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An analytical study of the technical aspects and their impact on the results of the 2023 Arab Basketball Championship for Men National Teams

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ABSTRACT:

This study aimed to determine the roles of basketballtechnical outcomes in determining the final result of the match, or whether it constitutes a factor in determining the teams qualifying for the next rounds or even winning the championships. The data was taken from the results of the Arab National Team Basketball Championship, the 25th edition held in Cairo, December 2023, through analyzing the scoore sheets in all technical outcomes (field points,free throws,offensive rebounds,defensive rebounds,assistes,steals,blocks,turnovers, fouls) for the teams qualifying for quarter-finals, it was assumed that there are statistically significant differences in these outcomes, and that these differences are considered among the main reasons for the qualification of teams over others, it was concluded that there are no statistically significant differences in the technical outcomes between the teams that qualified for the quarter-finals, and that the reasons for the differences in the final results of the matches are due to the small differences between the teams in each of the technical variables, and that among the reasons for the victory of one team over others is it can be a factor of physical preparation, and a factor of the dominance of one playing position over another during the match. The results obtained are considered very important outcomes for coachs or the physical trainer, to know the variables that are taken into consideration during training for continental or international tournaments.

Keywords: Match Analysis, match statistics, technical outcomes, playing position.

01 - INTRODUCTION

Basketball is a team sport that has numerous technical, tactical, and psychological factors. With the advancement of this sport and the development of tools for its use, whether technological or philosophical, it was necessary for countries competing in numerous high-level international competitions to stay up with such advances, and to remain fully apprised of all that is currently going on in this sport, and to strive for its permanent development. On the other hand, There is no doubt that the field of basketball training, like numerous other sports, is experiencing remarkable growth and development, particularly due to players' high levels of skill and tactical performance in local and international competitions, as well as an increase in their technical output during games, coaches create training schedules with physical, skill, and tactical aspects during the training season that are appropriate for the level of competition. (Abed, 2018)Weineck has confirmed that attaining the highest level of various physical, skill, tactical, and psychological abilities is necessary to achieve wins and outcome. As a result, training programs on scientific foundations related to modern sports training must be planned in an organized and systematic manner.(Weineck, 1983, p. 309)

Since these continental and international championships are regarded as a great occasion and even a good opportunity that cannot be missed to know precisely the level that these teams have reached, the most significant aspect we can search through analyzing international teams is their level in all the aspects mentioned above, physically,

skillfully, technically, and psychologically. Its data and outcomes offer crucial indicators that help us establish benchmarks and objective ramifications that set the course for our future work, from the junior members of the teams to the seniors on the national teams, in order to create plans to advance each and evyer facet of practice in advance of these kinds of performances.

The statistical analysis of basketball games can reveal numerous relevant performance markers, not all of which can be analyzed in real time. As a result, analyzing only close matches allows for the identification of a reduced selection of essential performance indicators.(Csataljay, O'Donoghue, Hughes , & Dancs, 2009)

The process of analyzing matches and approving score sheets that provide raw data and outputs for each team in the group of technical elements is regarded as critical, as it allows for the identification of the most important indicators that led to team victories and losses.

Many studies have proven the importance of score sheets in the process of objective analysis of the results reached, as well as coming up with the objective determinants that can be attributed to the victory of one team and the loss of another. A study named Dynamic Modeling of Performance in Basketball by Jorge Malarranha, Bruno Figueira, Nuno Leite, and Jaime Sampaio, adopted four indicators that could have a direct impact on the results of the matches, which are feild goals, offensive rebounds, defensive rebounds, through analyzing 74 basketball matches of the World Championship Turkey 2010, he concluded that these variables had a direct impact on the outcomes of the matches in different proportions, and that these results may allow coaches to have more accurate information aimed at preparing their teams for the competition.(Malarranha, Figueira, Leite, & Sampaio, 2013)

In an evaluation study titled Statistical analyzes of basketball team performance: understanding teams' wins and losses according to a different index of ball possessions, the researchers analyzed more than 400 matches for the 97-98 and 98-99 seasons of the Portuguese Professional Basketball League, which Through it, the researchers attempted to understand the philosophy of winning and losing for sports teams based on the variables of the type of match (regular season or play-off), the outcome of the match (win, loss), the location of the match (home, away), where the match was divided into 03 sections (close games, balanced games, unbalanced games) based on the points difference, as it was concluded that most of the reasons for the loss for the unbalanced and balanced games in the points difference are due to the low technical output throughout the duration of the competition. As for the close games, the reasons differ, perhaps the most important of which are successful free throws for the regular season, and offensive rebounds. As for the play-offs, and for the away matches, winning is largely linked to free throws, and in the return matches, the visiting team's errors greatly affect it.(Sampaio & Janeira, 2003), On the other hand, the study by Shaoliang Zhang et al., titled Performance profiles and opposition interaction during game-play in elite basketball: evidences from the National Basketball Association, confirmed the importance of some other variables that had a role in determining the final outcome of the match, such as the effect of the location of the match (home-away).), indicated that defensive rebounds, blocked shots, and assists determined between winning and losing games for stronger teams while defensive rebounds and turnovers were the key performance indicators for weaker teams.(Zhang, et al., 2019)

The results that can be reached by analyzing score sheets from the technical aspects may be of benefit to both the coach and the fitness trainer and even the psychological trainer to understand the psychology of the team's play, and the psychology of the competing teams' playing style to work on preparing the players and avoiding previous mistakes, especially after the Egyptian team won The Arab Basketball Championship in its 25th edition, and for the 13th time in its history after a fast that lasted 08 years, and this after its victory over the Emirates team in the semi-final with a score of 114-78 and taking the title from its Libyan counterpart with a score of 87-62, while the Algerian team was defeated by Its counterpart, the Emirates, in the quarter-finals with a score of 79/73, while the Tunisian team claimed third place after defeating the Emirati team with a score of 73/66, which raised many questions about the reasons for this defeat and whether it is due to the presence of statistically significant differences between the technical outputs of the Algerian team and the competing teams, and are there statistically significant differences between the technical outputs of the Algerian team and the Egyptian team that won the title?

