

# Analysis of badminton competitions in 2012 London Olympics

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## Abstract

In this study, the general analysis of 2012 London Olympics Badminton matches are aimed to be made. In this analysis, the physical characteristics of the Olympic players, the average match and rally durations, the countries which have participated by rally stroke points and the distributions of the medals were studied. The official website of 2012 London Olympics were used as a means of collecting data and during the matches, the results and analysis of a total 189 matches published on this site were recorded and evaluated. The study was carried out by using the data which belong to a total of 170 players (90 women and 80 men) who participated from 52 countries. Descriptive statistical analysis of data (mean, standard deviation, minimum and maximum values, percentage distribution) was done by using SPSS 17.0 for Windows. As a result of this research, the mean total match duration in singles and doubles categories were determined as; for males 45.12±13.24 minutes, 39.37±11.46 minutes, for females 37.7±12.46 minutes, 42.27 ±8.94 minutes respectively. The longest rally mean durations of competitions in man and women singles were respectively 38.4±16.22 seconds, 34.6±8.15 seconds; in men doubles, in women doubles and in mix doubles were respectively 38.18±15.13, 48.16±11.8 and 23.19±9.15 seconds. When the highest rally strokes, with average of 53,39±15,7 strokes, took place in the women doubles, it was followed by women singles (41,39±10,6), men singles (38,66±13,26), men doubles (36,74±12,58) and mix doubles (35,43±8,67). When looked at the data obtained in this study, it is observed that the highest mean match durations are in men singles and the longest mean rally durations and the highest mean rally strokes are in women doubles categories. As a conclusion, according to the 2012 London Olympics analysis, badminton coaches must revise technical, tactical, conditional elements of badminton and they have to prepare special schedules for category properties.

**Key Words:** Badminton, 2012 London Olympic Games, match analysis.

## INTRODUCTION

Badminton is a sports activity characterized by its continuous high density during games, its long durations and its periodical brakes (9). After badminton was represented officially in the 1992 Barcelona Olympics, the performance capabilities of the players became the focus of the researches. Despite having an old and rooted historical background, we cannot say that it is as widespread as expected in our country. It has a very short historical background in Turkey (the foundation of Turkey Badminton Federation is 1991). However, the development and promotion facilities are rapidly continuing. Besides, badminton takes place in the most preferred free time activities. Since the playground could be set up easily

and since the amateurs could easily start playing it, people are interested in these sports (8).

In badminton, as in the other sports which use racquets, there are short-termed maximal and submaximal overloading and short-termed resting periods. In such sports, speed, coordination, strength, reaction, instinct, game skills and technics are considered as preconditions of success (4). In high-level competitors, high level aerobic capacity is needed (10). The duration of a badminton match changes between 15-90 minutes depending on the performance of the players and the number of the rounds played (6,13).

From time to time, so as to make the conditions of the game more appealing, to improve the visual quality and to increase the number of sponsors and audience, International Badminton Federation (IBF) makes some changes on the rules. From these, the changes in the score system are the most attractive one. When it was 15 in all the categories in 2004 Olympic Games, the game was played over 21 round score and by changing the service system, each mistake was counted as a point in 2008 and 2012 Olympic Games. Again since the beginning of 2014, a trial has been started for another change in the system (11 points X 5 rounds). In this condition, it is clear that there will be a change in the physical and mental stress levels of the players and, as a result, a change in their tactics.

In this study, the general analysis of 2012 London Olympics Badminton matches are aimed to be made.

## MATERIAL & METHOD

In this study, the official website of 2012 London Olympics was used as a means of collecting data (11). During the matches, the results and analysis of total 189 matches (men singles 48, women singles 58, men doubles 29, women doubles 22 and mix doubles 32 matches) published on this site were evaluated. In this study, 90 women with average height of 169.12±6.12 cm, average weight of 61.25±5.18 kg, average age of 25.77±3.12 and 80 men with average height of 179.29±6.47 cm, average weight of 72.78±7.16 kg and average age of 27.38±4.14 participated from 52 countries.

Descriptive statistical analysis of data (mean, standard deviation, minimum and maximum values, percentage distribution) was done by using SPSS 17.0 Statistical Program.

