

The Relationship between the Performance of Some Offensive and Defensive Skills, and the Results Order of Teams Participating in Olympics London 2012 for Men Beach Volleyball

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Introduction

Olympic Games are considered to be the most significant sports events and gatherings held every four years after strenuous qualification for a limited number of countries to be represented for their continent and gain the honor of representation in this great international forum.

Volleyball is of sports, which has achieved great popularity in our planet with about 800 million participants around the world at practicing rate of once a week at least. That is because its skills are characterized by suspense and excitement, as well as team playing, lightness of the ball and the small size of the court make a lot of people choose it as their favorite game whether to practice or view. [٣]

Beach volleyball is of the latest games in the modern era in term of olympic, world and local practice. It is a

competitive and recreational game, practiced in the middle of sand and makes its practitioners gain a lot of physical and health capacities. Although beach volleyball is a method and style of indoor volleyball, there are substantial variances in the players' number and technique, and the form of the game, the nature surrounding the performance that lead to different laws ruling performance. [١٠, ١٨]

Beach volleyball has been included in the competitions of the Olympic Games in 1996 in Atlanta Championship, USA. In 1999, after Egyptian Federation of Volleyball formed a committee for beach volleyball, it has been practiced on the local level. [٢١, ١5]

Since its inclusion on the list of Olympic Games, amendments are carried out year after year in the laws ruling it in order to

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make the game more exciting and thrilling, either for the players or the public, or to all the participants. [١٠]

High sports levels require of special constituents to be distinctively available for the players. The modern evaluation methods based on proper scientific foundations are the basic pillars of physical and athletic education with their contribution to the performance evaluation of the international athletic levels. They are used in the beginners' selection, development of skill performance, direct training and appropriate choice for players of high athletic levels. [١١]

The analysis of matches is considered to be of the most advanced methods commonly used in volleyball, and to measure and evaluate the performance of different skills, the method of plans' implementation and used playing methods as well as to identify the strength and vulnerable points, and make use of them in developing public and private policy that are used to improve and evaluate the players' performance. [١٢, ١٣]

Volleyball skills are divided into offensive and defensive skills, which are mixed together with a rapid pace and dynamic performance with high degree of proficiency. They are characterized by the rapid transition from defense to attack, attack and defense. [١٤]

Volleyball is of sports being rich in offensive and defensive skills. The Serve is to ground the ball in play by the server player, who is in the serve area according to the law of beach volleyball. The team owning the powerful serve has a chance of the first attack and then it can start to score before the opponent. The more converged results the two teams have, the more tactical objectives the Serve achieves, which may affect the course of the set and the match. [١٥, ١٦]

Spiking skill is the strongest offensive weapons owned by a team because it is the skill by which the team's performance can be resulted in scoring in different ways. It is similar in its effect to score goals in other games. [١٧, ١٨]

Blocking, either offensive or defensive, has impressive offensive or defensive value. Blocking skill

can make a difference between defeat and victory. The effectiveness of blocking is affected by the height the blockers reach. The higher blockers reach, the greater their chances in the implementation of successful block increase. [٩]

The dig in beach volleyball means any contacts with the ball coming from the hitter of the opposing team and lead to the continuation of playing. Dig in beach volleyball is divided into standing mode defense, the standby mode defense and moving mode defense. [1٧]

Research Problem and Significance

By tracking the results of the Olympic Games since the involvement of Egyptian teams in the 5th championship in Stockholm 1912 even until London 2012, We discovered that Egypt got medals only in the individual games. Yet the mass games got only 4th place in football in Tokyo 1964, and has recently obtained 6th place in the handball in Sydney 2000. [٥]

The researcher noted through refereeing beach volleyball Championships as an international referee for the

Olympic Games qualifications held in Mauritius 2012 in which Egypt participated and did not qualify for London Olympics 2012. May be due to poor skill performance level of the Egyptian players in some offensive or defensive skills, by which beach volleyball is characterized and depends on.