We assumed that :

There are statistically significant differences between the technical outcoms of the Algerian team and the other participating teams.

There are statistically significant differences between the technical outcoms of the Algerian team and the Egyptian team that won the title.

There are statistically significant differences between members of the Algerian team in the technical outcoms due to the playing position factor.

02 - METHODS :

- Research sample: In our study, we relied on all nine teams participating in the twenty-fifth edition of the Arab Basketball Championship held in Cairo, The Championship was organized in its 25th edition of 2023 with the participation of 9 teams, distributed into two groups. The first group included Algeria, Libya, Somalia, and Mauritania, while the second group included 05 teams, Egypt, the Emirates, Kuwait, Tunisia, and Morocco.

- Study methodology **:** Since in our study we will rely on a process of analyzing the technical aspect of all the championship matches starting from the quarter-final matches, represented by analyzing the score sheets and its various components, the basis of the study here is presentation, analysis and discussion, and therefore we will rely on the descriptive analytical approach.

Data collection tools : In our study to collect information, we relied on match sheets, which give raw statistics at the end of each match, starting from the final result to all the technical data. What interests us most in the score sheets is a set of elements :

- The final result of the match : which gives information about the winning and losing team, and the number of points obtained at the end of the match.
- The field goals : are baskets scored on any shot or tap other than a free throw, worth two or three points depending on the location of the attempt.
- The free throws or foul shots : are unopposed attempts to score points by shooting from behind the free-throw line.
- The offensive rebounds : in which the ball is recovered by the offensive side and does not change possession.
- Defensive rebounds : in which the defending team gains possession.
- Assists : assist is attributed to a player who passes the ball to a teammate in a way that leads directly to a score by field goal
- Turnovers : turnover occurs when a team loses possession of the ball to the opposing team before a player takes a shot at their team's basket.
- Steals : steal occurs when a defensive player causes an offensive player to lose possession of the basketball, primarily by legally taking it away from the offensive player, intercepting the offensive player's pass, or deflecting the offensive player's pass or dribble.
- Blocks : block or blocked shot occurs when a defensive player legally deflects a field goal attempt from an offensive player to prevent a score.
- Fouls : foul is an infraction of the rules more serious than a violation

Score sheets can be considered tools with great honesty and objectivity, because they provide exclusive raw data and express to a large extent what exists on the ground without bias. Therefore, these results (match sheets results) can be accepted as reliable data collection tools, and we can perform statistical operations on them confidently

Statistical Tools : The researchers used statistical methods like the SPSS Program to calculate : Normality of data distribution using Shapiro-wilk test, Mann–Whitney U test to compaire means of two independent samples.

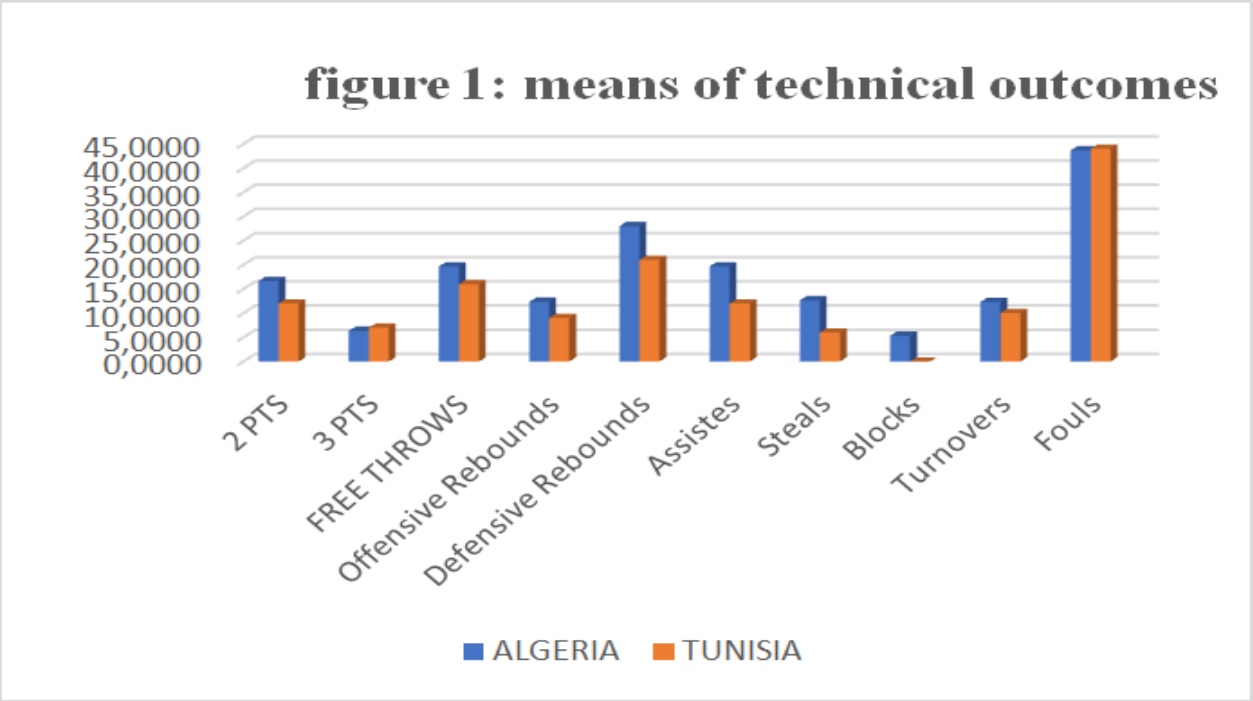
03 –PRESENTATION AND ANALYSIS OF RESULTS :

