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Relationship of Selected Biomechanical Variables with the Performance of Volleyball Players in Over Head Serve

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ABSTRACT

The scholar took the study of volleyball players. The subjects for the study were 10 male Volleyball players of Inter University level. Angular kinematics variables were ankle (Right & Left), Knee Joint ((Right & Left), Hip joint (Right & Left), Shoulder Joint (Right & Left), elbow joint (Right & Left), and linear kinematics variable were height of center of gravity.

The digital camera (Nikon 0-100) was employed to register the technique of overhead serve at selected moments. The subjects were photographed at the movement of (stance) and (Execution) in sagital plane. All the subjects performed the technique from the right side. From the photographic sequence, the stick figures were prepared by using joint point method. The angles and center of gravity were calculated at selected moments.

In order to find out the relationship of selected kinematics variables and the performance of the subjects in overhead server at selected moments, the Pearson's product movement were calculated, the level of significance was 0.05.

Based on the analysis and within the limitations of present study. It was concluded that none of the selected biomechanical variables has significant relationship with the performance of subjects in overhead serve in Volleyball.

Key Words – *Biomechanics, Angle, Joints, Kinematics, Volleyball, Performance*

INTRODUCTION

In view of tremendous progress being brought about in Volleyball. It has become essential to develop on objective criterion for qualifying the skill of Volleyball player in order to determine the effectiveness of training programme for Volleyball players. In addition to systematic training the mechanics of technique and Volleyball players also plays a vital role in attaining high performance in Volleyball.

METHODS

The subjects for the study were 10 male Volleyball players of Inter University level. Angular kinematics variables were ankle (Right & Left), Knee Joint ((Right & Left), Hip joint (Right & Left), Shoulder Joint (Right & Left), elbow joint (Right & Left), and linear kinematics variable were height of center of gravity.

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RESULTS

In order to find out the relationship of selected kinematics variables and the performance of the subjects in overhead server at selected moments, the Pearson's product movement were calculated, the level of significance was 0.05. The obtained value of coefficient of correlations at selected moment that is moment 'stance' and 'Execution' with selected kinetics variables were as follows, at moment of stance were: left ankle joint (0.470); Right ankle joint (0.524); Left Knee joint (-0.151); right knee joint (-0.400); left hip joint (0.429); right hip joint(0.174); left shoulder joint(-0130); right elbow joint (-0.312); left wrist joint (0.041); right wrist joint(0.261). At moment execution: Left ankle joint (0.458); right ankle joint (0.503); left knee joint (0.187); right knee joint (-0.100); left hip joint (0.082; right hip joint (0.065) left shoulder joint (-0384); right shoulder joint (-190); left elbow joint (0.035); right elbow joint (0.140); left wrist joint (0.489) and right joint (0.372).

In linear kinematics at the moment of stance, the height of center of gravity (-0.110) and at the moment of execution, the height of center of gravity (0.351).

FINDINGS

The score of each independent variable of angular and linear kinematics variables were correlated with the performance of subjects in Volleyball serve. Selected moments were stance and execution.

The values of coefficient of correlation of selected angular kinematics variables i.e. angles of selected joints at selected moments with the performance of subjects in overhead serve are presented in Table 1.

Table 1

Relationship of Selected Angular Kinetics Variables with the Performance of Subjects in Overhead Serve

S. No.	Variables	Coefficient or correlation 'r'	
		Stance	Execution
1	Ankle joint (left)	0.470	0.458
2.	Ankle joint (right)	0.524	0.503
3	Knee joint (left)	-0.151	0.187
4	Knee joint (right)	-0.400	-0.100
5	Hip joint (left)	0.429	0.082
6	Hip joint (right)	0.174	0.065
7	Shoulder joint (left)	-.0.130	-0.384
8	Shoulder joint (right)	-0.463	-0.190
9	Elbow joint (left)	-0.0566	0.035
10	Elbow joint (right)	-.0.312	0.140
11	Wrist joint (left)	0.041	0.489
12	Wrist joint (right)	0.261	0.372

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Since the obtained values of coefficient of correlations for 8 degree of freedom were less than the required value of 0.632 for 0.05 level of significance, therefore none of the selected angular kinematics variables at selected moments have shown significant relationship with the performance of subjects in overhead serve.

The relationship of selected linear kinematics variables at selected moments with the performance of subjects in overhead serve is given in Table no 2.

Table 2

Relationship of selected linear kinematics variables at selected moments with the performance of the subjects in overhead serve

Sl. No.	Variables	Co-efficient of correlation 'r'
1	Height of center of gravity at moment of stance	-0.110
2	Height of center of gravity at moment of execution	0.351

Since the values of coefficient correlation for 8 degree of freedom to be significant at 0.05 level is o.632 and the obtained values were less than that, therefore none of the selected linear kinematics variables at selected moments have exhibited significant relationship with the performance of the subjects in overhead serve.

DISCUSSION OF FINDINGS

As shown by the table no.1 and 2 that none of the selected biomechanical variables i.e. angular and linear kinematics variables have exhibited the significant relationship with the performance of subjects in overhead serve. this does not mean that these variables might have not affected the performance in overhead serve, but it may be due small size of the sample or other reasons.

CONCLUSIONS

Based on the analysis and within the limitations of present study. It was concluded that none of the selected biomechanical variables has significant relationship with the performance of subjects in overhead serve in Volleyball.

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