The researcher, from this point, suggested that there is an urgent need to analyze the high levels of teams in the field of beach volleyball in order to identify the most important skills in beach volleyball, and the relationship between the performance of offensive or defensive skills, the results of the participating teams and their order. That can be done in order to take advantage of the results of the analysis, which may contribute to guide the contents of the training programs of beach volleyball, and to focus the attention of trainers to increase training doses for learned skills because of their effectiveness in performance and winning beach volleyball games. In addition, these skills are taken into account when selecting the players representing national teams in beach volleyball

championships and competitions.

Study Objectives

1. This study aims at identifying the relationship between the order of participating teams in the Olympics LONDON 2012 for men beach volleyball and points achieved in the serve skill,

2. Identifying the relationship between the order of participating teams in the Olympics LONDON 2012 for men beach volleyball and points achieved in spiking skill,

3. Identifying the relationship between the order of participating teams in the Olympics LONDON 2012 for men beach volleyball and points achieved in block skill, and

4. Identifying the relationship between the order of participating teams in the Olympics LONDON 2012 for men beach volleyball and Dig skill.

Study Queries

1. What is the relationship between the Serve skill and

teams' order in beach volleyball?

2. What is the relationship between spiking skill (attack) and teams' order in beach volleyball?

3. What is the relationship between blocking and teams' order in beach volleyball?

4. What is the relationship between Dig skill and teams' order in beach volleyball?

5. Is it possible to predict the order of beach volleyball teams through some of the offensive and defensive skills?

Related Studies

– Yusuf Mohamed Kamel Amin (1999) [12] conducted a study entitled "An analytical study of the effectiveness of some offensive skills contributing to the results of Volleyball World Cup 1998". The study aimed at identifying the proportions of contributions of some offensive variables under study in the results of the matches. The researcher has used the descriptive method. The study sample included all teams that ranked 1 to 12 orders in the World Cup in Japan. The sample consisted of 144

players. The most significant results have been blocking offensive skill, which was the most types of skills used by volleyball players, followed by spiking then serve skill.

– Laios Yiannis (2004) [11] conducted a comparative study to the effectiveness of the Greek men and the top teams in the Olympic Games 2004. The study sample included teams which occupied the first five places in addition to the Greek team. The researcher used the descriptive method where he photographed the 26 games for Brazil, Italy, Serbia and Montenegro, France and Russia teams in addition to the Greek team that won the 13th place in this championship. The study concluded that the Greek team is the most loss of serve compared with the previous five teams, as well as it is the weakest impact on the offensive performance, the weakest in the blocking, dig and coverage behind the hitters.

– Marelic, *et al.* (2004) [12] studied analysis of the differentiation between winning and losing set in the Italian Volleyball League. The

researcher used the descriptive method, and sample included the analysis of 76 sets played in 20 matches of the 1999/2000 Italian League. The most performance variables are represented in the Serve, serve reception, spiking, blocking, and attack. The study concluded that there are significant differences in favor of the sets in which winning was achieved. It also concluded that the most significant reason to win sets is due to the success in spiking, especially in the counter-attack, which preceded by a successful reception. Blocking comes after spiking in scoring followed by the serve.

– Gamil Abdul Hameed el-Deeb (2004) [13] studied "the relationship of skill performance level to the results of African Nations Championship XIV for volleyball qualifying for the World Championship (analytical study). The researcher used the descriptive method and the sample included the matches of participating teams in the African Nations Championship XIV for Men from 1 to 10 August 2003. The participating teams were Egypt, Tunisia,

Congo, Rwanda, Algeria, Cameroon, Morocco, South Africa. The most important results were that spiking is considered to be the strongest and the most important attack methods, and the first way to acquire the serve and score a point. In addition, the double block is the most types of block in scoring points. The results of the games also depends on the tactical prepared behavior, and dig and serve reception.