1st hypothesis: There are statistically significant differences between the technical outcoms of the Algerian team and the other participating teamsthat reached the semi-finals.

Table 01 shows the results of the Mann–Whitney test of the 1st hypothesis
(ALG vs TUN)

	Variables	U value	P value
Algeria VS Tunisia	2pts	0.625	0.532
	3pts	0.211	0.833
	Free throw	0.842	0.400
	Offensive Rebounds	0.712	0.476
	Defensive Rebounds	1.330	0.183
	Assists	1.604	0.109
	Steals	1.948	0.051
	Blocks	2.555	0.011
	Turnovers	0.718	0.437
	Fouls	0.365	0.722

Note : Sig level:0.05 / N : 11



From the results of the table 01, we note that there are no statistically significant differences between the Algerian team and the Tunisian team in all technical outcomes (p value> 0.05)

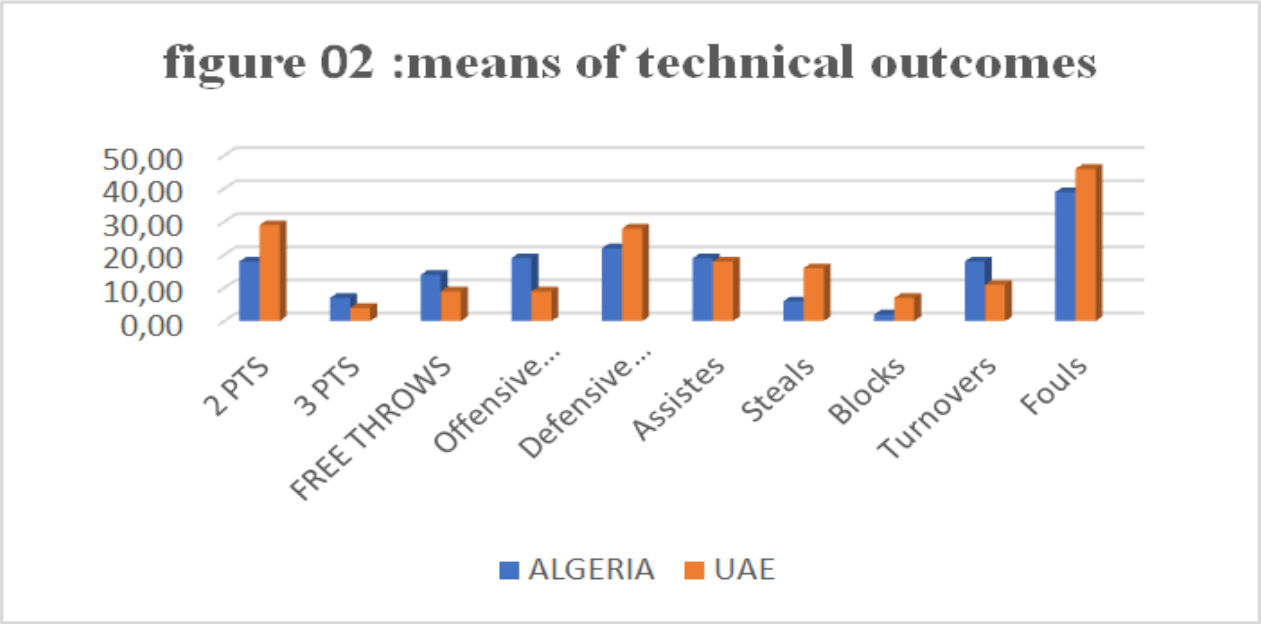
Returning to the graphical representation, we can see that there is no significant difference between the two teams with regard to these variables, as the Algerian team outperformed by a margin that does not exceed two of two point shots over its Tunisian counterpart, and 05 free throws. As for the Tunisian team, it surpassed its Algerian counterpart by one three-point shot. This implies a high level of convergence in these variables, demonstrating the absence of statistically significant differences.