## RESULTS

As seen in table 1, the average age, the average height and the average weight of the women (no=90) and men (no=80) players who joined the 2012 Olympics are respectively 25.77 ± 3.12 years old, 169.12 ± 6.12 cm, 61.25 ± 5.18 kg for women; 27.38 ± 4.14, 179.29 ± 6.47 cm, 72.78 ± 7.16 kg for men.

At the end of the man singles, the average duration of the match was 45.12±13.24 minutes. In rounds, the 3rd round (with the average of 25.06±4.2 minutes) is the longest average round. In rally durations, the 2nd round (with 41.12±9.12 seconds)

has the longest duration. The highest average rally strokes are 44.4±12.8 times.

Table 1. The physical characteristics of the athletes.

Variables	N	Min.	Max.	Mean	SD	
Age (year)	Woman	90	155	183	169.12	6.12
	Man	80	163	197	179.29	6.47
Height (cm)	Woman	90	50	75	61.25	5.18
	Man	80	60	95	72.78	7.16
Weight (kg)	Woman	90	17	38	25.77	3.12
	Man	80	21	37	27.38	4.14

Table 2. The analysis of man singles (48 matches in total).

		Min	Max	Mean	SD
Match duration (min)	1st round	7	28	22.18	4.12
	2nd round	9	32	22	3.54
	3rd round	13	28	25.06	4.2
	Total	22	79	45.12	13.24
The longest rally duration (sec)	1st round	9	65	35.31	15.78
	2nd round	12	85	41.12	9.12
	3rd round	17	69	34.05	14.52
	Total	17	85	38.4	16.22
The highest rally strokes	1st round	9	90	34.5	13.58
	2nd round	17	51	38.75	8.54
	3rd round	14	58	44.4	12.8
	Total	18	90	38.66	13.26

Table 3. The analysis of women singles (58 matches in total).

		Min	Max	Mean	SD
Match duration (min)	1st round	15	25	19.2	4.04
	2nd round	12	28	20.28	4.12
	3rd round	19	23	21.75	5.13
	Total	20	78	37.7	12.46
The longest rally duration (sec)	1st round	8	46	29.6	6.57
	1st round	8	46	29.6	6.57
	2nd round	9	56	30.92	8.48
	3rd round	25	34	30.4	9.23
The highest rally strokes	Total	16	56	34.6	8.15
	1st round	18	41	23.68	8.24
	2nd round	18	43	23.21	7.02
	3rd round	24	29	25.23	5.16
Total	18	43	41.39	10.6	

In women singles matches, it is seen that the average total match duration is 37.7±12.4 minutes and

the average longest rally duration is  $34.6 \pm 8.15$  seconds. The highest average rally stroke is  $41.39 \pm 10.6$  times. In common, the three are seen at the 3rd round (Table 3).

In men doubles matches, the average total match duration is  $39.37 \pm 11.46$  minutes and the average longest rally duration is  $38.18 \pm 15.13$  seconds and the highest average rally strokes is  $36.74 \pm 12.58$  times (Table 4).

When we observe table 5, the average total match duration is  $42.27 \pm 8.94$  minutes and the average longest rally duration is  $48.16 \pm 11.8$  seconds and the highest average rally strokes is  $53.39 \pm 15.7$  times.

Table 4. The analysis of men doubles (29 matches in total).

		Min	Max	Mean	SD
Match duration (min)	1st round	8	24	19.42	4.46
	2nd round	9	25	22.85	5.21
	3rd round	21	28	26.45	3.25
	Total	26	83	39.37	11.46
The longest rally duration (sec)	1st round	16	60	36.14	7.16
	2nd round	12	67	35.42	17.57
	3rd round	18	43	32.65	5.16
	Total	16	67	38.18	15.13
The highest rally strokes	1st round	14	72	33.28	6.26
	2nd round	14	52	39.4	11.57
	3rd round	18	59	34.56	8.15
	Total	16	63	36.74	12.58

Table 5. The analysis of women doubles (22 matches in total).

