International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 08,
2020 ISSN: 1475-7192

An analytical study of the speed and distance of touching the ball with the playing field for the points of transmission and mutual strikes for the final of the Australian Open tennis tournament between the two players (Serena Williams - Maria Sharapova) 2015

Rafid Habib, Alaa Kamel , Adhwaa Warwar , Omar Saad Ahmed
University of Diyala

Rafid.habib@uodiyala.edu.iq **alaa.kamel@uodiyala.edu.iq**
adhwaa.warwar@uodiyala.edu.iq, omar.saad@uodiyala.edu.iq

Abstract

Studying and analyzing matches gives more accurate results than tests, exercises and experimental matches, given that the players make a more real effort in official matches compared to tests and training, and that the measured variables are biomechanically obtained from match analysis is an accurate and reliable measurement method for evaluating the performance of the team or player And to explain the reasons for winning and losing, and that one of the important biomechanical variables in the game of tennis is the distance of contact with the ball with the playing field and the sides of the field in addition to its speed. Most of the biomechanical research is concerned with performance analysis and dynamic performance variables. In this research, performance results have been analyzed, because the level of motor performance here is very high and a match is the final of the Australian Open tennis tournament for the year 2015, which ended with the victory of the American player (Serena Williams) over the Russian player (Maria Sharapova) has two groups, and the number of runs in the first group (6-3) and in the second group (7-6), and through analyzing the performance results we reached the reasons for winning the American player, which achieved (28) points in direct and influential transmissions and an arithmetic mean of contact distance The ball with the ground pitch b G (0.420 cm), compared to (17) sending Russian player and a mean distance of the ball in contact with the pitch reached (0.594 cm). The results of the analysis also show that the arithmetic mean of the transmission speed of the American player was (181) km / hour, while the arithmetic mean of the Russian player was (161) km / hour. The results of the analysis also show that the American player achieved (39) points in resolving the mutual strikes rally, and the arithmetic mean of the distance of contact with the ball with the playing field reached (0.872) cm, compared to (37) points in resolving the mutual strikes rally, and the mean of the distance of contacting the ball with the playing field reached (0.961) cm, if we note that there are clear differences in favor of the American player in the number of points of transmission and the speed of transmission and the number of points for deduction of mutual strikes, as well as the difference is clear in the distance of contact of the ball with the pitch of the field in transmissions and mutual strikes.

Key words : Analytical study, ball velocity and distance, transmitter and mutual strokes, tennis

Introduction

Studying and analyzing matches gives more accurate results than tests, training and experimental matches, given that players make a more real effort in official matches compared to tests and training, so the variables for any game or event are more measured as what has been obtained from official matches and presented through Technical analysis of coaches and specialists to determine the pros and cons of the team or player.

The measured variables are biomechanically obtained from match analysis. It is an accurate and reliable measurement method for evaluating the performance of the team or player. The analysis of matches using the means and tools of kinetic analysis, whether with one or several variables, helps in reaching results that can be used to explain the reasons for winning. The loss and the team and player value, and that one of these important biomechanical variables in the game of tennis is the distance of the ball contact with the playing field and the sides of the stadium in addition to its speed, as it is known in the game of tennis, the player trying to play the ball near

The middle or lateral line of the serve area and at the highest possible speed, either in front, back and different strikes the player tries to return the ball to the depth of the field and the proximity of the side lines and at a high ball speed in order to form a greater difficulty for the competitor as well as returns some balls near the network to constitute a greater difficulty for the competitor to reach For the ball, the research problem lies in studying the speed and distance of contacting the balls that fall in the depth of the field and near the side lines, which are more effective than the balls that fall in the center of the depth of the field, as well as the balls that fall near the side lines and at a high speed in the transmissions achieve better results Accordingly, the researchers decided to study and analyze the speed and distance of the ball's contact (fall) to the point of transmission that gets a direct and effective point and the final point of mutual strikes, in order to explain the reasons for winning and losing the final of the Australian Open tennis tournament of 2015 between the two players (Serena Williams - Maria Sharapova), Depending on the performance results related to the distance the ball touches with the pitch in the transmissions, its speed, and the distance the ball touches with the pitch to the final point of mutual strokes.