We see also that the Algerian team obtained 12 offensive rebounds compared to 9 for the Tunisian team, which indicates the Algerian superiority in the opponent's area in terms of controlling the ball and good positioning of the players after the shot. On the other hand, we see the Algerian team's superiority also in defensive rebounds, where he obtained 28 defensive rebounds compared to 20 for the Tunisian team, which proves the ability of the Algerian team to control its area on one hand, and the ability to recover rebounds. We also note the relatively large difference in the number of assistes between the two teams, as the Algerian team achieved 19 assistes compared to 12 for the Tunisian team, which enhances the difference in points between the two teams. However, all of these differences did not exceed eight degrees, which can be considered close difference., additionally the statistical value of the blocks variable is **2.555** with a sig level of **0.011** which indicates that there are statistically significant differences in this variable, we find a convergence between the two teams in the fouls variable, similar to the turnovers variable, in which the difference did not exceed the limit of two degrees. As for the blocks variable, the differences here are in favor of the Algerian team after looking at the graphical representation, It is possible to analyze the numerous amounts of blocking and attribute it to the increase in the percentage of offensive operations for the opposing team, but the most important thing is that the Algerian team had more blocked balls, which indicates the team's effective defensive technique, which leads to more possession of the ball and more turnovers for the opposing team.

Table 02 shows the results of the Mann–Whitney test of the 1st hypothesis (ALG vs UAE)

	Variables	U value	P value
Algeria VS UAE	2pts	1.135	0.526
	3pts	0.879	0.380
	Free throw	1.192	0.233
	Offensive Rebounds	1.022	0.307
	Defensive Rebounds	0.530	0.596
	Assists	0.086	0.931
	Steals	1.513	0.130
	Blocks	1.518	0.129
	Turnovers	1.725	0.084
	Fouls	0.410	0.682

Note : Sig level : 0.05 / N : 11



From the results of the table 02, we note that there are no statistically significant differences between the Algerian team and the UAE team in all technical outcomes (p value> 0.05)

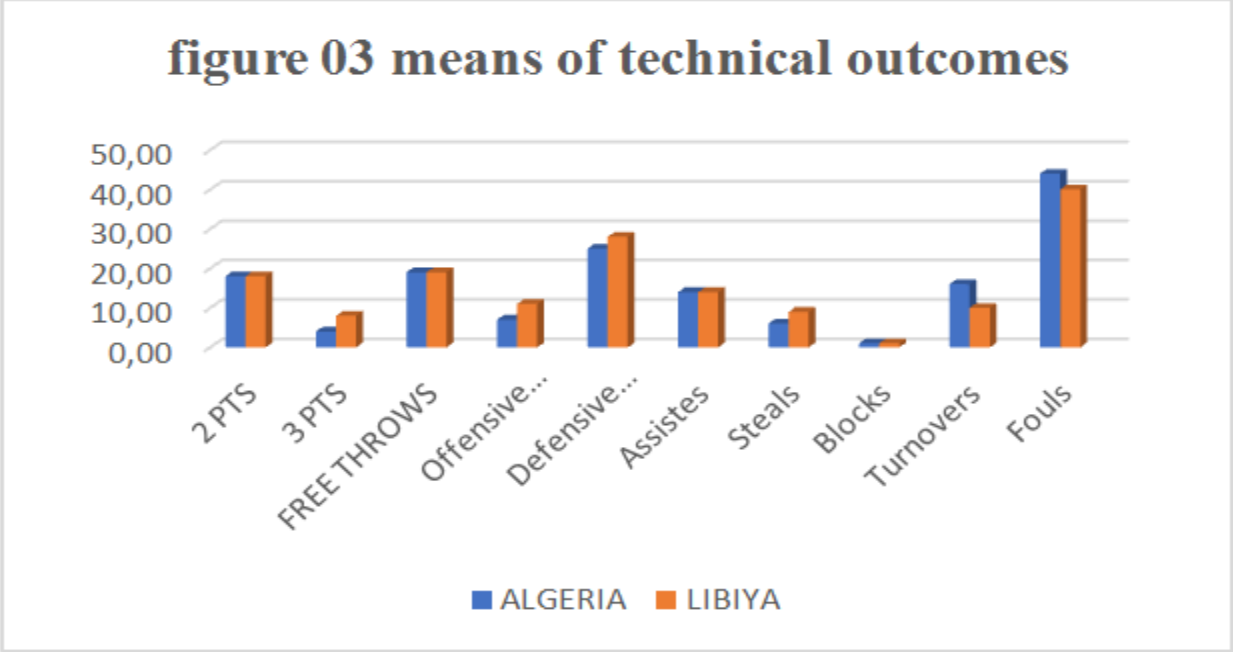
Returning to the graphical representation, we can see that there is no significant difference between the two teams with regard to these variables, we notice that the Emirati team was ahead in the two-points variant with more than 10 shots, while the Algerian team was ahead with 3 shots in the three-points variable, as well as with 5 free throws, and this created balance in the result of the match, which ended with a difference of only 6 points in favor of the Emirati team.

Furthermore, we notice through the graphical representation that the Algerian team advanced with 10 offensive rebounds, but the result indicates that he did not utilize these opportunities, Even with the progress of possession and positioning, the exploitation of the balls was not ideal, which led to a decrease in the shots scored for points, in contrast to The Emirati team took advantage of its superiority in defensive rebounds and steals , which naturally leads to turnovers, which in itself is considered disappointing and expresses tactical deficiency, which led to the superiority of the Emirati team and its ability to translate rebounds and stealed balls into decisive assests and scoring points, as explained in the graph.On the other hand the Emirati team advanced with 5 successful blocking operations, which indicates the qualitative defensive operations, which led the Algerian team to make many turnovers. As for the fouls, we notice a convergence between the two teams

Table 03 shows the results of the Mann–Whitney test of the 1st hypothesis ALG vs LIB)