– Both Hamdi Noor El-din Mohammad and Ahmed Abou El Fadl Hijazi (2004) [7] conducted a study "offensive skills as a function to predict the results of matches in the Volleyball Men World league in Madrid 2003". The study aimed at identifying the differences between the eight teams in the Volleyball Men World League, Madrid 2003, in offensive skills, and identifying the relationships between the offensive skills and matches results. Both researchers used the descriptive method and the application was made on intentional sample, Volleyball Men World league in Madrid 2003 (Quarter-finals). The most significant results

indicated that spiking was the most widely offensive skills used and influential in the results of the games. Furthermore, spiking was the most variables contributing in the results of the games.

– Hamdi Noor El-Din Mansour (2005) [8] studied "the offensive skills as a function to predict the results of the matches in Volleyball Men's World Grand Champions Cup, Japan 2005". The study aimed at identifying the offensive skills as a function to predict the results of the matches in Volleyball Men's World Grand Champions Cup, Japan 2005. The researcher used analytical descriptive method due to its adequacy to the study nature. The sample has been selected by the intentional way and included the results of Volleyball Men's World Grand Champions Cup in Japan 2005. The number of selected teams was 6; Brazil, Italy, America, Japan, Egypt, China, by 100% of the original research community. The most significant results indicated that spiking was the most widely offensive skills used and influential in the results of the games. The results also

concluded that there is a direct correlation between the serve skill and the results of the games; the team that won the first place is the most commonly teams using offensive skills.

– Theyab Al-Shatarat (2008) [٢٠] conducted a study entitled "The relationship between the performance of some offensive skills and the order of teams' results participating in the 8th Arab Clubs Championship for women's volleyball." The researcher has used the descriptive method. The study sample included 70 female players of those who participated in the championship. The most important results indicated that there is a statistically significant correlation between the order of the teams in serve, spiking and blocking skills and their order in the championship.

– Marcelino Rui, *et al.* (2008) [١٢] conducted a study "The contribution of spiking, serve, and blocking skills in the order of teams in Volleyball World League 2005". The study aimed at examining the performance levels of spiking, serve, and blocking and linking

the results to the final order of teams during those competitions. The researchers used a descriptive method due to its adequacy to the nature of the study. The sample was selected by the intentional way of teams participating in Volleyball World League where 72 matches were filmed. The data were analyzed and teams were classified according to each skill under study. The most important results of the study indicated that spiking skill is of the most important skills, achieving win in high levels concurrently with blocking skill as well as the number of points gained from the serve and the low number of faulty serve.

– Claver F, *et al.* (2013) [٢] conducted a study "The relationship between the skill performance during the game and the score". A study in the stages of volleyball training." The study aimed at clarifying the most important influencing skills in volleyball matches, according to the results of the matches. The sample was selected by intentional way for 74 players of the youth teams under 16 years of Extremadura Volleyball League (Spain) season (2010/2011). The study

variables were selected from (serve, block, setting, and spiking) where the analysis of the Fédération Internationale de Volleyball (FIVB) has been relying on. The most important results after conducting the statistical analysis of the data of the study sample indicated that there are significant differences between the winning and losing teams in the mastery of skills under study (serve, block, setting, and spiking) in favor of the winning teams. It has been also concluded that the study results are used in promoting and understanding the competitive performance in volleyball and discovering players and using them efficiently to play well in the positions in volleyball matches.

– Rob Dyba (2013) [14] studied "The analysis of technique and tactics in beach volleyball for novice players (men/women)." The study aimed at describing and comparing the performance mode (technique) and plans (tactic) between novice players (men/women) as well as among international players (women only) in the FIVB U21 Beach Volleyball World Championship 2011 for (serve,

serve reception, setting, attack, blocking, dig) skills. The researcher used the descriptive method due to its adequacy to the nature of the study. The sample was selected by the intentional way of 16 male players and 16 female players with an average age of (19.9 years for men - 19.75 years for women). Eight (8) matches for each of the men's and women's in the final were observed and analysis. The most important results indicated that there are statistically significant differences in the technique of serve performance and its effectiveness between the defenders and blockers of junior men at the level of significance 0.05. Furthermore, there are statistically significant differences in the technique of serve performance and its effectiveness between the defenders and blockers of novice women at the level of significance 0.001. There is also a statistically significant difference in the technique of serve performance and its effectiveness between the international defenders and blockers at the level of significance 0.001.

