference was found at the relationship of serve-success between them (p<0.001). **A** significant difference was not found at the relationship between the hitting of the serve directions and the opponent's serve box (p=0.261). **A** significant difference was found at the relationship between the areas where the serves hit and the points scored (p<0.001).

Table 3. Serve values of federer and nadal (Final)
(Tablo 3. Federer ve nadal' ın (Final) servis değerleri)

Serve-Success Relationship	Result (point)		P
	Unsuccessful serve	Successful serve	
1st Player (Federer)	72	84	0.427
2nd Player (Nadal)	81	79	
1st and 2nd Serves' Relationship to the Result	Result (point)		P
	Serve not scored point	Serve scored point	<0.001
1st Serve (Successful)	48	128	
2nd Serve (Successful)	31	35	
The relationship between directions of serves and Hitting of the Opponent's Serve Box	Result (point)		P
	Unsuccessful Serve	Successful Serve	0.261
Serves used from right(Advantage)	83	81	
Serves used from left (Deuce)	70	81	
The relationship between the areas where the serves fell into and the result	Result		P
	Unsuccessful (no point)	Successful (point)	<0.001
1st Area	0	1	
2nd Area	24	55	
3rd Area	17	27	
4th Area	29	80	
5th Area	0	0	
6th Area	0	0	

p<0.05 was considered significant.

Table 4. Serve values in total hit at semi-final and final competitions
(Tablo 4. Yarı final ve final müsabakalarında atılan toplam servis değerleri)

Result Relationships of the points scored from serves		Points that the players scored from the serves they hit	Points that the players lost from the serves they hit	p
Winners		184	83	<0.001
Losers		136	105	
The relationship between the serves hit from Right(Advantage) and left(Deuce) areas and the result			Result(point)	p
			Unsuccessful* / Successful**	
Serves used from Left (Advantage) and Right (Deuce) areas		Right(Advantage)	192 / 186	0,988
		Left(Deuce)	180 / 174	
The relationship between successful serve and result		Result		p
		Unsuccessful*	Successful**	
Serve	1.	230	312	<0,001
	2.	78	114	
The relationship between the areas where the serves fell into and the result		Result		p
		Unsuccessful*(point)	Successful**(point)	
The areas where the serves fell into	1st Area	1	2	<0,001
	2nd Area	52	122	
	3rd Area	48	70	

	4th Area	94	163	
	5th Area	0	1	
	6th Area	2	1	

p<0.05 was considered significant.

When each of the three competitions was analyzed, rates of entering to the game of the serves hit in total were as 76,7, 2% in the first serve and 23,3% in the second serve. At studies of Girardin and Alain, it was stated that these rates were 72, 2% for the first serve and 28% for the second serve [6].

In our study, when we looked at the rates of the 1st serves entering to the game; they were registered as % 69,7; rates of the 2nd services entering to the game as 96,5% ; 1st service errors as 23,3%; 2nd service errors as 0,82%. In the study that 2001 Men's Grand Slam Tournaments were analyzed by Filipcic, A., his found the average of percent values of the points scored by first serve as 65,1% [16]

In the study by O'donoghue and friends, they found that the most points were scored by the serves in Wimbledon Tennis Tournament (1997-1999) [13]. In the study by Johnson, C D. and friends, they made analyses of the matches played in 2003 Grand Slam Tennis Tournament as to the hitting types and determined that in Wimbledon, the service was 60% more dominant than the other hitting types [9]. In the study by Ferauti and Weber, they stated that the rates of the 1st serves entering to the game were 61,2%; 2nd serves entering to the game were 80% ; 1st serve errors were 38,8%; 2nd serve errors were 20%. In the study by Kandaz, he stated 1st serves entering to the game as 58,9%; 2nd services entering to the game as 84,5% ; 1st service errors as 41,2%; 2nd service errors as 15,5% [10 and 15].

Consequently, it may be said as a generalization that rates of the 1st serves entering to the game were 60%, the 2nd serves entering to the game were 85%; 1st serve errors were 40%; 2nd serve errors were 15%. Accordingly, it may be said that 2nd serves were used as more guaranteed services. In each three competitions, tennis players used serves from right as 51,7%, and from left as 48,3% in total. This result is so close to the result in the studies of Ranson and Weinberg. In their studies, it was stated that the rate of the serves they (the tennis players) used from right as 51%, and the rate of the serves they used from left as 49% [10 and 15]. It may be deduced that tennis players used their serves equally from right and left by a narrow margin during the competition and this is a restriction resulted from the rules of the game.

In our study, when we looked at the areas where the tennis players' services fell into, they were centered on 2nd,3rd and 4th areas. In the studies by Ranson and Weinberg, they stated that tennis players generally hit their serves to the places that are close to the each two sidelines of the serve box [15]. This definition is parallel to our findings that also include the 2nd, 3rd and 4th areas in our study. In all competitions, serves' point that fell into the opponent's serve box was 568. Of these serves, the point of the player who hit serves was 313. This rate, calculated as 55,1%, was stated as 66,5% in the research of Klaasen ve Magnus [11]. According to these results, we can't suggest the the idea that merely using service is enough for winning the competition since 100% of all the serves hit do not get points.

5. CONCLUSION AND RECOMMENDATIONS (SONUÇLAR VE ÖNERİLER)

At the end of the study, it was seen that most of the effective serves fell into the 2nd and 4th areas. It was seen that the place where the serve was hit did not state meaningfulness for the result, but,

successful serve, the areas where the serves fell into; unsuccessful serve (out-net-double error) had effects on the results. When we looked at these results and the study in general, it was observed that merely using services was not enough for winning the competition, a player who hit more serves was able to lose the competition, and returning serve and the strategy in the game were so important. In training programs to be prepared to develop this, necessary studies should be performed in order to increase the success at serves, to concentrate and intensify on 2^{nd} and 4^{th} areas. As a result of this study, it has been understood that apart from giving place to more competitions in the similar studies deal with the subject, making analyses and comparative studies through tournaments, searching the common service evaluation, comparison of the serves hit by the players in the game with the serves hit by the opponents and their effects on winning the competition may be suggested.

- **Restrictions:** Scope of the Research is restricted by (734) serves that 4 male semi-finalist tennis players hit during 3 matches in 2006 Wimbledon tennis tournament.
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