	Variables	U value	P value
Algeria VS Libiya	2pts	0.141	0.888
	3pts	0.850	0.395
	Free throw	0.000	1.000
	Offensive Rebounds	0.921	0.357
	Defensive Rebounds	0.179	0.858
	Assists	0.052	0.958
	Steals	0.905	0.366
	Blocks	0.000	1.000
	Turnovers	1.121	0.262
	Fouls	0.893	0.893

Note : Sig level : 0.05 / N : 11



From the results of the table 03, we note that there are no statistically significant differences between the Algerian team and the UAE team in all technical outcomes (p value> 0.05)

We notice through the graphical representation the complete similarity between the Libyan and the Algerian teams in terms of the two-points variable and the free-throws variable. Both teams got the same number of shots, but the difference was in the number of three-points shots. The Libyan team outperformed the Algerian team and advanced over them by 3 throws, which increases the difference to 9 points, however this difference was not statistically significant, in addition to the similarity between the two teams in the variable of assestes, while the two teams getting a total of 14 decisive assestes, but the difference here was the superiority of the Libyan team in both the offensive and defensive rebounds. This is what proved the steadfastness of the Libyan team and its ability to position well and recover balls, whether in its own half or the opponent's half, which forces the Algerian team to make many turnovers, which gives the Libyan teams an advantage to build attacks, and this is what was exploited.

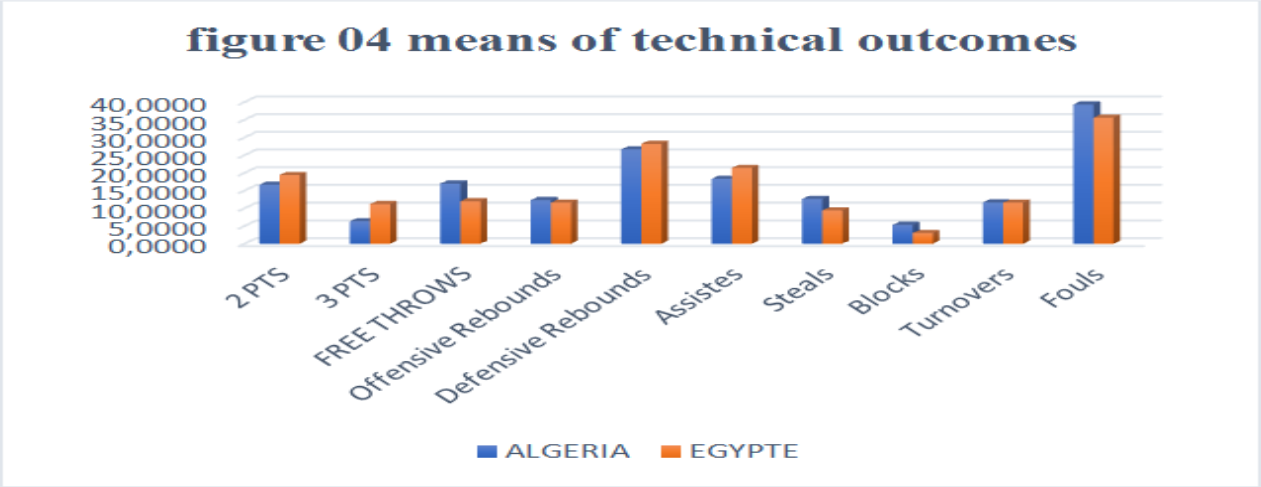
Moreover, what is observed through the graphical representation is the convergence in the fouls rates between the two teams, which explains the similarity in the number of free throws on one hand, and the absence of statistically significant differences in this variable on the other hand. We can also distinguish the complete similarity in the number of blocking operations between the two teams, where it stabilized in the totalof one operation for each team, and this may reflect the low defensive capabilities of the two teams in the blocking skill, which opens the way for the two teams to carry out offensive operations without confronting them. As for the turnovers variable, we notice an increase in its rates for the Algerian team, and this is due, according to the graphical representation, to the increase in total rebounds in favor of the Libyan team and good exploitation of them in both halves of the field.

2nd hypothesis : There are statistically significant differences between the technical outputs of the Algerian team and the Egyptian team that won the title.

Table 04 shows the results of the Mann–Whitney test of the 2nd hypothesis (ALG vs EGY)

	Variables	Z value	P value
Algeria VS Egypte	2pts	0.845	0.389
	3pts	0.756	0.449
	Free throw	1.600	0.110
	Offensive Rebounds	0.400	0.689
	Defensive Rebounds	0.178	0.859
	Assists	0.357	0.721
	Steals	0.979	0.327
	Blocks	0.970	0.332
	Turnovers	0.223	0.842
	Fouls	0.772	0.772

Note : Sig level : 0.05 / N : 11



From the results of the table 04, we note that there are no statistically significant differences between the Algerian team and the UAE team in all technical outcomes (p value> 0.05)

Through the graphical representation, we notice the superiority of the Egyptian team in the field points variable, as it was ahead of the Algerian team by approximately three shots, in the two-point variable, and approximately five shots in the three-point variable, which enhances the point difference to more than 20, but The Algerian team was ahead of his Egyptian counterpart in the free throws variable with 05 shots, which reduces the difference to around 16 points, but the difference remains large between the two teams.

We notice through the graphical representation the close similarity between the two teams in terms of rebounds. The difference between the two teams in offensive rebounds was only one rebound in favor of the Algerian team, while the difference in defensive rebounds was less than two rebounds in favor of the Egyptian team. However. We also notice that the Egyptian team excelled in the assistes variable with 3 decisive assistes, which explains the superiority in the number of field points, as well. The Algerian team outperformed the Egyptian team in stealing balls with 3 steals.