Research Methodology

The research used the descriptive method in the survey method for its suitability and the nature of the research, "as the scope and depth of the study depend mainly on the nature of the problem" (Jouda Ezzat, 2009, 85).

Research community and samples

The research community and sample were determined by selecting the final match of the Australian Open tennis tournament for the year 2015 between the two players (Serena Williams - Maria Sharapova), and this match was chosen as the final and represents the highest levels in the tournament as well as the capabilities of the two players and their acquisition of most tennis tournaments in recent years, In addition, several final matches were followed in several tournaments, and this match was chosen, as the main camera for photographing the match is stationary and limited in movement. This helps a lot in the analysis to extract the contact point of the ball with the field and the color of the pitch helps a lot in this.

Research Tools

To provide a set of devices and tools necessary for the purpose of using them to solve the problem, whatever those tools, and to make sure that these tools are suitable for research to achieve hypotheses. In fact, the researcher used the devices, tools and means that helped the researcher to conduct his research, as follows:

Kinovea Kinetic Analysis Program Version (8.27).

The Testes

Measured biomechanical variables:

- Variable contact distance ball with pitch:
- The variable of the contact distance of the ball with the pitch to the point of transmission was measured by determining the place of the ball falling at the moment of contact with the ground to the nearest line from the area of the transmission, whether the side line or the middle line according to the proximity of the ball to one of the lines, and the distance of the ball fall to the transmission that gets a point directly or The effective and intended here by the effective transmission is that the transmission that is returned to the network or outside the field, that is, does not respond correctly and the receiver loses the point.
- Variable speed balls sent:
- The direct and effective transmission speed variable was taken through the match video, because after performing each transmission there is a device to measure the speed of the transmissions placed inside the field showing the speed of the ball directly and in a unit of

measurement (H / KM). Figure 2 shows the transmitter speed display, speed value and unit of measurement.

- Variable contact distance of the sphere with the pitch of the reciprocating hit point:
- The ball contact variable with the pitch of the field was measured for the final point of mutual strokes (rally) by determining the place of the ball fall the moment of contact with the ground and measuring the distance to the nearest side of the pitch lines.
- The researchers used Kinovea version (8.27) to analyze and extract the search variable, and this version can define the entire stadium as a drawing scale and figure (4) illustrates
- the program's interface and the method for determining the scale of drawing and the number of frames and video resolution, knowing that the match movie was downloaded
- from the Internet in a format (HD) High definition and the number of frames (25) frames per second.

