What are the key points to win in tennis?

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ABSTRACT

The purpose of this study is to understand the tennis scoring system in order to highlight the points that have the most influence on the chances of winning a match. Based on the analysis of point sequences played during men's singles matches at the last French Open, it has been possible to show the importance of winning points at 30-all and being the first to have the advantage in deuce situations. This article also discusses the consequences of these findings on tennis players' training.

INTRODUCTION

When tennis experts are asked about what differentiates the world's top players (the likes of Djokovic, Nadal and Federer) from the others, they generally mention the mental aspect as being a key factor in success. Coaches and players alike also agree that these players are better at playing the big points of a tennis match, thus increasing their chances of winning. Even though there appears to be a consensus that the ability to play big points well is vital, determining exactly what those points are remains difficult. Are "big points" break points at the end of a set? Having the advantage on serve at 6-5? Points played at 5-all in tie-breakers? In order to obtain some preliminary answers, we can first take a look at statistical models specific to tennis to see if these bring new insight into what big points are.

STATISTICAL MODELS IN TENNIS

The first statistical analyses based on the distribution of points in tennis and the probability of winning matches date back to the 1970s with the introduction of the Markov chain (Schutz, 1970). Further to these studies, the 2000s saw a series of studies attempting to model the probability of winning matches. Without claiming to be exhaustive, we can mention the work of Clarke & Dyte (2000) which used the ATP ranking point system as well as the differences in players' ranking points to predict the outcome of head-to-head contests. In a similar fashion, Barnett & Clarke (2005) used the official statistical data published by the ATP to assess each player's chance of victory in a tennis match. Finally, Barnett, Brown & Clarke (2006) developed a revised Markov chain model to predict the outcome of matches and determine each player's probability of winning in a head-to-head contest. Thanks to all these models, it is currently possible to track each player's chance of winning a tennis match in real time. However, these models do not give a picture of the importance that some points have compared to others.

In addition to these studies, the ATP publishes and updates a set of statistics on matches played by professional players. Coaches thus have valuable information, allowing them to analyse their players and their opponents with great precision. Among these statistics, some are considered as playing a major role in the probability of winning a match. This applies specifically to the number of break points converted, the first serve percentage, or the percentage of points won on first and second serves. However, no data is available at the present time to identify the key statistic that could help determine the probability of winning a match.

Our objective is therefore to identify a statistic that has a major effect on the probability of winning a match. By analysing point sequences played in tennis matches, we want to determine the big points that players should pay special attention to.

METHODOLOGY FOR THE ANALYSIS OF SEQUENCES OF PLAY

Our method is based on the analysis of point sequences played in matches of the 2014 French Open men's draw. We analysed all the matches played during the tournament, i.e. a total of 127 matches. In order to get point-by-point score lines, we referred to the "flashresultats" Website. We took into account three types of data to carry out our analyses, namely, the player who wins the point at 30-all, the player who has the advantage (following a deuce situation), and the player who has the advantage first in the game (without the score being 30-all). These three data were studied against the number of games won by each player and their role (server or returner). For example, we looked at what player won the point at 30-all, the server or the returner, and examined the impact of that point win on the win/loss of the game (a similar approach was used for the other two data).

RESULTS

The results are shown in tables indicating the chance of winning the game from several possible situations. Probabilities are expressed as percentages and the possible situations correspond to the three types of data collected using our method, added to which are the chances of winning a game regardless of the initial conditions. Table 1 shows the data for the matches of the first three rounds (N=112).

Chance of winning the game (%)	Server	Returner
For the player who wins the point at 30-all	88.87%	61.14%
For the player who has the advantage	66.63%	39.13%
For the player who has the advantage first	92.61%	65.18%
Over all matches	74.60%	25.40%

Table 1. Probabilities of winning a game during the first week of the tournament.

Table 2 shows the data for the matches played from the fourth round to the final (N= 15).

Chance of winning the game (%)	Server	Returner
For the player who wins the point at 30-all	88.87%	61.14%
For the player who has the advantage	66.63%	39.13%
For the player who has the advantage first	92.61%	65.18%
Over all matches	74.60%	25.40%

Table 2. Probabilities of winning a game during the second week of the tournament.

Results show that in two out of three situations, the player who wins the point has a higher probability of winning the game compared to the percentage of games usually won during the tournament. Whether the player is serving or returning, the two most favourable situations to win the game are winning the point at 30-all and being the first to have the advantage. In the first week, the server who wins the point at 30-all has 14.27 percent more chance of winning the game compared to the normal (88.87% against 74.60%). In the same condition, the returner increases his chance by 35.74% (61.14% against 25.4%). The player who has the advantage first (following a score of deuce) has 18.01 and 39.78 percent more chance of winning the game as a server and as a returner, respectively. Results found for the second week of the tournament confirm those observed for the early rounds. When serving, if the player wins the point at 30-all, he has 16.16 percent more chance of winning the game compared to the percentage of games usually won on serve. When returning, the player has 47.74 percent more chance of winning the game if he wins that particular point. As for the player who has the advantage first, he increases his chance of winning the game by 12.23% and 54.57% when serving and returning, respectively.

DISCUSSION

The point-by-point analysis of sequences of play highlights two situations that play a particularly crucial role in the probability of winning games in tennis. Indeed, players who succeed in winning points at 30-all or those who have the advantage first greatly increase their chance of winning the match. Compared to the percentages of games usually won during the tournament, servers increase their chance of winning by 15% on average in these two situations. As for the returners, the advantage given by these situations is crucial since their chance of winning increases by more than 44% on average. These results highlight two matchplay situations that can be considered as big points in tennis since they increase players' chances of winning games.

CONCLUSION

The point-by-point analysis of sequences of play during men's matches at the 2014 French Open brings new knowledge on the handling of big points in tennis. This research uncovers a hitherto unknown dimension in terms of statistics and analysis of high- level tennis matches. It encourages tennis coaches to adopt a new approach by teaching how to play big points from the perspective of typical matchplay situations. Indeed, learning how to handle the big points will prove more effective if the player is put in a 30-all situation rather than in the context of head-to-head contests where the first player to 5 is the winner (as is too often the case). Furthermore, it is recommended for coaches to help players improve on serve and return of serve in the deuce court, i.e. where points are played when the score is 30-all or deuce. Tactical training methods aimed at improving game plans in the deuce court should therefore be considered. It will be interesting to do a similar analysis of sequences of play during Wimbledon to compare results and verify if big points arise in the same matchplay situations.

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