Morover,the Algerian team is superior to its Egyptian counterpart in the blocking variable by a difference of two, and this explains the similarity in the turnovers variable with more than 11. This is due to the Algerian team's superiority in stealing balls and blocking operations, even with the Egyptian team's superiority in defensive rebounds.

3rd hypothesis : There are statistically significant differences between members of the Algerian team in the technical outputs variables due to the playing position factor

Table 05 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (2 points variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	3.23	37	17.192	0.003
Center	2.58	31		
Point_guard	2.30	13		
Power_forward	1.90	4		

Note : Sig level : 0.05 / df : 3

Table 06 shows the results of the pairwise comparisons of positions (2 points variable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.400	1.000
power forward - point guard	0.675	0.589
Power forward - small forward	1.325	0.007
point guard - center	0.275	1.000
Center - small forward	0.925	0.141
point guard - small forward	0.650	0.668

Note: Sig level : 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables05,06, we notice that there are statistically significant differences in the outcomes of the 2 points variable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.003) and The results of the pairwise comparisons are also significant (p value 0.007)

Table 07 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (3 points variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	2.70	9	9.435	0.024
Center	2.35	2		
Point_guard	2.78	12		
Power_forward	2.18	0		

Note : Sig level : 0.05 / df : 3

Table 08 shows the results of the pairwise comparisons of positions (3 points variable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.175	1.000
power forward - point guard	0.525	1.000
Power forward - small forward	0.600	0.024
point guard – center	0.350	1.000
Center - small forward	-0.425	1.000
point guard - small forward	-0.075	1.000

Note: Sig level: 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables07,08, we notice that there are statistically significant differences in the outcomes of the 3 points variable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.024) and The results of the pairwise comparisons are also significant (p value 0.024)

Table 09 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (Free throws variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	3.05	28	16.205	0.001
Center	2.23	11		
Point_guard	2.78	24		
Power_forward	1.95	2		

Note : Sig level : 0.05 / df : 3

Table 10 shows the results of the pairwise comparisons of positions (free throws variable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.275	1.000
power forward - point guard	0.825	0.260
Power forward - small forward	1.100	0.042
point guard – center	-0.550	1.000
Center - small forward	0.825	0.260
point guard - small forward	0.275	0.1000

Note: Sig level: 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables 09,10 we notice that there are statistically significant differences in the outcomes of the free throws variable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.001) and The results of the pairwise comparisons are also significant (p value 0.042)

Table 11 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (Offensive Rebounds variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	3.08	23	13.309	0.004
Center	2.33	13		
Point_guard	2.50	15		
Power_forward	2.10	2		

Note : Sig level : 0.05 / df : 3

Table 12 shows the results of the pairwise comparisons of positions (Offensive Rebounds variable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.225	0.582
power forward - point guard	0.400	0.327
Power forward - small forward	0.975	0.017
point guard – center	-0.175	0.668
Center - small forward	0.750	0.066
point guard - small forward	0.575	0.159

Note: Sig level: 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables11,12, we notice that there are statistically significant differences in the outcomes of the Offensive Reboundsvariable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.004) and The results of the pairwise comparisons are also significant (p value 0.017)

Table 13 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (Defensive Rebounds variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	3.40	55	25.545	0.000
Center	2.50	38		
Point_guard	2.38	21		
Power_forward	1.73	3		

Note : Sig level : 0.05 / df : 3

Table 14 shows the results of the pairwise comparisons of positions (Defensive Rebounds variable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.650	0.668
power forward - point guard	0.775	0.346
Power forward - small forward	1.675	0.000
point guard – center	0.125	1.000
Center - small forward	1.025	0.072
point guard - small forward	0.900	0.165

Note : Sig level : 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables13,14, we notice that there are statistically significant differences in the outcomes of the DefensiveReboundsvariable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.000) and The results of the pairwise comparisons are also significant (p value 0.000)

Table 15 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (Assistes variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	3.10	34	16.842	0.001
Center	2.30	11		
Point_guard	2.70	26		
Power_forward	1.90	3		

Note : Sig level : 0.05 / df : 3

Table 16 shows the results of the pairwise comparisons of positions (Assistesvariable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.400	1.000
power forward - point guard	0.800	0.300
Power forward - small forward	1.200	0.020
point guard – center	-0.400	1.000
Center - small forward	0.800	0.300
point guard - small forward	0.400	1.000

Note: Sig level: 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables15,16, we notice that there are statistically significant differences in the outcomes of the Assistesvariable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.001) and The results of the pairwise comparisons are also significant (p value 0.020)

Table 17 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (Steals variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	3.10	26	15.772	0.001
Center	2.48	11		
Point_guard	2.48	10		
Power_forward	1.95	0		

Note: Sig level: 0.05 / df : 3

Table 18 shows the results of the pairwise comparisons of positions (Steals variable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.525	1.000
power forward - point guard	0.525	1.000
Power forward - small forward	1.150	0.029
point guard – center	0.000	1.000
Center - small forward	0.625	0.755
point guard - small forward	0.625	0.755

Note: Sig level: 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables17,18, we notice that there are statistically significant differences in the outcomes of the Steals variable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.001) and The results of the pairwise comparisons are also significant (p value 0.029)

Table 19 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (Blocks variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	2.78	8	7.500	0.58
Center	2.60	7		
Point_guard	2.45	4		
Power_forward	2.18	0		

Note : Sig level : 0.05 / df : 3

We note from Table No. 19 that the statistical value of the Chi-square test reached 7.500 with a p-value of 0.58, which indicates that there are no statistically significant differences between the mean ranks of the Blocksvariable due to the playing position variable.

