

Investigation of Winning Factors of Miami Heat in NBA Playoff Season 2012-2013

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Abstract: Analyze the data of Miami Heat in the NBA playoff season 2012-2013 from the aspects of team, main force, bench players, and core players to investigate the winning factors. The result shows that: Free throws and turnover of Miami Heat team are more than the opponents, while fouls are less; Two-point shooting number, three-point percentage and score of main forces are higher than the opponents; Penalty shooting number is more than the opponents, while the free throw number and foul number are less than the opponents; Total rebounds of the bench players are more than the opponents; the playing time, two-point shots and scores are significantly higher than the regular season.

Keywords: Bench, core players, main force, NBA, playoffs.

1. INTRODUCTION

Founded in 1946, NBA (National Basketball Association) has become one of the most market-oriented, professional, and influential sports associations around the world after 60 years of development. From the date of birth, NBA games continuously develops and changes: from player talent show to regular season, from MVP competition to playoff competition, the improvement and development of NBA games and management system is leading the trend of world basketball development, with outstanding contributions to promote the popularity of basketball in the world. Globalization promotion strategy enables each NBA game attracts the attention of hundreds of millions of people. Participation of international players promotes basketball and cultural exchange, with expanding the influence of NBA teams in their country, which in turn lay the foundation of cultural exchange for the successful marketing. Based on the previous studies, the author conducted in-depth study with index contrast analysis. Through the analysis of NBA team record influence factors, the author discussed the development rules and provided references for the development of Chinese competitive basketball level.

2. RESEARCH OBJECTS AND METHODS

2.1. Research Objects

Take the championship of NBA playoff in the season 2012-2013 Heat as the research object to analyze the game data of core players and the team in regular season and playoff.

2.2. Research Methods

Literature: I went through game statistics of regular season 2011-2012 on the China NBA official website and

over 20 related researches on NBA technical statistics, to learn about related theoretical background and determine research idea and frame.

Mathematical Statistics: I used Excel 2010 and spss19.0 to analyze the statistical data analysis.

Comparative Analysis: I integrated the data and information collected and conducted logical analysis and comparative research to the data processing result.

3. RESULTS AND ANALYSIS

3.1. Analysis of Winning Factors of Miami Heat in Playoff Season 2012-2013

With the higher, faster, and stronger development trend of modern sports, NBA also develops to the direction of fast speed, high intensity, and high score [1]. The essence of basketball is to score the ball into the basket, with the ultimate goal of beating the scores. The total score is achieved by various means, including two-point shooting, three-point shooting, and penalty shooting. Technical statistics, including assists, rebounds, block shot, and foul have indirect impact on the total score. Good technical and tactical convergence is the basis for the team to score and the guarantee to win. From the overall performance of NBA playoff in the season 2012-2013, Miami won 16 and lost 7 in the 23 games, with average score of 97.4 gained and 90.3 lost, and average 7.3 than the opponents. Despite the victory in the finals at 4:3, Miami fell behind the Spurs at 3:2, risking its championship. The thrilling playoff games elicited the problems existed in Miami Heat. Investigation on these problems helps to recognize the competition rules, set targets for the development of Heat after playoffs, and generate profound influence on how to play on a stable level in the fierce playoff, to present a wonderful game, and improve the overall competitive level and ornamental value of CBA.

Table 1. Paired sample correlation coefficient of the statistic data of miami heat and its opponents.