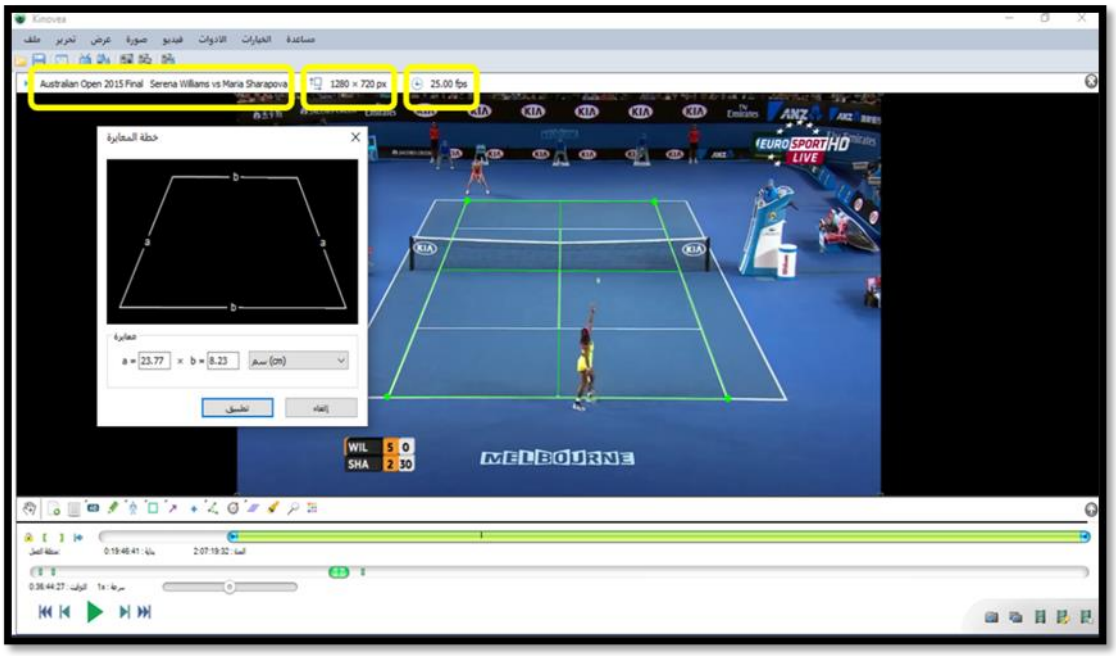

Figure No. (4) shows Kinovea, the scale of the video, video resolution, number of frames per second and the title of the video

Applied Test

The main experiment was started from 1/1 to 25/25/2020 to extract the search variables using Kinovea kinematics version (8.27).

Results and discussed

View and discuss search results:

Show results, arithmetic mean, and standard deviations of the ball distance and speed of points in the serve for two groups (Serena Williams - Maria Sharapova) for the first two sets
Table No. (1) shows the circles and deviations of the contact distance and the speed of the ball for the points in the transmission.

The second group				The first group			
Maria		Serena		Serena		Maria	
Ball speed)H/KM(	The distance of the ball)Centimetre(	Ball speed)H/KM(	The distance of the ball)Centimetre(	Ball speed)H/KM(	The distance of the ball)Centimetre(	Ball speed)H/KM(	The distance of the ball)Centimetre(
164	0.10	199	0.51	166	1.12	150	0.59
177	0.50	166	0.47	198	0.29	174	0.00
163	0.00	164	0.51	168	0.30	142	1.53
159	0.76	167	0.53	178	0.24	150	0.30
153	0.75	169	0.84	191	0.18	171	1.72
162	0.03	198	0.40	191	0.32	161	0.95
157	0.84	178	0.00			174	0.69
163	0.56	173	1.03				
154	0.78	192	0.15				
177	0.00	169	0.91				
		190	0.00				
		198	0.42				
		198	0.61				
		199	0.39				
		180	0.35				
		168	0.43				
		186	0.42				
		159	0.15				
		169	0.00				
		188	0.68				
		191	0.53				
		198	0.00				
162	0,43	182	0.42	182	0,43	160	0,83	A
8,345	0,359	13,863	0.292	13.312	0,352	13,149	0,625	Std

Show results, arithmetic mean, and standard deviations of the ball's distance of points in two strokes of the two players (Serena Williams - Maria Sharapova) for the first and second sets

Table No. (2) Shows circles and deviations of the distance the ball touches at the final points of the mutual hits.

Received: 05 Mar 2020 | Revised: 21 Apr 2020 | Accepted: 05 May 2020

Mutual strikes for the second set		Mutual strikes for the first set	
Maria	Serena	Serena	Maria
The distance of the ball)Centimetre(	The distance of the ball)Centimetre(	The distance of the ball)Centimetre(	The distance of the ball)Centimetre(
1.17	1.25	0.80	1.22
0.41	1.68	1.70	2.84
0.56	1.05	0.46	2.43
1.30	3.60	1.41	0.81
0.55	0.66	3.31	1.09
2.02	3.51	2.17	3.76
0.32	2.46	1.20	1.07
3.01	0.51	0.47	1.01
1.94	2.61	0.75	1.58
0.89	1.70	1.01	2.70
0.67	0.34	0.88	
3.37	1.14	0.80	
1.50	0.30	0.49	
0.66	1.92	1.44	
2.33	1.01	1.71	
1.15	0.72	0.58	
2.59	1.75	2.46	
0.00	1.67	1.30	
0.66	2.54	1.82	
0.85	1.06		
1.95			
1.02			
1.03			
0.39			
1.22			
2.96			
0.49			
1,296	1.574	1,303	1,815	A
0,917	0.968	0,761	1,007	Std