Table 20 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (Turnovers variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	3.10	26	14.559	0.002
Center	2.43	14		
Point_guard	2.53	15		
Power_forward	1.95	5		

Note: Sig level: 0.05 / df : 3

Table 21 shows the results of the pairwise comparisons of positions (turnovers variable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.475	1.000
power forward - point guard	0.575	0.954
Power forward - small forward	1.150	0.029
point guard – center	-0.100	1.000
Center - small forward	0.675	0.589
point guard - small forward	0.575	0.954

Note: Sig level: 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables20,21, we notice that there are statistically significant differences in the outcomes of the Turnoversvariable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.002) and The results of the pairwise comparisons are also significant (p value 0.029)

Table 22 shows the results of the friedman two way anova by ranks of the 3rd hypothesis (Fouls variable)

	Mean ranks	Sum	Chi-Square	Sig
Small_forward	3.50	69	26.497	0.000
Center	2.28	26		
Point_guard	2.45	38		
Power_forward	1.78	4		

Note: Sig level: 0.05 / df : 3

Table 23 shows the results of the pairwise comparisons of positions (fouls variable)

Sample1 – sample2	Test statistics	Sig
power forward - center	0.500	1.000
power forward - point guard	0.675	0.589
Power forward - small forward	1.725	0.000
point guard - center	-0.175	1.000
Center - small forward	1.225	0.016
point guard - small forward	1.050	0.061

Note: Sig level: 0.05 / sig values have been adjusted by the bonferroni correction for multiple tests

Through the results of the two tables22,23, we notice that there are statistically significant differences in the outcomes of the Fouls variable due to small forward position, where the results of the chi-square test are statistically significant (p value 0.000) and The results of the pairwise comparisons are also significant (p value 0.000)

04 – DISCUSSION:

Through analyzing the results of the tables, and the graphsthrough which we tried to determine the significance of the differences in the group of technical outcomes of the teams that qualified for the semi-finals and comparing them with the outcomes of the Algerian team, the results proved that there were no statistically significant differences in these outputs.

The lack of statistically significant differences between the teams qualifying for the quarter-finals is explained by the close level between the teams in these technical outcomes, this is logical given the right to move from the qualifying rounds to the play-off rounds, however, parity in the technical level between the teams does not mean that there are no teams qualified for the other advanced rounds (the semi-finals and the final round). The effect of these ratios for each variable on another variable and the extent of its impact on changing the outcome of the match is what is observed by analyzing the average level of the Algerian team in the tournament until the quarter-final match, compared to its counterpart the Tunisian team, we would find all the technical indicators in favor of the Algerian team, starting with the field points, and all other indicators, where we notice the superiority of the general level of the Algerian team, which opens the question of whether the Algerian team would have had a chance to qualify for the semi-finals if it had met the Tunisian team in the quarter-finals.

As for the technical indicators of the Algerian national team and its Emirati counterpart, which achieved victory over the Algerian national team in the quarter-finals with a score of 73-79, the loss of the Algerian national team, by only 6 points, is due to a group of factors, perhaps the most important of which is the increase in the average variable of two points in favor of the Emirates, and on the other hand, the increase in Average defensive rebounds, which indicates the UAE team's frequent possession of the ball, at least in its own half of the field, we also note the significant increase in the variable of steals , which indicates the frequent wasting of balls by the Algerian team, which increases the probability of receiving goals, which is also observed through the graphical representation of the variable of turnovers. Accordingly, it can be said that the technical output indicators indicate that the Emirati team is superior to its Algerian counterpart. Which led to the loss of the Algerian team to its Emirati counterpart and the loss of the transition to the next stages.

On the other hand, the average indicators of both the Algerian national team and the Libyan national team were somewhat similar, especially in the variables of field points and assists , but the difference was in the defensive rebounds variable, where we notice its increase compared to the Algerian national team, which indicates the efficiency of the team's defensive operations and its frequent possession on the ball, and this is proven by the graphical representation of the turnovers variable, where do we notice its increase in the Algerian national team.

Returning to the results of both teams in the quarter-final match, we note that the Libyan team was superior in field points, as the accuracy rate for the two-points was 52.2% compared to its Algerian counterpart, 38.8%, and 30.8% in the three-points variable, compared to 26.9% for the Algerian team, As for the free throws variable, they were similar for both teams. This superiority for the Libyan team according to the results was due to the higher accuracy of the throws compared to the Algerian team, the lack of missed balls compared to the Algerian team, and the high number of assists. It could be predicted that the Libyan team would have outperformed the Algerian team if it had competed with them in the match. Quarter-final match.

