

# PREDICTING THE ACCURACY OF SPIKE SHOOTING SKILL PERFORMANCE WITH THE SIGNIFICANCE OF SOME VOLLEYBALL PLAYERS' MOTOR FEATURES

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## Abstract

Prediction is one of the idea of achievement requirements forecasting and its impact on athletic achievement is higher than modern methods that reflect a combination of factors and qualifications are linked with each other to ensure a scientific mathematical research in order to predict the future of the youth.

That every sporting activity several requirements contribute to the achievement down to the integration of Alade and live up to the highest levels, including the requirements of physical and kinetic and functional, mental, educational, psychological, and are manifestations of the motor including (transport motor, slaves motor, flow kinetic) of the important requirements in performance kinetic for all sports especially a game of volleyball, and highlights the importance of these features, in particular, when the performance of attacking skills, in particular the skill of beating overwhelming, as it related to these aspects to a movement of man and the laws of mechanical movement as the take corners and tracks the kinetic proper for all parts and joints of the body gives the player and the situation preparatory right to apply conditions Mechanical relevant flow and transport motor.

**KEYWORDS: Prediction. Motor aspects. Volleyball.**

## 1. INTRODUCTION

Prediction is one of the achievement's requirements. The idea of prediction and its effect on high sporting achievement is considered one of the modern methods which represent a set of factors and qualifications related together to ensure doing scientific sporting researches in order to predict the sporting future of the novice. If the process of players' selection in first stages enables us to identify their readiness and abilities, we will be able to predict the outcomes of this readiness and abilities in the sporting future for the novice and how far they can achieve through the use of prediction. Thus, it is required from all those who are involved in training process to use all scientific training updates as well as utilizing all various sciences such as philosophy, anatomy, biomechanics, training theories and sport psychology as well as knowing important requirements and abilities that should be found in an equal way in each game or sport activity to make sport training take practical steps that have useful effect on all elements of the training process. Hence, each sporting activity has a lot of requirements which contribute to the achievement reaching performance integration and higher levels including physical, motor, mental, educational and psychological requirements that play a crucial role in practicing and mastering all sporting activities. The size of this role varies according to type and nature of the activity.

Motor features (including motor transportation, motor rhythm and motor flexibility) are from the important requirements in tactical performance of all sport games, especially volleyball as these features are related to man's motor system and motor mechanical rules as taking correct motor angulars and paths for all parts and joints of the body gives the player a correct prepared posture to apply mechanical terms related to motor transport and flexibility. In this context, we refer that "Performance of main volleyball skills is closely related to movement flexibility performed by the player which means performing continuous movement and then a skill can be performed (Kah Zal, 2008) quickly which contributes in the complete flow of movement among joints with high speed. This means not losing performance speed and benefit from the intensity in each part and movement within joints in the motor path to achieve the correct mechanical goal from skilled performance. Complete flexibility within joints means that there is the optimum performance due to mechanical and motor performance principles.

The importance of these requirements comes particularly while performing attacking skills, especially the spike shooting skill as this skill requires high abilities and features of passing, rhythm and motor flexibility. This is because it is one of the important skills in volleyball and strong attack in terms of affecting match results, gaining points, possession of serving. Due to the importance of these mentioned features, the relation among them is very important as they have a great effect on reaching optimum skilled performance level in volleyball. In addition, results of predicting these variables have great importance in the linking process among these variables and the accuracy of spike shooting.

**Problem of the Study:** Volleyball is one of the games whose popularity is increasing worldwide as it is characterized by numerous sudden and quick situations whether in attacking and defense. This game is a collective dynamic activity that was characterized by continuous interaction and variable basic skills. These skills are affected, especially spike shooting, by motor features which are

amongst major requirements and contribute to the effect in skilled performance' accuracy and high achievement. Despite the importance of these requirements, there is lack in depending on it compared with the other variables on which volleyball future prediction is based. In addition, after reviewing the most studies in this filed, there was not any study tackling such variables with the possibility of linking them in a predicting study through which we will predict the sporting performance level for this skill in future and this facilitates training due to players' important requirements which support skilled performance in future.