		Min	Max	Mean	SD
Match duration (min)	1st round	9	26	16.42	8.44
	2nd round	9	24	16.71	4.25
	3rd round	17	18	17.50	3.65
	Total	20	82	42.27	8.94
The longest rally duration (sec)	1st round	25	57	39.71	20.61
	2nd round	21	64	36.28	22.28
	3rd round	24	25	24.5	9.82
	Total	21	64	48.16	11.8
The highest rally strokes	1st round	28	57	40.14	22.34
	2nd round	22	71	37.57	16.12
	3rd round	27	28	27.5	18.5
	Total	22	71	53.39	15.7

Table 6. The analysis of mix doubles (32 matches in total).

		Min	Max	Mean	SD
Match duration (min)	1st round	8	36	20.87	6.2
	2nd round	12	38	21.75	4.12
	3rd round	16	42	24	4.19
	Total	24	76	44.27	16.44
The longest rally duration (sec)	1st round	15	62	26.44	12.56
	2nd round	17	49	20.80	8.65
	3rd round	21	50	22.33	10.12
	Total	21	62	23.19	9.15
The highest rally strokes	1st round	14	44	32.46	8.56
	2nd round	17	58	36.42	10.24
	3rd round	24	54	34.25	8.45
	Total	24	58	35.43	8.67

In the matches played in mix doubles category in 2012 London Olympics, the average total match duration, the average longest rally duration and the highest average rally strokes are  $44.27 \pm 16.44$  minutes,  $23.19 \pm 9.15$  seconds and  $35.43 \pm 8.67$  times respectively (Table 6).

As seen in table 7, China's contribution is the highest in 2012 London Olympics following (15 players - %8.82), Korea (14 athletes - %8.24), Denmark and Japan (11 players - %6.47). 26 countries were represented with 1 player (%1.11).

While China was the first with 8 medals (5 gold, 2 silver and 1 bronze), Denmark (2 medals), Japan (1 medal), Korea (1 medal), India (1 medal), Malaysia (1 medal) and Russia (1 medal) followed China.

## DISCUSSION

The general analysis of Badminton matches (which took place in 2012 London Olympics) was made. The physical characteristics of the players who participated, the average match duration, the average rally duration, the average rally strokes and the distribution of the athletes according to their countries and how many medals they won were observed.

A total of 170 players (90 women and 80 men) took place in the Olympics. China, with 15 players (8 men and 7 women), is the country that contributed the most (Table 7). To the Athens Olympics in 2004, a total of 162 athletes participated from 30 countries and to the 2008 Beijing Olympics 173 athletes participated from 50 countries. In both of the Olympics, China was

the one who contributed the most (26 players in 2004, 19 players in 2008). In 2004, 4 countries joined with 1 player and in 2008, 18 countries joined with 1 player (1).

weight of the players who took place in the Olympics are respectively  $25.77 \pm 3.12$  years old,  $169.12 \pm 6.12$  cm,  $61.25 \pm 5.18$  kg for ladies and  $27.38 \pm 4.14$  years old,  $179.29 \pm 6.47$  cm,  $72.78 \pm 7.16$  kg for men.

The average age, average height and average

Table 7. The distribution of the countries participated to the 2012 London Olympic.

