Analysis of Point-by-Point Performance in Tennis: An Example of Novak Djokovic

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Introduction

Tennis is an individual sport that requires a specialized training and match preparation for every player. Former studies in tennis have tried many approaches to analyze player's performance using descriptive statistics (e.g., match time, rally duration, game number, points per game or points per game) and normal match statistics (e.g., first and second serve percentage, aces, double faults or net points won). Although helpful in providing general information of match characteristics and evaluating player performance, there is little consideration over how an individual player behaves on point-by-point basis according to different match situations. Whereas situational variables related to success on match or tactical level have been widely studied in team sports, limited studies have been done in tennis.

Methods

Using data of Novak Djokovic in four Grand Slams from the 2011 Australian Open to 2016 Wimbledon, this study was aimed to assess predictors of point outcome (win/lose) related to year, tournament types, round, set, quality of opposition, game status, serves and running distance. A total of 29729 points played by Novak and his opponents were recorded (excluding unfinished matches) through classification tree analysis (exhaustive CHAID), before which a K-Means cluster was employed to cluster quality of opposition, serves speed and rally length.

Results

The results showed that the performance of Novak was influenced by tournament types (level 1): similar in hard courts (Australian Open and US Open), where he won 7987 (56.6%) of 14122 points; and similar in clay (French Open) and grass court (Wimbledon), where he won 8527 (54.8%) of 15553 points. Also, it was revealed that he played stably despite of different opponents, rounds, sets or server. However, when faced with different game status (level 2: winning, losing, equal score, breaking opponent and facing breakpoint), his performance was affected and high percentage of points won was achieved when he was winning and breaking opponents' service game. A similar percentage of winning a point appeared when the score was equal while less points would be won if he was losing or being broken by his opponents. On serve level (level 3), his performance remained uninfluenced whatever the first or second serve when he was winning, but when playing second serves when the score was equal or breaking opponents, Novak exhibited a dominant performance, winning more points. Additionally, by analyzing matches containing rally length, it was found that a medium (8.23±1.87) or long (16.68±3.97) rally enabled him to win more points in situations of winning and breaking opponent, but a short rally length (2.22±1.50) could increase his possibility of winning a point if he was losing or being broken.

Discussion & Conclusion

These results will give insightful ideas for coaches and players when planning the individual game strategy, allowing more appropriate tactics under different game status.

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