		N	Correlation Coefficient	Sig.
Pair 1	Two-point shots & opponent two-point shots	36	.897	.000
Pair 2	Two-point shooting & opponent two-point shooting	36	.844	.000
Pair 3	Two-point shooting & opponent two-point percentage	36	-.188	.273
Pair 4	Three-point shots & opponent three-point shots	36	.572	.000
Pair 5	Three-point shooting & opponent three-point shooting	36	.309	.067
Pair 6	Three-point shooting & opponent three-point shooting	36	.102	.553
Pair 7	Penalty shooting & opponent penalty shooting	36	.823	.000
Pair 8	Free throw & opponent free throw	36	.770	.000
Pair 9	Free throw percentage & opponent free throw percentage	36	.022	.898
Pair 10	Total rebounds & opponent rebounds	36	.700	.000
Pair 11	Assists & opponent assists	36	.719	.000
Pair 12	Steals & opponent steals	36	.783	.000
Pair 13	Blocks & opponent blocks	36	.578	.000
Pair 14	Turnovers & opponent turnovers	36	.347	.038
Pair 15	Foul & opponent foul	36	.538	.001
Pair 16	Score & opponent score	36	.850	.000

3.1.1. Related Analysis

As is shown from the study (Table 1), the two-point percentage of Miami Heat in the NBA playoff in the season 2012-2013 was negatively correlated with the opponent without significant difference; Related analysis of variables, including two-point shots, two-point shooting, three-point shots, free throws, penalty shooting, total rebounds, assists, steals, block shots, turnovers, fouls, and scores are significantly related with the opponent ($P < .01$), which makes further paired sample T-test necessary.

3.2. Paired Sample T-Test of Team Data of Miami Heat and Opponent Team in 2012-2013 Playoff

Based on the paired samples T-test result (Table 2), average penalty shootings of the Heat are 2.25 more than the opponents, with significant difference ($P < .05$); turnovers are 0.89 more than the opponents, with significant difference ($P < .05$); fouls are 1.61 less than the opponent, with significant difference ($P < .05$). To some extent, fouls reflect the level of offense quality, which means, two many fouls undermine the combat effectiveness [2]. Too much turnovers indicate two problems: poor passing the ball, and strong defense from the opponent. In the basketball games, each team wants to utilize positive and effective defense and try to create more turnovers for the opponent and get more chances to get the ball, reduce turnovers, and increase offensive scoring opportunities [3]. NBA games require high body confrontation, especially in the playoffs where each ball and each game matters a lot, which creates a tense confrontation physically and psychologically. NBA players have a high

degree of executive ability, with the time integrity of defense and cooperation as main defensive performance. Based on one-to-one defense, the defense area expands from inside to outside, and back to front; players will make full use of the violation rules of 3, 5, 8, and 24 seconds, interrupt the offensive tempo of the opponent, compress the exchange time of inside and outside line of the opponent, restrict the passing line of the opponent, leaving the opponent under intense anxiety and nervous with disrupting the exist offensive thinking and routine [4]. In the fierce defense, in order to force the opponent to turnover, the defensive player may be in passive condition, risking foul with slightly big move. During the competition with Heat, other teams obviously showed to much fouls.

3.3. Comparison and Analysis of Main Players of Heat and Opponent in Playoff Season 2012-2013

The five players in the starting roster of the coaches before the game are the objects of the analysis [5]. Determination of the main players is the main part of the preparatory work of the game. The coaches will try to learn about the main tactics and changes, analyze the strong and weak points and cooperation between players of the opponents, and determine main scoring player, core player, main center, main team, and bench players, based on the tactical style, player height, weight, physical quality, technical expertise and shortage. Some researchers believe that the main players take different functional positions (such as guard, forward, and center) based on individual body type, fitness, tasks, and skill function areas on the field. The ability of main players is able to represent the whole team [6].

Table 2. Paired sample t-test of team statistic data of miami heat and opponent team in 2012-2013 playoff.