Countries	Men	%	Women	%	Total	%
1. CHN	8	10,00	7	7,78	15	8,82
2. MAS	4	5,00	2	2,22	6	3,53
3. KOR	7	8,75	7	7,78	14	8,24
4. DEN	6	7,50	5	5,56	11	6,47
5. IND	2	2,50	4	4,44	6	3,53
6. JPN	5	6,25	6	6,67	11	6,47
7. GUA	1	1,25			1	0,59
8. INA	5	6,25	4	4,44	9	5,29
9. HKG	1	1,25	3	3,33	4	2,35
10. GER	4	5,00	2	2,22	6	3,53
11. ESP	1	1,25	1	1,11	2	1,18
12. IRL	1	1,25	1	1,11	2	1,18
13. RUS	4	5,00	2	2,22	6	3,53
14. FIN	1	1,25	1	1,11	2	1,18
15. FRA	1	1,25	1	1,11	2	1,18
16. POR	1	1,25	1	1,11	2	1,18
17. EST	1	1,25			1	0,59
18. VIE	1	1,25			1	0,59
19. TUR			1	1,11	1	0,59
20. GBR	2	2,50	2	2,22	4	2,35
21. PER	1	1,25	1	1,11	2	1,18
22. THA	4	5,00	2	2,22	6	3,53
23. SUR	1	1,25			1	0,59
24. POL	4	5,00	2	2,22	6	3,53
25. SIN	1	1,25	3	3,33	4	2,35
26. UKR	1	1,25	1	1,11	2	1,18
27. UGA	1	1,25		0,00	1	0,59
28. TPE	3	3,75	5	5,56	8	4,71
29. SWE	1	1,25			1	0,59
30. CZE	1	1,25	1	1,11	2	1,18
31. AUT	1	1,25	1	1,11	2	1,18
32. MDV	1	1,25			1	0,59
33. BEL	1	1,25	1	1,11	2	1,18
34. ISR	1	1,25			1	0,59
35. NED			1	1,11	1	0,59
36. BUL			1	1,11	1	0,59
37. CAN			3	3,33	3	1,76
38. ITA			1	1,11	1	0,59
39. INA			1	1,11	1	0,59
39. USA			1	1,11	1	0,59
40. MEX			1	1,11	1	0,59
41. SUI			1	1,11	1	0,59
42. FIN			1	1,11	1	0,59
43. ISL			1	1,11	1	0,59
44. AUS	2	2,50	3	3,33	5	2,94
45. SLO			1	1,11	1	0,59
46. LTU			1	1,11	1	0,59
47. PER			1	1,11	1	0,59
48. SVK			1	1,11	1	0,59
49. BLR			1	1,11	1	0,59
50. EGY			1	1,11	1	0,59
51. NOR			1	1,11	1	0,59
52. SRI			1	1,11	1	0,59
Total	80	100,0	90	100,0	170	100,0

Table 8. The distribution of medals in 2012 London Olympics.

Categories	The Distribution of medals in 2012 London Olympics		
	Gold	Silver	Bronze
Lady Singles	China	China	India
Man Singles	China	Malaysia	China
Ladies Double	China	Japan	Russia
Men Double	China	Danemark	Korea
Mix Double	China	China	Danemark

In the study that Senel & Eroglu (15) conducted in 2005, it is clearly seen that for ladies the average age is 25.59, the average weight is 62.2 kg and the average height is 168.3 cm. In the research that Revan et al. (4) conducted in 2007 on elite badminton players, the average weight and height of the national players of the Turkish National Badminton Team are 175.0±7.3 cm and 67.5±7.7 kg for men; 166.4±5.6 cm and 59.5±7.7 kg for women. The players of the 2008 Beijing Olympic Games' average age, average height and average weight are respectively 25.16±3.7, 168.32±6.28 cm, 61.66±5.97 kg for women and 27.12±4.02, 178.98±6.48 cm, 73.47±7.59 kg for men (1).

In man singles match durations, the average duration for the 1st round is 22.18±4.12 minutes, for the 2nd round is 22±3.54 minutes and for the 3rd round is 25.06±4.2 minutes and the total duration is 45.12±13.24 minutes. In lady singles the average durations for each round are respectively 19.2±4.04 minutes, 20.28±4.12 minutes and 21.75±5.13 minutes and the total duration is 37.7±12.46 minutes. In men doubles the average durations for each round are respectively 19.42±4.46 minutes, 22.85±5.21 minutes and 26.45±3.25 minutes and the total duration is 39.37±11.46 minutes. In ladies doubles the average durations for each round are respectively 16.42±8.44 minutes, 16.71±4.25 minutes, 17.5±3.65 minutes and the total duration is 42.27±8.94 minutes. And lastly in mix doubles we see that the average durations for each round are respectively 20.87±6.2 minutes, 21.75±4.32 minutes, 24±4.19 minutes and the total duration is 44.27±16.44 minutes.

In the study that Cinemre et al. (7) conducted on young badminton players, they found out that in the lady singles the average duration for the 1st round is 4.50± 2.21 minutes and for the 2nd round is 6.01±1.69 minutes and in the man singles the average duration for the 1st round is 10.15±3.25 minutes and for the 2nd round is 16.91±7.26 minutes. Aydogmus determined in his 2002 study that Turkish National Men Badminton players played 33.78 minutes in total (2). In another research which Aydogmus et al. (3) conducted, they found out that in 3x15 point system the average duration is 33.78 minutes and in 5x7 point system it is 27.21 minutes.