Comment on Literature

Through the presentation of studies, the researcher concludes the following:

- The sample of most studies has been selected from the advanced levels of volleyball as well as the diversity between men and women.
- Most of the studies agreed to use the descriptive method.
- These studies dealt with multiple statistical treatments in order to access to the results of the study such as arithmetic mean, standard deviation, percentage, analysis of variance tests, correlation coefficient.
- There is no Arab study dealt with Beach Volleyball

skills either analysis or study, which adds scientific value of this study that may be useful to specialists in this area.

Methodology

The researcher used analytical descriptive method due to its adequacy to the nature of the study.

Study Sample

The sample was selected by intentional way from all international beach volleyball players participating in the London Olympics 2012. It included the analysis of all the results of Olympics LONDON 2012 for men beach volleyball of 24 teams, 100% of the original community.

Table (1)
Research Sample Characteristics n=48

Statement	Height (cm)	Weight (kg)	Age (year)	Body Mass Index (BMI)	Matches	Sets
Arithmetic Mean	194.62	91.30	32.40	23.57	4.5	10.33
Standard Deviation	5.59	8	5.15	3.92	1.37	3.30
Highest Rate	206	125	41	30.04	7	17
Minimum Rate	185	77	22	21.44	3	6

It is clear shown, from the *Research Sample Characteristics in the* above

table that the Height (cm) has Arithmetic Mean 194.62 ± 5.59 H.R 206 and M.R 185.

Moreover, the Weight (kg) has Arithmetic Mean 91.30 ± 8 H.R 125 and M.R 77. Furthermore, the Age (**year**) has Arithmetic Mean 32.40 ± 5.15 H.R 41 and M.R 22 .In addition, the Body Mass Index has Arithmetic Mean 23.57 ± 3.92 , H.R 30.04 and M.R 21.44. Besides, the Matches have Arithmetic Mean 4.5 ± 1.37 H.R. 7 and M.R 3. Finally, the Sets have Arithmetic Mean 10.33 ± 3.30 H.R. 17 and M.R.6.

Data Collection:

- The researcher used the website of the International Federation of beach volleyball to get basic data of beach volleyball players as well as the official analysis of FIVB for London Olympics 2012 matches and the recordings of the matches related to research sample.

The statistical system of FIVB has been designed by the International Committee of the Trainers in 1979 (adapted from Coleman *et al.*) and system of

Statistics, which distinguishes different levels of skill performance of different skills in volleyball. Therefore, it is accepted as a valid tool for research community and has been previously applied in several studies. [۳]

Statistical Treatment:

The researcher used the statistical Package for Social Sciences (SPSS) in the analysis of the raw data of the study using:

- The arithmetic mean,
- Standard deviation,
- Percentages,
- Spearman's Rank Correlation Coefficient, and
- Stepwise Multiple-Regression Analysis

Results and Discussion

I. Results

To test the validity of the first, second, third and the fourth hypotheses, the researcher used the Spearman's rank correlation coefficient. The results were as follows:

Table (2)

Simple correlation matrix between some of the offensive and defensive skills and the results order of teams participating in the Olympics LONDON 2012 for Men Beach volleyball

Variables	Serve	Spiking (Attack)	Blocking	Dig	Teams Order
Serve		*0.411	*0.510	0.299	**0.532
Spiking			**0.603	0.260	**0.728
Blocking				*0.420	**0.828
Dig					*0.466
Teams Order					

** Correlation coefficient is statistically significant at the significance level of 01.0 to the level of the two parties.