However, there are many other variables that could have had an impact on the results of the matches, and which could have also had an impact regarding the teams' qualification for the quarter-finals at the expense of the losing teams, and among the most important of these variables is the aspect of good physical preparation for the teams qualified for the quarter-finals, In a study by Puente, Carlos, and others, they demonstrated that a professional basketball player achieves an average of 44 jumps per game, in addition to fast kicks.(Puente, Abián-Vicén, Areces, López, & Del Coso, 2017), while many other studies like the study of (Ben Abdelkrim, et al., 2010) and (Ziv & Lidor, 2012) and (OSTOJIC, MAZIC, & DIKIC, 2006) All of them used the vertical jump, explosive power, and anaerobic power tests to determine the physical requirements of the professional basketball player, as for Gheribi Hichem's study, he emphasized the importance of explosive power in improving the performance of the game and its direct relationship to improving the quality of shooting. (GHERIBI, 2018), The study of both Gheribi and Krideche also proposed a training program to develop the vertical jumping ability, which indicates that it is among the most important attributes of a professional basketball player. (Gheribi & Krideche , 2016)

What we looked at was the possibility of physical effects on the skill and tactical performance of the players in the match and thus affecting the final result. Accordingly, the Algerian team qualified, like the other teams, for the quarter-finals.It may be due - in addition to the influence of a group of other factors - to the influence of the aspect of physical prohibition and superiority in it at the expense of the unqualified teams, and this can also be said regarding the failure of the Algerian team to reach the semi-finals.

Discussing the second partial hypothesis :

By analyzing the results of the tables... and the graphs... through which we tried to find out the significance of the differences in the group of technical outcomes of the Egyptian team that won the title and comparing them with the outcomes of the Algerian team, the results proved that there are no statistically significant differences, which are theseoutputs.

The absence of statistically significant differences between the Egyptian team and the Algerian team explains the close level between the two teams in these technical outcomes. However, what constitutes the difference in this type

of competitions, whether continental or international, is characterized by great closeness, whether in the physical level or the technical level, which reflects the professionalism and the effectiveness of the preparations before competing. What constitutes the difference here are the details that influence the final outcome of the matches, and in our case, the details that made the difference between the two teams are the general percentages of technical outcomes.If we return to the average technical output of the two teams until the quarter-final match, we will see the superiority of the Egyptian team in the variables of the two-point and three-point shots, in addition to the superiority in the variable of assists, which increases the accuracy rate of the shots compared to the Algerian team. On the other hand, we notice an increase in the percentage of defensive rebounds among the teams, which explains the large number of offensive operations in each team's half of the field,however, superiority and possession were in favor of the Egyptian team, as for the rest of the indicators, they were in favor of the Algerian team, such as superiority in free kicks, superiority in the percentage of offensive rebounds, and steals.

If we compare the results of the final match for the Egyptian team with the results of the quarter-final match for the Algerian team, we will see that the Egyptian team excelled in field points with an accuracy rate of 50% compared to 34.7% for the Algerian team, and the free throw accuracy rate was 71.4% for the Egyptian team, compared to 70% for reste the Algerian national team, which explains the differences in points in the match on one hand, and the ability to shoot accurately.

On the other hand, rebounds have a significant impact on the final outcome of matches. Many studies have proven the importance of offensive rebounds in achieving final results with large differences. The study of Comor et al. Proved the correlation between offensive rebounds and making a decisive shot.(Komure, 2014), While the study of Christos et al. (2020) confirmed that the teams that lost the match (within the limits of the study sample) were teams that had more unsuccessful offensive operations after offensive rebounds, and that most of the teams that lost were distinguished by carrying out offensive operations within less than 5 seconds of obtaining an offensive rebound (KOUTSOURIDIS, LIOUTAS, GALAZOULAS, KARAMOUSALIDIS, & STAVROPOULOS, 2020). This factor may have an impact on the results of the Algerian team, especially after observing the high rates of offensive rebounds against the Egyptian team, with a decrease in average field points, which contributed to reducing the rates of possession, losing balls, and thus receiving goals.

Discussing the third partial hypothesis :

By analyzing the results of the tables andthe graphsthrough which we tried to find out the significance of the differences in the set of technical outcomes among the members of the Algerian team due to the effect of the playing position, the results proved the existence of statistically significant differences in the technical outcomes in favor of the small forward position

Many studies have proven the existence of statistically significant physical and skill differences between playing positions, such as the study by Alan et al. (2023), which proved the existence of differences in physical condition between playing positions in the characteristics of aerobic ability, explosive power, speed, and muscular strength. (ALEN , et al., 2023), While the study of Anne and Cohen (2009), in which they tried to find out the difference in strength, speed, and fitness, the centers (point guard, shooting guard) were distinguished by speed and explosive power, while the performance of (small forward and power forward) were better in tests of resistance and explosive power. (Delextrat & Cohen, 2009), This is what leads us to believe that the physical variable has a role in the emergence of differences in favor of the winger, especially since they are more distinguished by resistance, which provides longer time to play without fatigue, as well as explosive power, which is considered a determining factor in progress and scoring. The results of this hypothesis are consistent with the results of the study by Davide Ferrioli et al. (2020), through which the researchers concluded that the greater percentages of possession of the ball were in favor of both (small forward and power forward) (Ferioli, et al., 2020)

The results of this hypothesis also agreed with the study of Tana Adrian et al. (2021), which also found that there are statistically significant differences between playing positions in basketball, which have an impact on the final outcome of the match. (Escudero-Tena, Rodríguez-Galán, García-Rubio, & Ibáñez, 2021). The findings of the analytical study at hand could be of benefit to coaches or physical preparations, especially in the preparation stage for the competition, to take into account the most important aspects that could have an impact on the final outcome of the match, both physical and technical.

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