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The Correlation between some of Kinematic Variables of Strike Arm and Attack Serve Performance Accuracy in Volleyball

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Firas Suhail Ibrahim

Faculty of Physical Education, University of Babylon

Abstract
The aim of study is to know the relating between some of kinematic variables of strike arm and attack serve performance accuracy in volleyball. 10 students of fourth class of faculty of physical education\ University of Babylon were participated in present study,we used an descriptive approach design method due to it is suitable to achieve aims of the study. However, homogeneity among students was conducted in the variables of height, age, and weight before conducting the tests.Data of study was analyzed through a program of SPSS and using means, standard deviations, and T test. Study concluded that no correlation between the angular velocity and accuracy of attack serve skill in volleyball as well as no correlation between the peripheral speed and accuracy of attack serve skill and also very lake correlation between the moment of inertia and accuracy of attack serve skill.

Keywords: kinematic variables, strike arm, attack serve volleyball, performance.

1. Introduction

The game of volleyball is one of the important and distinctive games in terms of the level of overall performance particularly at national, continental and global levels; this excellence shows through interdependence, harmony, and interaction between the different variables which affecting the nature of the skills performance of each player according to the region occupied by the player in the court.

The scientific progress is one of the advantages of the present time, it involves all aspects of life including the sporting side which interacts with many of the natural science and humanitarian to preparethe player comprehensive balanced preparation prelude to reach higher levels in the selected sports game as well as the preparation of the player can't be achieved without this science, so we must develop modern methods contribute to the development of all sports especially volleyball game that you need to prepare a physical and high skill.

Several studies in the field of team games including volleyball have conducted to determine the necessary specific requirements for the volleyball game through using anappropriate analysis method which is one of the most important factors affecting the learning technical performance of attack serve skill and development the most important qualities of the motor associated with them, In addition it is contributing in the arrival of the learner and the student to the best level in skillperformance especially if it is used properly and in a meaningful (William., 1990).

The importance of the study is to study the relationship between some of the kinematic variables of striking arm and accuracy of attack serve skill performance in volleyball. However, the study problem is most of students of the fourth class in the Faculty of Physical Education lacked a lot of physical characteristics whichresult in hindering the performance of the right technique in spite of their skill in general, but it is certainly reflected the image of the accuracy of the skill performance in terms of kinetic changes which occur on the body of the student or athlete during perform skill of attack serve. Finally, the aim of study is to know the relating between some of kinematic variables of strike arm and attack serve performance accuracy in volleyball for students of fourth class.

2. Methodology

2.1 Participates:

10 students of fourth class of faculty of physical education\ University of Babylon were participated in present study, we used an descriptive approach design method due to it is suitable to achieve aims of the study. However, homogeneity among students was conducted in the variables of height, age, and weight before conducting the tests as shown in table (1).

Table (1)
shows homogeneity among students in the variables of height, age, and weight

Variables	Measure U	Mean	Median	SD	Skewness Coefficient
Age	Year	21.3750	21.5000	0.30586	-0.080
Height	Cm	171.2500	171.5000	5.58075	-0.600
Weight	Kg	70.0000	69.5000	5.69395	1.612

Skewness Coefficient is between (±3), so participates of the study are homogeneity in variables of the study.

2.2 Measurements

2.2.1 Attack serve skill accuracy test

The aim of test is to measure accuracy of attack serve in volleyball, a student performs attack serve from location of 4 and coach will prepare the balls to the student from location of 3. Each student achieves 5 attempts in location (A) and 5 attempts in location (B), maximum degree is 40 degrees assigned in 20 degrees for each region (Nahida, 2011) as shown in following figure. However, to record scores of attempts we have to follow bellow conditions.

- The ball which is fallen in A or B regions given 4 degrees.
- The ball which is fallen in color region given 3 degrees.
- The ball which is fallen in A or B regions given 2 degrees.
- The ball which is fallen outside of court given zero degree.

Note: Before each attempt a preparation has to be excellent.