* Correlation coefficient is statistically significant at the significance level of 05.0 to the level of the two parties.

Table (2) indicates that there are 10 correlation coefficients, 4 of them are statistically significant at the significance level of 01.0. There are also 4 statistically significant at the significance level of 05.0, and 2 direct correlation coefficients is not statistically significant.

To test the validity of the hypothesis V, which indicates as follows: (Is it possible to predict the order of beach volleyball teams through some of the offensive and defensive skills); the researcher used Stepwise Multiple-Regression Analysis. The results were as follows:

Table (3)

The Results of Multiple Regression to predict the Order of teams participating in the Olympics LONDON 2012 for Men Beach Volleyball

Independent Variables	B Coefficient	Standard Error of B Coefficient	β	t	Sig. level
Stable	39.438	7.590		5.196	0.001
Blocking	-0.485	0.096	-0.660	-5.047	0.001
Spiking	-0.378	0.161	-0.306	-2.342	0.05

It is clear from the above table that there is a statistically

significant effect for each of the blocking, spiking on teams'

order. These combined skills have interpreted 7.31% of the variation in the degrees of teams' order; as the multiple-correlation coefficient square, R^2 (Coefficient of determination) = 0.731 and prediction* equation is:

Teams order = 39.438 - 0.485 (blocking) - 0.378 (spiking)

II. Results Discussion:

After viewing the concluded results and based on the limits and nature of the research in terms of its objectives, hypotheses, the sample, methodology used, the tools made available to the researcher, statistical used method, and in the light of the associated studies, scientific references, and experiences of the researcher, the results are discussed as follows:

- The Discussion the first hypothesis, which states: "What is the relationship between the Serve skill and

* The order of the independent variables in prediction equations (multiple regression equations) generally reflects the relative importance and the strength of each effect on the dependent variable. An independent variable is not included in the regression equation due to its weak non-statistically significant effect on the dependent variable (Ezzat Abdel-Hamid, 2011) [4].

teams' order in beach volleyball."

Table (2) indicates that the correlation matrix showed that there is a positive correlation between the serve skill and teams order in beach volleyball 0.532 at the significance level of 0.01. This means that the more the server player's mastery increased in performing a strong serve skill characterized by accurate in beach volleyball, the more direct points earned by the team increased and therefore the team order. This also leads to the difficulty of serve reception and team defense and dislocate the receiving team and therefore the difficulty of building a strong attack on the server team. This is consistent with the results concluded by Laios Y (2004) [1], Hamdi Noor El-Din Mansour (2005) [8], Theyab Al-Shatarat (2008) [9], Claver F, et al. (2013) [3], and Quirgo M, et al. (2012) [16].

- The Discussion of the second hypothesis, which states: "What is the relationship between spiking skill (attack) and teams' order in beach volleyball."

It is obvious from Table (2) that the correlation matrix

indicated that there is a strong positive correlation between spiking skill (the attack) and teams' order in beach volleyball 0.728 at the significance level of 0.01. This means that the more spiking (the attack) has increased, the more win points have increased and team's order, which reflects the importance of spiking as an offensive skill owing a strong influence in beach volleyball. Gamil Abdel-Hamid El-Deeb (2004) [1], Hamdi Noor El-Din Mansour, Ahmad Abou El Fadl Hijazi (2004) [2], Laios Y (2004) [3], and Shondel R (2004) [4] indicated that the spiking skill is the strongest and most important offensive weapons owned by a team. It is also the most influential and widely used skill in games because it is a skill by which the team's performance can be resulted in scoring, and the first way to acquire the serve and recording a point. It is similar in its effect to score goals in other games. Marcelino Rui et al. (2008) [5] added that the spiking skill is of the most important skills that achieve win in high levels.

– The discussion of the third hypothesis, which states:

"What is the relationship between blocking and teams' order in beach volleyball."