	Paired Samples	Mean Value	Standard Deviation	t	df	Sig. (Bilateral)
Pair 1	Two-point shots & opponent two-point shots	-.11111	10.51197	-0.063	35	.950
Pair 2	Two-point shooting & opponent two-point shooting	1.19444	6.27384	1.142	35	.261
Pair 3	Two-point shooting & opponent two-point percentage	.03750	.17719	1.270	35	.213
Pair 4	Three-point shots & opponent three-point shots	.88889	4.56557	1.168	35	.251
Pair 5	Three-point shooting & opponent three-point shooting	.55556	2.71971	1.226	35	.229
Pair 6	Three-point shooting & opponent three-point shooting	.03861	.23411	.990	35	.329
Pair 7	Penalty shooting & opponent penalty shooting	2.25000	6.56995	2.055	35	.047
Pair 8	Free throw & opponent penalty penalty	.69444	5.33891	.780	35	.440
Pair 9	Free throw percentage & opponent free throw percentage	-.11250	.80032	-.843	35	.405
Pair 10	Total rebounds & opponent rebounds	.36111	8.35003	.259	35	.797
Pair 11	Assists & opponent assists	.72222	4.86158	.891	35	.379
Pair 12	Steals & opponent steals	-.80556	2.97436	-1.625	35	.113
Pair 13	Blocks & opponent blocks	.36111	2.30717	.939	35	.354
Pair 14	Turnovers & opponent turnovers	.88889	2.29008	2.329	35	.026
Pair 15	Foul & opponent foul	-1.61111	4.42898	-2.183	35	.036
Pair 16	Score & opponent scores	3.69444	16.20726	1.368	35	.180

Table 3. Paired sample t-test of team data of miami heat and opponent team in 2012-2013 playoff.

		Levene Test		Test of Mean Equation t			
		F	Sig.	t	df	Sig.	Mean Deviation
Two-point shot	Assuming equal variances	.190	.666	.654	34	.517	.44444
	Assuming unequal variances			.654	33.507	.517	.44444
Two-point shooting	Assuming equal variances	10.302	.003	1.359	34	.183	2.66667
	Assuming unequal variances			1.359	22.925	.187	2.66667
Two-point percentage	Assuming equal variances	.397	.533	1.542	34	.132	.03833
	Assuming unequal variances			1.542	33.726	.132	.03833
Three-point shot	Assuming equal variances	1.151	.291	.351	34	.728	.50000
	Assuming unequal variances			.351	31.662	.728	.50000
Three-point shooting	Assuming equal variances	3.199	.083	.281	34	.780	.22222
	Assuming unequal variances			.281	29.945	.781	.22222
Three-point percentage	Assuming equal variances	5.957	.020	.099	34	.922	.00500
	Assuming unequal variances			.099	27.722	.922	.00500
Free throw	Assuming equal variances	1.595	.215	2.353	34	.025	5.44444
	Assuming unequal variances			2.353	30.730	.025	5.44444
Penalty shooting	Assuming equal variances	1.200	.281	-2.178	34	.036	-.09111
	Assuming unequal variances			-2.178	33.867	.036	-.09111

Table 3. Contd.....

		Levene Test		Test of Mean Equation t			
		F	Sig.	t	df	Sig.	Mean Deviation
Total rebounds	Assuming equal variances	.571	.455	-1.206	34	.236	-2.44444
	Assuming unequal variances			-1.206	33.878	.236	-2.44444
Assists	Assuming equal variances	.000	.989	.869	34	.391	.61111
	Assuming unequal variances			.869	33.991	.391	.61111
Steals	Assuming equal variances	.077	.783	-.631	34	.533	-.61111
	Assuming unequal variances			-.631	32.929	.533	-.61111
Foul	Assuming equal variances	.138	.713	-2.067	34	.046	-2.44444
	Assuming unequal variances			-2.067	33.857	.046	-2.44444
Score	Assuming equal variances	5.868	.021	1.733	34	.092	8.05556
	Assuming unequal variances			1.733	25.541	.095	8.05556

Table 4. Paired sample t-test of team data of miami heat and opponent team in 2012-2013 playoff.