Based on these facts, researchers chose this subject hoping to know the role of these variables in predicting spike shooting accuracy in order to elevate the game's level according to correct scientific standards.

### Objectives of the Study

- 1- Identifying the accuracy of volleyball spike shooting skill for the sample of the study.
- 2- Identifying the characteristics of motor features for the sample of the study.
- 3- Identifying the linking relation between the performance of volleyball spike shooting skill and some motor features.
- 4- Finding an equation to predict the accuracy of volleyball spike shooting skill performance with the significance of some motor features.

## 2. MATERIAL AND METHODS

The researchers used the descriptive approach with the style of linking correlations as it is appropriate to the nature of the proposed problem and to achieve study goals.

**Sample of the Study:** The sample of the study was determined with the purposive method in players of Diala volleyball team for the academic year (2013/2014) who are 8 players.

**Sample Homogeneity:** In order to determine sample homogeneity in some related variables, skewness coefficient of the following variables was extracted as follows:

**Table 1: Arithmetic Means, standard deviations and skewness coefficients in the sample of the study:**

Statistical feature	Measurement units	M	Med	S.D	Sk
Total length	Cm	176	177	12	0.435
Mass	Kg	73	72	7	0.215
Training age	Year	4	3	1	0.537

#### Tests:

- The test of diametrical volleyball spike shooting skill accuracy (Mohamed Sobhy Hassanien: 1997, 205-207)
- The test of linear volleyball spike shooting skill accuracy (Mohamed Sobhy Hassanien and Hamdy Abdelmoneim: 1997, 207-208)

**Motor Features:** Biochemical variables, through which we can measure the rhythm and flexibility, have been determined as follows:

1. Flexibility: flexibility and shifting were extracted from the rule of energy reduction according to the following equation:  

$$_1(2S \times K0.5) - _2(2S \times K0.5)$$
2. Motor Rhythm: it is extracted through partial movement time, or the time of the movement second part divided into the time of the movement first part.

**Program of Motor Analysis "Kinovea"** :The motor analysis program "Kinovea" was used in order to extract and analyze the variables of distance and time of the skill of diametrical and linear spike shooting skill. This software application is better than a lot of steps which were used in previous research at the level of diameters as follows: First, the photographed film is takes as it is, inserted in the program as a raw film and helps to extract variables directly. Next, program steps begin on (12) tools that can be used in motor analysis of any body part to able to determine which of these tools that can help determine the variable which we want to measure and determine its type.

**The Main Experiment:** The main experiment was done on 10/12/2013 in the volleyball arena. Each of the tested was given five attempts of the diametrical and straight spike shooting skill to choose the best successful attempt to analyze and extract biomechanical variables. Video recording was done using two *Casio Exilim Ex-FHZO* cameras which is characterized by frequency speed of (210 photos/sec). The video recorder was mounted on a big 3D holder. One of the two cameras was put beside the laboratory with length of 3.60 m and height of 1.20 m from the land. The second camera was put at the left of the lab and on the desks in the internal hall with the purpose of covering the total test scope. A scale drawing was used as its length in reality is (1.50 cm).

## 3. RESULTS AND DISCUSSION

The presentation of spike linear or diametrical shooting skill accuracy tests, features and analysis of motor rhythm and discussion.