- Display and discuss the results of the number of transmissions, reciprocal strikes, their arithmetic mean, and their standard deviations for both groups, the total of the points that were not analyzed, the number of transmission errors, the runs, and the result of the game for the two players (Serena Williams - Maria Sharapova)
- Table (3) shows the number of transmissions, reciprocal strikes, their mediums and deviations for the two groups, the total of the points that were not analyzed, the number of transmission errors, the number of runs and the result of the match.

Name	Serena Williams			Maria Sharapova		
Status	Transmissions	Speed of sending	Strikes	Transmissions	Speed of sending	Strikes
the number	28	28	39	17	17	37
Arithmetic mean	0,420	181,821	1,442	0,594	161,823	1,446
standard deviation	0,299	13,501	0,872	0,508	10,284	0,961
Total points analyzed	67			54		
Double volts	5			4		
Score without analysis	4			5		
Number of round	Group 1/Round 6 Group 2/Round 7 Total/ 13			Group 1/Round 3 Group 2/Round 6 Total/ 9		
The result of the match	Two groups			nothing		

Through Table (3), the number of direct and effective transmissions of the player (Maria Sharapova) in both groups was (17) send, while the number of direct and effective transmissions of the player (Serena Williams) was (28), meaning that the difference between the two players in the number of transmissions is (11) We also note that the number of mutual strikes of the player (Maria Sharapova) in both groups was (37) strikes, while the number of reciprocal strikes of the player (Serena Williams) was (39) strikes, i.e. two difference teams.

And that the mean of the contact distance of the balls from the middle and side line of the serve area of the player (Serena Williams) was (0.420) cm and a deviation (0.299) while the mean of the player (Maria Sharapova) was (0.594) cm and a deviation (0.508) shows the difference clearly in Arithmetic circles and standard deviations of the distance of contact with the ball, which gave the player Serena Williams) (28) points in both groups because the distances of contact of her balls from the middle line and the side line of the sending area were closer to the player (Maria Sharapova), as the distance the ball fell closer On the center line or the sideline of the sending area, the results were better, and this is what A indicated Faraj Yellin said, "The best place to direct the ball is either next to the midline or in the far corner of the side line, and if the player wants to advance on the net he must direct the transmission strike towards the midline, and if he wants to stay at the baseline he must direct his strike to the corners The opponent's court, thus making it difficult for the recipient to return the ball straight due to fear that it will be returned to him by a flying hit "(Eileen Faraj: 85,2000). Also table No. (3), the mean of the transmission speed of the player (Serena Williams) was at a value of (181.821) km / hour, noting that the highest speed was (199) km / hour and less (159) km / hour, while we note that the mean of the player (Maria Sharapova) was (161.823) km / h, knowing that the highest speed was (177) km / h and less (142) km / h, as the speed of the ball has a big role in obtaining points, and we notice this clearly through the number of points Obtained by American player Serena Williams. The arithmetic mean of the distance of the ball touching the two sides of the stadium during the mutual strikes of the player (Serena Williams) was (1.442) meters and a deviation (0.872), while the arithmetic mean of the player (Maria Sharapova) was (1.446) meters and a deviation (0.961), which showed us The difference was very simple in circles and deviations, as in the number of mutual strikes, which were (39) for the player (Serena Williams) and (37) for the player (Maria Sharapova), which is a very close result that helped the player (Maria Sharapova) reach the tie Specifically in the second group, knowing that what qualified her to win the first group was due to mutual strikes, and with a difference of (9) blows to the player. (Maria Sharapova), and Zafer and others point out that "the tactical means that help in influencing the opponent's ability to return the ball is to aim the ball towards the corners of the field, in order to compel the competing player to move left and right, which affects his physical condition in particular. When he

complains about a weak level of fitness, which is reflected in his performance level (Zafir and two others: 215,2000.(

