

# Does Roger Federer Feel the Pressure in Close Matches?

By

Tristan Barnett and Vladimir Ejov  
College of Science and Engineering  
Flinders University

## Abstract

Roger Federer is regarded as one of the greatest players of all time with a current record of 20 grand slam singles titles. Despite this incredible all-time grand slam record of 20 grand slam titles and other momentous records, this article will demonstrate evidence to suggest that Federer could have won even more grand slams if he won more points on a significant amount of 'importance' (particularly near the end of close matches).

## Introduction

As of the 1/10/2019, Roger Federer has won an all-time record 20 Grand Slam singles titles and has reached a record 31 Grand Slam finals (10 consecutive, and another 8 consecutive – the two longest streaks in history), 45 semi-final appearances (23 consecutive), and 56 quarter-final appearances (36 consecutive). He is one of eight men to have won a career Grand Slam (winning all four Grand Slams at least once) and one of four players to have won a career Grand Slam on three different surfaces, hard, grass and clay courts. Federer has won 8 Wimbledon titles, an all-time record. From 2005-2010 Federer astonishingly reached the finals in 18 out of 19 grand slams, winning 12 titles and 6 runners up trophies. He is the only male player to win 2 different Grand Slam tournaments at least 6 times (Australian Open, Wimbledon) and the only player to win 3 different tournaments at least 5 times (Wimbledon, Australian Open, US Open). He is the only player to win two Grand Slams five consecutive times at Wimbledon from 2003–07 and the US Open from 2004–08. Federer has spent 310 weeks as the No. 1 ranked player in the world (ranked No. 1 for 237 consecutive weeks), the most of any men's tennis player since the inception of these rankings in 1973. Federer, who turned professional in 1998, was continuously ranked in the top ten from October 2002 to November 2016. Federer has also won a record six ATP Finals titles, 28 ATP Tour Masters 1000 titles, and a record 23 ATP Tour 500 titles. Federer is also the only player after Jimmy Connors to have won 100 or more career singles titles, as well as to amass 1,200 wins in the Open Era. [https://en.wikipedia.org/wiki/List\\_of\\_career\\_achievements\\_by\\_Roger\\_Federer](https://en.wikipedia.org/wiki/List_of_career_achievements_by_Roger_Federer)

Despite this incredible all-time grand slam record of 20 Grand Slam titles and other momentous records, is there evidence to suggest that Federer could have won even more grand slams if he won points on a significant amount of 'importance' (particularly near the end of close matches)?

## Importance

The importance of points in a game as defined by Morris (1977) is defined as: the probability the server wins the game given that he wins the point, minus the probability the server wins the game given that he loses the point.

For example, a server up 40-0 in a game is highly likely to win the game whether he wins or loses the next point. Therefore, 40-0 is the least important point in a game. Whereas 30-40 has the highest level of importance in a game since the server has a high chance of winning the game if he wins the next point whereas he will lose the game if he loses the next point.

Morris (1977) also states that each point is equally important to both players.

Similarly, the importance of points in a match is defined as:

the probability a player wins the match given he wins the point, minus the probability a player wins the match given he lose the point.

Hence, the definition of importance of a point in a match is a way of stating how much difference will result in the outcome of the match depending on whether a point is won or lost.

Thus, points in a tiebreak game have a high level of importance as well as points near the end of close matches.

In the context of a challenge system, importance of a point in a match can be viewed by how much percentage error will occur if a wrong decision is made. For example, suppose the score in a best-of-5 set match (all tiebreak sets) is 2-2 in sets, 5-5 in games and 30-30 in points and player A is currently serving. Suppose player A is winning 62% on serve and player B is winning 60% on serve. Using a Markov Chain model (Barnett and Clarke, 2005), player A has a 51.5% chance of winning the match from that position. If player A won the point, then his chance of winning the match would be 60.3%: whereas if player A lost the point then his chance of winning the match would be 37.3%. Therefore, the importance of the point in the match is given as  $60.3\% - 37.3\% = 23.0\%$ . If a wrong decision was made at that particular point in the match, then it would cost one of the players 23 percentage points in their chance of winning the match.