		LEVENE TEST		Test of Mean Equation t			
		F	Sig.	t	df	Sig. (Bilateral)	Mean Difference
Two-point shot	Assuming equal variances	.304	.585	.709	34	.483	.27778
	Assuming unequal variances			.709	33.463	.483	.27778
Two-point shooting	Assuming equal variances	3.303	.078	-.240	34	.811	-.27778
	Assuming unequal variances			-.240	28.709	.812	-.27778
Two-point percentage	Assuming equal variances	.001	.975	.758	34	.454	.03667
	Assuming unequal variances			.758	33.860	.454	.03667
Three-point shot	Assuming equal variances	.048	.828	1.095	34	.281	1.27778
	Assuming unequal variances			1.095	33.967	.281	1.27778
Three-point shooting	Assuming equal variances	.635	.431	1.536	34	.134	.88889
	Assuming unequal variances			1.536	32.559	.134	.88889
Three-point percentage	Assuming equal variances	.001	.973	1.116	34	.272	.07222
	Assuming unequal variances			1.116	34.000	.272	.07222
Free throw	Assuming equal variances	3.134	.086	-.846	34	.404	-.94444
	Assuming unequal variances			-.846	28.071	.405	-.94444
Penalty shooting	Assuming equal variances	1.415	.243	-.498	34	.622	-.13389
	Assuming unequal variances			-.498	20.083	.624	-.13389
Total rebounds	Assuming equal variances	.101	.752	2.057	34	.047	3.16667
	Assuming unequal variances			2.057	33.613	.048	3.16667
Assists	Assuming equal variances	5.531	.025	2.944	34	.006	1.16667
	Assuming unequal variances			2.944	23.933	.007	1.16667
Steals	Assuming equal variances	8.943	.005	-1.749	34	.089	-1.00000
	Assuming unequal variances			-1.749	25.883	.092	-1.00000
Foul	Assuming equal variances	.009	.923	-.747	34	.460	-.77778
	Assuming unequal variances			-.747	33.213	.461	-.77778
Score	Assuming equal variances	1.567	.219	-.233	34	.817	-.66667
	Assuming unequal variances			-.233	30.383	.817	-.66667

Table 5. Comparative analysis of data of lebron james in regular and playoff season.

	Regular season (n = 64)				Playoffs (n = 23)				F	Sig.
	Mean Value	Max Value	Minimum Value	Standard Deviation	Mean Value	Max Value	Minimum Value	Standard Deviation		
Time:	37.24	47	28	4.49	42.78	48	32	3.83	5.68	0.00
Two-point shot	18.86	33	10	4.29	21.83	27	14	3.31	3.40	0.00
Two-point shooting	9.98	16	4	2.73	10.91	19	7	2.76	1.39	0.16
Two-point percentage	0.53	0.82	0.29	0.11	0.5	0.73	0.35	0.09	1.29	0.19
Three-point shot	2.34	7	0	1.88	3.7	6	0	1.49	3.95	0.00
Three-point shooting	0.84	4	0	1.09	0.96	2	0	0.82	0.55	0.61
Three-point percentage	0.26	1	0	0.32	0.25	1	0	0.24	0.16	0.85
Free throw	8.06	19	1	4.21	10.17	24	3	4.82	1.58	0.14
Penalty shooting	6.2	15	1	3.8	7.52	18	1	4.24	1.32	0.17
Penalty percentage	0.77	1	0.2	0.19	0.71	1	0.2	0.2	1.25	0.21
Defensive rebound	0.81	3	0	0.89	0.7	3	0	0.88	0.51	0.62
Total rebounds	7.81	13	2	2.79	9.74	18	4	3.65	2.19	0.02
Assists	6.08	13	0	2.5	5.61	13	2	3	0.67	0.63
Steals	1.81	5	0	1.42	1.87	6	0	1.36	0.18	0.71
Foul	1.53	5	0	1.17	2.04	6	0	1.58	1.41	0.15
Score	27.02	41	14	6.8	30.3	45	19	5.28	2.36	0.02

As is shown from Table 3, the scoring statistics of two-point shooting and three-point shooting of the Heat are higher than the opponents, with arrhythmia showed in the sample homogeneity of variance test. That is to say, these skill statistics of the Heat are higher than the opponents with significant difference. In the playoffs, the free throws of Heat main force is 5.44 more than the opponent, with significant difference ($P < .05$); the penalty shooting is 0.09 less than the opponent, with significant difference ($P < .05$); while the foul is 2.44 less than the opponent, with significant difference ($P < .05$). There is no significant difference in statistics of two-points shot, three-point shooting, total rebounds, and steals.