It is obvious from Table (2) that the correlation matrix indicated that there is a strong positive correlation between blocking skill and teams' order in beach volleyball 0.828 at the significance level of 0.01. This means that the team, which features a strong blocking gets increasingly winning points as well as the team's order. This reflects the importance blocking as an offensive/defensive skill, having a strong impact in beach volleyball.

Claver F, et al. (2013) [6] indicated that blocking in volleyball is of the skills that enable the team to get points, just like spiking, which affects the results of the game. This result is consistent with the results conclude by Joel Dearing (2003) [7], Marelic, et al. (2004) [8], that blocking whether offensive or defensive has an effective value offensive or defensive. Blocking skill can make the difference between defeat and victory, where blocking comes after spiking to gain points. The effectiveness of blocking is affected by the height the

blocker reaches. The higher blockers reach, the greater their chance in the implementation of successful block increases. Marcelin Rui (2008) [12] added that blocking is of the most important skills that achieve win in high levels simultaneously with the spiking skill.

– The Discussion of the fourth hypothesis, which states: "What is the relationship between Dig skill and the teams' order in beach volleyball?"

It is obvious from table (2) that the correlation matrix illustrated that there is a strong positive correlation between dig skill and teams' order in beach volleyball 0.466 at the significance level of 0.05. This means that the team characterized by dig skill in beach volleyball leads to the success of the offensive skills on which the team's plans depend for getting a point and serve acquisition. Marelic, et al. (2004) [13] concluded that one of the most important reasons for winning sets is a successful reception which leads to a successful counter-attack. This result is in line with the results concluded by Gamil Abdel-Hamid El-Deeb

(2004) [6] that the result of game depends on tactical behavior of the setter, dig, and serve reception. Claver F, et al. (2013) [7] confirmed that dig is of the most important skills by which teams of high levels are characterized and the results of matches depend on.

– The discussion of the fifth hypothesis, which states: "Is it possible to predict the order of beach volleyball teams through the performance of some offensive and defensive skills."

Table (3) indicates that there is a statistically significant effect for each of the blocking, spiking on the order of teams. These combined skills have interpreted 7.31% of the variation in the degrees of teams' order. It is also clear that the primary contributor in the order of teams in beach volleyball is blocking followed by spiking. This result is inconsistent with the study of Marelic, et al. (2004) [13], which concluded that the blocking comes after spiking in scoring in volleyball. Marcelin Rui (2008) [12] concluded that the blocking is one of the most important skills achieving win in high levels simultaneously

with the spiking skill. The researcher illustrates this difference is probably due to fundamental differences in the number of players, playing plans, and the nature of conditions surrounding performance in beach volleyball.

Conclusions

In the light of study sample and the games that have been analyzed, the researcher concluded that:

1. There is a statistically significant positive correlation between the serve skill and teams' order in beach volleyball 0.532 at the significance level of 0.01.
2. There is a statistically significant positive correlation between the spiking skill and teams' order in beach volleyball 0.728 at the significance level of 0.01.
3. There is a statistically significant positive correlation between the blocking skill and teams' order in beach volleyball 0.828 at the significance level of 0.01.
4. There is a statistically significant positive correlation between dig skill and teams' order in beach volleyball 0.466 at the significance level of 0.05.

5. The first contributor of teams' order in beach volleyball is blocking followed by spiking.

Recommendations

Through the results the researcher concluded and based on the conclusions, the researcher recommends the following:

1. Correlated relationship that the study achieved when teaching or training beach volleyball should be taken into account.
2. Multiple regression equations that help to predict the results of matches and teams' order in terms of offensive and defensive skill should be used.
3. Similar research in the field of beach volleyball should be conducted such as making comparison between the Egyptian team and teams that got the first place.
4. The Egyptian Federation of Volleyball should work to raise the awareness among beach volleyball coaches of the importance of offensive and defensive skills that are the most effective in beach volleyball. The study concluded these results because of their significant impact on teams' occupation of

advanced order during those championships and qualifications.

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