Morris (1977) also showed that a player could increase their chances of winning by increasing effort on the important points and decreasing effort on the unimportant points. He stated, for example, that if a player increased their probability of winning a point from 0.60 to 0.61 on the important half of his service points, and decreased from 0.60 to 0.59 on the unimportant half, he would increase his winning percentage for a game by 0.0075 from 0.7357 to 0.7432.

Based on the above, matches can be decided by player's winning the important points; such as 30-40 in a game, points in a tiebreak game and points near the end of close matches. As a result of the hierarchical scoring system in tennis every point has a different amount of importance which is somewhere between 0 and 1, and the importance of a point in a match is a way of stating how much difference will result in the outcome of the match depending on

whether a point is won or lost. Hence a player could win a higher percentage of points on serve compared to their opponent (which is an unbiased measure of performing better on the day) but still lose the match based on not winning the important points – which typically occur in tiebreak games and near the end of close matches (and hence feel the pressure of the situation).

## Grand Slams

Table 1 lists the percentage of points won on serve for Roger Federer against his opponent at the grand slams events that he lost since winning his first grand slam at Wimbledon in 2003. The highlighted cells indicate where Federer won a higher percentage of points on serve compared to his opponent. At the Australian Open 2005 Federer lost to Marat Safin in the semi-finals with a score line of 5-7 6-4 5-7 7-6(6) 9-7, indicating a very close match. Federer won a distinctly higher percentage of points on serve (69% compared to 66% for Safin). Safin went on to win the Australian Open by defeating Lleyton Hewitt in the final 1-6 6-3 6-4 6-4. Based on Federer performing better (by winning a higher percentage of points on serve) against Safin in the semi-finals, that would be fair to compare a “shadow final”, indicates that Federer would have been the favourite to defeat Hewitt in the finals (but was unable to defeat Safin in the semi-finals due to not winning the important points and hence feeling the pressure in a closely fought match).

At the 2008 Wimbledon finals Federer lost to Nadal with a score line 6-4 6-4 6-7(5) 6-7(8) 9-7, indicating a very close match. Federer won a slightly higher percentage of points on serve (66.8% compared to 66.0% to Nadal). Federer is best suited to the grass courts at Wimbledon winning a record 8 Wimbledon Championships whereas Nadal is best suited to the clay courts at the French Open (winning a record 12 French Open championships). This possibly suggests Federer lost the 2008 Wimbledon Championships due to not winning the important points and hence feeling the pressure in a closely fought match.

At the 2009 US Open finals Federer lost to Del Potro 6-3, 6-7(5), 6-4, 6-7(4), 2-6 in a very close encounter, where he was regarded a strong favourite. Although Federer did not hold a match point, he was two points away from the title in the 4<sup>th</sup> set, leading 5-4 and 15-30 on opponent's serve. Considering the psychological pressure of not winning most important points when it mattered (including tie breaks in the 2<sup>nd</sup> and 4<sup>th</sup> sets where Federer was on both occasions first to succumb a mini-break) to impact Federer's performance in the 5<sup>th</sup> set, that spoiled the overall statistics of the match for Federer the losses of important points in the 4<sup>th</sup> set were most critical for the finals outcome.

At the 2019 Wimbledon finals Federer lost to Djokovic with a score line of 7-6(5) 1-6 7-6(4) 4-6 13-12(3), indicating a very close match. Federer won a significantly higher percentage of points on serve (69% compared to 64% to Djokovic). Federer broke serve at 7-7 to lead 8-7 in the final set and serve out the match. Federer had 2 match points on serve leading 40-15 in the game and was unable to win the game, levelling at 8-8 and losing the match in a tiebreak game at 12-12 (7 points to 3). This also suggests that Federer feels the pressure on important points in a closely fought match. There are other examples highlighted in table 1 where Federer won a higher percentage of points on serve compared to his opponent and could

have potentially won these matches (by winning the important or pressure points) and hence increase his chances of winning further grand slams.