3.4. Comparative Analysis of Bench Player of the Heat and the Opponents in the Playoff Season 2012-2013

Data of bench players is not comparable due to different variances of assists and steals. Among variables under test (Table 4), total rebounds of the bench players of Heat is 3.17 more than the opponent, with significant difference ($P < .05$).

There is no significant difference in other variables. A team gets the ball mainly through rebounds, which reflects the team's hard power. Rebound has direct relationship with offense and defense, *i.e.* getting a rebound create a most favorable condition for fighting back [7]. Some researchers believe that rebound is one of the important factors that influence the outcome of the basketball game, with saying "The team that wins the rebounds wins the game." [8]. The results showed that the rebounding ability of Miami Heat bench players is higher than the opponents. Excellent rebounding protection raised the confidence of offensive players and increases the psychological burden of the opponents.

4. PERFORMANCE OF CORE PLAYERS

Core players are the soul and leader of the whole team. Game-winning balls in the NBA games are often handled by the core player. Therefore, each team would develop offense and defense tactics based on the core player of the team. Comprehensive technical skills, high morale, and leadership

ability that lead the whole team to strive for success are required for the core players. Their performance plays an important, even decisive role in the tactic cooperation and competitive condition of the whole team [9]. According to the comprehensive performance, including average play time and scoring in regular season and playoffs, the author lists LeBron James as the core player in Heat. The study result shows that the data follows a normal distribution. Independent sample T-test is adopted. Refer to Table 5.

As is shown from the comparison of the data of regular season and playoffs, the playing time of James improved significantly, from 37.24 minutes to 42.78 minutes; Two-point shots increases from 18.86 to 21.83, increases 3 times by average, with significant difference; Two-point percentage of James in the playoffs is around 50%, which is lower than the regular season, but without significant difference; The stability of two-point shooting ensures that the percentage increases with the increase of shots; James strengthened three-point shots in the playoffs, which increased from 2.34 in the regular season to 3.7. However, the three-point shooting number and percentage still needs to be improved. Free throws and shootings in the playoffs were improved, with percentage declined, which indicated that the intense competition of the playoffs cast a subtle psychological effects on the players; The total rebounds improved significantly from 7.81 to 9.74; Assists, and steals decreased while fouls increased, but without significant difference; average score increased from 27.02 to 30.3 points, with significant difference from the regular season. Based on the above data, the coach gave ample playing time and shots for core player James in the playoffs, compared with the regular season; With the trust of coaches and teammates, James also ensured the stability of individual two-point shots, which led to higher scores with the increase of two-point shots; at the same time, James actively got rebounds and created more opportunities for free throws; Despite all the achievements, James should improve the three-point percentage, decrease fouls, and prevent fouls and injuries during the confrontation.

CONCLUSION

1) Free throws and turnovers of Miami Heat are more than the opponents, with significant difference; fouls of Miami Heat is less than the opponents, with significant

difference. 2) The two-point shooting, three-point shooting, and scoring of Miami Heat main force are higher than the opponents, with significant difference; free throws are more than the opponents, with significant difference; penalty shootings are less than the opponents, with significant difference; while foul games are less than the opponents, with significant difference. 3) Total rebounds of Heat bench players are more than the opponents, with significant difference. 4) Playing time, two-point shots, scoring of core player James improved significantly.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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