In a study conducted on 8 women and 8 men about match analysis, it is determined that in 21 point system, the average match duration for men is 17.27

minutes and for women it is 17.14 minutes (12). In 2008 Olympics, in men singles, this duration is approximately 41.7 minutes (1).

When we look at the longest rally durations in the matches, the average of man singles for the 1st round is 35.31±15.78 seconds, for the 2nd round is 41.12±9.12 seconds and for the 3rd round is 34.05±14.52 seconds and the mean of these 3 rounds is 38.4±16.22 seconds. In lady singles the average for each round are respectively 29.6±6.57 seconds, 30.92±8.48 seconds and 30.4±9.23 seconds and the mean for the longest rally duration of these 3 rounds is 34.6 ±8.15 seconds. In men doubles the average for each round are respectively 36.14±7.16 seconds, 35.42±17.57 seconds and 32.65±5.16 seconds and the mean of these 3 rounds is 38.18±15.13 seconds. In ladies doubles the average for each round are respectively 39.71±20.61 seconds, 36.28±22.28 seconds and 24.5±9.82 seconds and the mean of these 3 rounds is 48.16±11.8 seconds. And lastly in mix doubles we see that the average rally durations for each round are respectively 26.44±12.56 seconds, 20.80±8.65 seconds, 22.33±10.12 seconds and the mean of 3 rounds is 23.19±9.15 seconds (Tables 2, 3, 4, 5, 6).

In the study which Cabello and Gonzales worked on in 2003 (6), they defined the match duration as 28 minutes, the rally duration as 6.4 seconds and break times as 12.9 seconds. Again, Cabello et al. (5) state that the rally duration is 8 seconds and the time to rest is twice of it (16 seconds) according to their research on three high-level national players.

When the highest rally strokes are observed in the matches, it is seen that in man singles in the 1st round it is 34.5±13.58 times, in the 2nd it is 38.75±8.54 times, in the 3rd it is 44.4±12.8 times and the mean of these 3 rounds is 38.66±13.26 times. In lady singles in the 1st round it is 23.68±8.24 times, in the 2nd it is 23.21±7.02 times, in the 3rd it is 25.23±5.16 times and the mean of these 3 rounds is 41.39±10.6 times. In men doubles in the 1st round it is 33.28±6.26 times, in the 2nd it is 39.4±11.57 times, in the 3rd it is 34.56±8.15 times and the mean of these 3 rounds is 36.74±12.58 times. In ladies doubles in the 1st round it is 40.14±22.34 times, in the 2nd it is 37.57±16.12 times, in the 3rd it is 27.5±18.5 times and the mean of these 3 rounds is 53.39±15.7 times. And at last, in mix doubles, it is seen that in the 1st round it is 32.46±8.56 times, in the 2nd it is 36.42±10.24 times, in the 3rd it is 34.25±8.45 times and the mean of these 3 rounds is

35.43±8.67 times (Tables 2, 3, 4, 5, 6).

The difference between 2012 London Olympics and the previous two Olympic Games is the countries which participated and the number of the players. When there were 162 participants from 30 countries (76 women, 86 men) in 2004 Olympics, this number has increased to 173 participants from 50 countries (86 women, 87 men). In 2012 London Olympics this number has become 170 participants from 52 countries (90 women, 80 men). While China is the first with 8 medals (5 gold, 2 silver and 1 bronze) in 2012 London, Denmark follows China with 2 medals (1 silver and 1 bronze).

To conclude the study, we can say that not the match durations but the rally durations and the strokes being more in ladies doubles can be related with women having less strength than men and ending strokes such as smashes being less. Furthermore, we can explain why these parameters don't reflect on match durations by the reduction in the number of continuous matches. In mixed doubles categories, rather than the rally durations and the number of strokes, tactic is on the forefront. In the game, rapid strokes like smashes and drives are generally used and we can say that this type of game shortens the rally durations of the match.

As a result, according to the 2012 London Olympics analysis, badminton coaches and players must revise technical, tactical, conditional elements of badminton and they have to prepare special schedules for category properties.

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