**Table2: Arithmetic means and standard deviations for the test of diametrical and straight shooting skill accuracy and features of motor flexibility and rhythm**

Statistical treatment Variables	Accurate spike shooting		Accurate spike shooting	
	M	S.D	M	S.D
Performance accuracy	2.73	0.7	2.02	0.63
Motor flexibility	216	54	289	84
Motor rhythm	0.753	0.128	0.679	0.050

**Results of simple skewness coefficient between diametrical and straight shooting skill accuracy and features of motor flexibility and rhythm**

**Table 3: Simple skewness coefficient between diametrical shooting skill accuracy and features of motor flexibility and rhythm.**

Statistica treatment variables	Performance accuracy	Correlation coefficient	Error level	Statistical significance
Motor flexibility	Diametrical spike	-0.216	0.20	Random
	Straight spike	0.562	0.166	Random
Motor rhythm	Diametrical spike	-0.343	0.08	Random
	Straight spike	0.621	0.06	Random

Showing results of multi correlation coefficient and the quality of linear correspondence quality between diametrical and straight spike shooting accuracy, features of motor flexibility and rhythm:

**Table 4: Multi Correlation Coefficient between diametrical and straight spike shooting accuracy, features of motor flexibility**

Variables	Multi correlation	Effect	The F Value	Error level
Diametrical spike shooting accuracy performance	0.974	0.897	3.646	0.081
Straight spike shooting accuracy performance	0.925	0.855	3.012	0.137

Presenting and analyzing results of motor features effect with diametrical and straight spike shooting accuracy performance:

**Table 5: The effect of the studied variables in diametrical and straight spike shooting accuracy performance, standard error, the T value and error level**

Statistical treatment variables	Effect (mile)	Standard error	T Value	Error level	
Motor flexibility	Diametrical	2.39	0.707	3.382	0.02
	Straight	0.012	0.101	0.121	0.908
Motor rhythm	Diametrical	0.007	0.0001	0.873	0.423
	Straight	-0.00002	0.0001	0.337	0.750
Rhythm	Diametrical	0.015	0.0001	1.15	0.302
	Straight	-0.00019	0.0002	1.304	0.249

**Results Discussion**

Results of tables (2-3-4-5) show that there is no statistically significant relation between diametrical and straight spike shooting accuracy with features of motor flexibility and passing. The study sample, players of Diala University volleyball team, did not get a reasonable level of diametrical and straight spike shooting accuracy and this can be noticed through the values of arithmetic means of this skill in table No. (2) to be 2.73 and 2.200 which is a percentage that confirms the weakness of interest in biomechanical aspects while performing technical skills, especially spike shooting skill which is considered the most difficult attacking technical skill in this game. This skill needs the highest degrees of accuracy, correspondence, strength and performance speed as well as the biomechanical aspect in terms of achieving correct motor paths harmonious with the model performance that is characterized with flexibility, control and performance accuracy. These characteristics can be achieved when the angular speeds in all body joints are appropriate and harmonious in their values through technical performance of skills as well as motor feature. This skill needs this feature in terms of strength movement from one joint to another and with a constant increase to achieve optimum motor duty. "In volleyball, the athlete should not make attack or defensive moves that require correspondence and performance accuracy by involving the needed muscular group to perform these movements with the maximum contraction for all muscles participating in movement in order not to cause weakness, disorder and non-appropriateness of skilled performance effectiveness" (Kamal Abdelhamid et al 1999, 156).

Researchers see that reasons of this great weakness in performance are due to not providing players with information and knowledge related to the biomechanical aspect of the skilled performance by explaining exercises and drawing their attention towards motor flexibility features represented in lack of variance in angular speed indication of the shoulder, trunk and knee joints. This lack shows

that there are no big pauses in performance, therefore, it ensures constant motor performance in these joints as “having right angles in trunk and shoulder joints gives players a preparation posture to apply mechanical terms related to motor flexibility and shifting related, in turn, to the studied variables” (Sarih Abdelkarim: 2007, 125).

#### 4. CONCLUSION

1. There is a clear weakness in the accuracy of performing diametrical and straight spike shooting for the sample of the study.
2. There is weakness and no significant correlation between diametrical spike shooting and features of motor flexibility and rhythm.
3. There is weakness and no significant correlation between straight spike shooting and features of motor flexibility and rhythm.

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