Table (3) that the player (Maria Sharapova) has four unsuccessful (double-volt) transmissions two in each group while the (Serena Williams) has five unsuccessful (double-volt) transmissions three in the first group and two in the second group, There are four cases for the player (Serena Williams) and five cases for the player (Maria Sharapova) in which the analysis was not carried out because the camera was moving during the course of the match, which is an inaccurate case to extract the distance of contact with the ball, so its speed was also neglected and not taken out,

Through all of the above, the researchers achieved the goal of their research by setting accurate objective values for the points of transmission and mutual strikes according to the distance the ball touched the field in the field of transmission and the side lines and explaining the reasons for winning the player (Serena Williams) in the Australian Open 2015

.

Conclusions and recommendations

Conclusion

Through the above presented results and the researcher's analysis and discussion of these results, he reached the following conclusions:

- The player (Serena Williams) has achieved (28) points in the two groups with direct and effective transmissions (6) of them in the first group and (22) in the second group, and the mean for the speed of the transmissions was (181) km / hour, and one of the reasons for winning the group the second.
- -The player (Maria Sharapova) has achieved (17) points in the two groups with direct and effective transmissions (7) of them in the first group and (10) in the second group, and the mean for the speed of the transmissions was (161) km / hour One of the reasons for the loss was in the second group
- -The player (Serena Williams) achieved (39) points in the two groups through mutual strikes (19), including in the first group and (20) in the second, and was one of the reasons for winning in the first group.
- The player (Maria Sharapova) has achieved (37) points in the two groups through mutual strikes (10), including in the first group and (27) in the second group, which is one of the reasons the match reached a draw in the number of runs in the second group (6 - 6).

Recommendations

Through what has been concluded, the researcher recommends the following recommendations:

- The need for coaches of clubs and national teams in the game of tennis to provide their players with information regarding the distance of the ball falling to the lines of the serve area and the side lines of the stadium and its impact on the outcome of the match.
- The need for coaches of clubs and national teams in the game of tennis to train their players to increase the speed of the ball, taking into account its accuracy for its great role in obtaining direct points, especially in the service.
- The necessity of measuring the distance of the ball's contact with the playing field and the number of transmissions and reciprocal strikes in tests and official matches of the players and the players of the national team and sports clubs to find accurate objective results that show the reasons for winning and losing players in official and experimental matches.
- Attention to putting training curricula in the game of tennis, focusing on the distance of touching the ball from the nearest side of the serve area lines and the nearest point to the side lines of the stadium, taking into account the ages and capabilities of the players.
- The possibility of conducting a similar study on the same current research variable and on other technical games

Reference

1- Effect of Exercises Using Devices to Develop Some of the Motor Qualities and Offensive Basketball Skills, Rasha Talib dheyab, Omar Saad Ahmed, College of Physics Education and Sports Science, University of Diyala, Diyala , Iraq.2019

2- THE EFFECT OFELEVATION TRAINING MASKS WITH HYPOXIC TRAINING ON SOME COMPONENTS OF BLOOD AND SOME BIOCHEMICAL VARIABLES FOR BASKETBALL PLAYERS, 1RashaTalebDiab and 2Omar Saad Ahmed, Saif Saad Ahmed,2019 University of Diyala /Iraq, Physical Education and Sports Science.

3-The effect of exercise on high and low intensity zones to improve young weightlifters power and strength
Omar.Saad.Ahmed, 2HayderSoud Hassan, 3Nibras ALI, 4FirasAbdulmunemAbdlrazzaq, 5Hayder Shaker,2019

5- Eileen Wadih Faraj: Tennis (Education - Training - Evaluation - Arbitration), Mentafat Al-Maaref, Alexandria, 2000.

6- Joudeh Ezzat Atwi: methods of scientific research, concepts, tools, methods, statistics, 1st edition. Amman: House of Culture for Publishing and Distribution, 2009.

7- Zafer Hashem and two others: artistic and tactical numbers in tennis, Dar Al-Jumaiya for Printing, Publishing and Translation, 2nd edition, Baghdad, 2000.