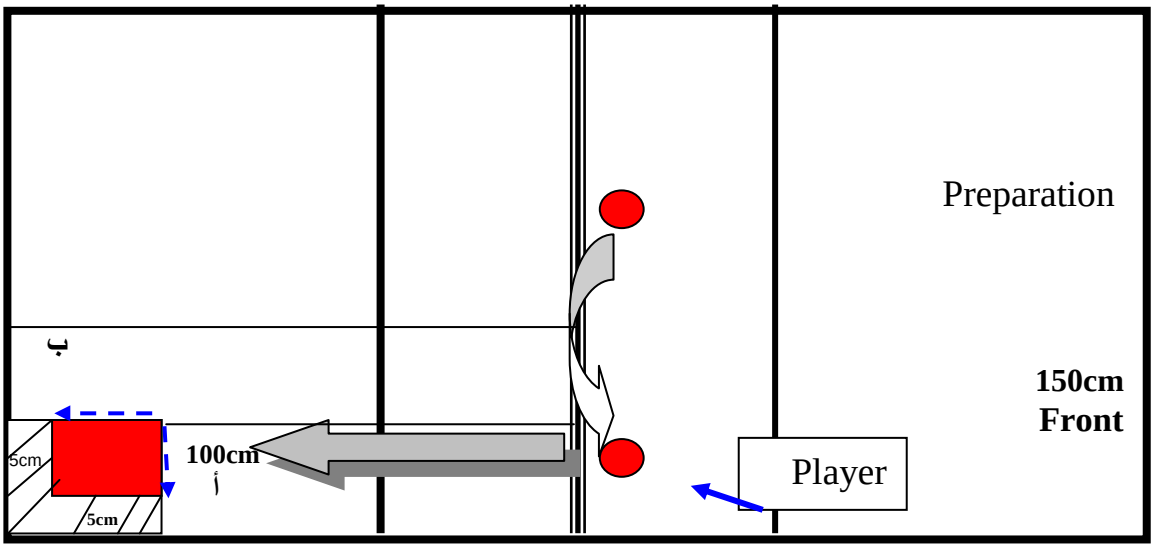

Figure (1) shows accuracy of attack serve test

2.2.2 Kinematic variables tests of strike arm

2.2.2.1 Peripheral speed test:

The aim of test is to collect peripheral speed of strike arm, the player who will perform an attack serve froma center of (4) is preparing to perform the test at the same time the preparation player will prepare the ball to the first player as referred in the description of the skill of attack serve. We accounted peripheral speed through using following law.

Peripheral speed= (angular speed x radius)^2
Angular speed= arc length \ time

2.2.2.2 Angular speed test

The aim of test is to account angular speed of strike arm, the player who will perform an attack serve froma center of (4) is preparing to perform the test at the same time the preparation player will prepare the ball to the first player as referred in the description of the skill of attack serve. We accounted peripheral speed through using following law.

Angular speed= arc length \ time

2.2.2.3 Test of joints angles of strike arm

The aim of test is to account the joints angles of strike arm for example (shoulder joint, elbow joint, and wrist joint), we conducted the test in the same method of peripheral speed test as mentioned above, Angles of arm were accounted depending on motor analytical program during transfer the information of film into the computer and then we used a special program to get the results of require angles measurement.

2.3 Statistical analysis

Data of study was analyzed through a program of SPSS and using means, standard deviations, and T test.

3. Results and Discussion

Table (2)
Shows means, SDs, and correlation coefficient between angular and peripheral speeds with accuracy of attack serve

Variables	Size of subject	Mean	SD	Correlation Coefficient
Angular speed	10	2.9786	0.36360	0.046
Peripheral speed	10	7.1810	0.37575	0.091
Accuracy of attack serve	10	16.4	2.5	1

Table (2) showed that mean of angular speed amounted of (2.9786) with SD of (0.36360) while mean of peripheral speed amounted of (7.1810) with SD of (0.37575) and when search the correlation between variables of the study which mentioned above with accuracy of attack serve skill, the mean was amounted (16.4) with SD (2.5) whereas correlation coefficient value amounted (0.046) which is larger than tabulated P value amounted (0.091), it means a middle correlation between them.

Table (3)
Shows means, SDs, and correlation coefficient between ratio of arm lengthand accuracy of attack serve

Variables	Size of subject	Mean	SD	Correlation Coefficient
Moment of inertia	10	5.1594	0.61130	0.487
Accuracy of attack serve	10	16.4	2.50333	

Table (3) displayed that mean of moment of inertia amounted of (5.1594) with SD of (0.61130) while mean of accuracy of attack serve amounted of (16.4) with SD of (2.5) and when search the correlation between variables of the study which mentioned above with accuracy of attack serve skill, correlation coefficient value amounted (0.487) which is larger than tabulated P value amounted (0.153), it means a lake correlation between them. Through what has been exposed in the table(2 and 3) showed that there is variation in the type of relationship between the moments of inertia for the different parts of the arm and the accuracy of attack serve in volleyball and all refer to the weakness of the relationship except variable should erinertia which refers to the medium relationship. The total length and private arm lengths are a great importance forvolleyball playerfor beingone of the mostfrequently usedparts of the bodyin blockingballsandpass themas well as theimportance ofthe lengths ofparts of the bodyto control theball. Mohamad (1987) confirmed that the length in several activities including total length of the body is veryimportance.

Several studies have pointed that thelengthis importancein manysporting activities, whether the total lengthor the length ofsomeparts of the body for instancethe arms orlegs, moreover the consistency ofthe lambs length with eachof them is an extreme importancein the acquisition ofindividualcompatibilityneuromuscularin mostsports activities (Ahmed&Ali., 1997; Adel., 2012; Marwan., 2001). The researcher sees the importance of measuring the moment of inertia as an important indicator for the selection of volleyball which appears by identifying the moment of inertia of the different body part with attack serve accuracy, the impact of the training load in the sport of volleyball especially among players at higher levels reflected the effects on the amount of torque generated from the trunk wrap of movement and the impact of power transmission points across the should errands down to the point of contact of the hand with the ball, which has a direct relationshipwith the moment of inertia of arm.

4. Conclusion

Study concluded that no correlation between the angular velocity and accuracy of attack serve skill in volleyball as well as no correlation between the peripheral speed and accuracy of attack serve skill and also very lake correlation between the moment of inertia and accuracy of attack serve skill.

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