These observations suggest that it would be worthwhile to analyse in detail (shot-to-shot) the instances of important points that really stand out – non-converted championship points in grand slam finals that led to match losses, as there were only few of those since 1960: 1960 Australian Open final when Laver went on to defeat Fraser 5-7, 3-6, 6-3, 8-6, 8-6 from a match point down; 2002 Australian Open when Capriati saved 4 championship points to defeat Hingis 4-6, 7-6, 6-2 in the epic final, 2004 French Open Final when Coria squandered 2 championship points to lose 6-0, 6-3, 4-6, 1-6, 6-8 to his compatriot Gaudio and two already mentioned matches featuring Federer: 2005 Australian Open semi-final (“shadow final”) against Safin that he lost from a match point in the 4<sup>th</sup> set and 2019 Wimbledon final against Djokovic that Federer lost from two championship points in the 9<sup>th</sup> game of the 5<sup>th</sup> set.

Event	Round	Opponent	Federer's serve	Opponent's serve
US Open 2003	Fourth	David Nalbandian	56%	66%
French Open 2004	Third	Gustavo Kuerten	62%	69%
Australian Open 2005	Semis	Marat Safin	69%	66%
French Open 2005	Semis	Rafael Nadal	54%	59%
French Open 2006	Finals	Rafael Nadal	63%	69%
French Open 2007	Finals	Rafael Nadal	62%	67%
Australian Open 2008	Semis	Novak Djokovic	61%	67%
French Open 2008	Finals	Rafael Nadal	41%	69%
Wimbledon 2008	Finals	Rafael Nadal	66.8%	66.0%
Australian Open 2009	Finals	Rafael Nadal	59.9%	59.4%
US Open 2009	Finals	Juan Martin Del Potro	64%	67%
French Open 2010	Qtrs	Rodin Soderling	66.7%	66.4%
Wimbledon 2010	Qtrs	Tomas Berdych	63%	67%
US Open 2010	Semis	Novak Djokovic	61%	67%
Australian Open 2011	Semis	Novak Djokovic	62%	64%
French Open 2011	Final	Rafael Nadal	58%	62%
Wimbledon 2011	Qtrs	Jo-Wilfried Tsonga	76%	72%
US Open 2011	Semis	Novak Djokovic	63%	72%
Australian Open 2012	Semis	Rafael Nadal	63%	68%
French Open 2012	Semis	Novak Djokovic	52%	65%
US Open 2012	Qtrs	Tomas Berdych	63%	70%
Australian Open 2013	Semis	Andy Murray	62%	71%
French Open 2013	Qtrs	Jo-Wilfried Tsonga	53%	74%
Wimbledon 2013	Second	Sergiy Stakhovsky	72.1%	72.8%
US Open 2013	Fourth	Tommy Robredo	62.4%	62.8%
Australian Open 2014	Semis	Rafael Nadal	60%	74%
French Open 2014	Fourth	Ernesto Gulbis	63%	67%
Wimbledon 2014	Finals	Novak Djokovic	67%	71%
US Open 2014	Semis	Marin Cilic	62%	73%
Australian Open 2015	Third	Andreas Seppi	68%	66%
French Open 2015	Qtrs	Stan Wawrinka	64%	77%
Wimbledon 2015	Finals	Novak Djokovic	66%	69%
US Open 2015	Finals	Novak Djokovic	63%	62%
Australian Open 2016	Semis	Novak Djokovic	56%	73%

Wimbledon 2016	Semis	Milos Raonic	70%	72%
US Open 2017	Qtrs	Juan Martin Del Potro	67%	72%
Wimbledon 2018	Qtrs	Kevin Anderson	73%	69%
US Open 2018	Fourth	John Millman	64%	70%
Australian Open 2019	Fourth	Stefano Tsipias	74%	73%
Roland Garros 2019	Semis	Rafael Nadal	53%	66%
Wimbledon 2019	Finals	Novak Djokovic	69%	64%
US Open 2019	Fourth	Grigor Dimitrov	65%	68%

Table 1: The percentage of points won on serve for Roger Federer against his opponent at the grand slams events that he lost since winning his first grand slam at Wimbledon in 2003.

## References

- C. Morris, The most important points in tennis, In *Optimal Strategies in Sports*, S.P. Ladany and R.E. Machol eds. (1977), Amsterdam: North– Holland, 131–140.
- T. Barnett and S. Clarke, Combining player statistics to predict outcomes of tennis matches, *IMA Journal of Management Mathematics* 16(2) (2005), 113–120.