BIOMECHANICAL COMPARISION OF CROSS COURT DROP SHOT

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ABSTRACT

The main purpose of the study was to investigate the height of centre of mass in cross court drop shot of badminton player between advance and intermediate[N=5] subjects who are currently studying in LNIPE Gwalior. Who is having good proficiency in particular skill. Videography technique was used to check the performance of the skill. Nikon D-3100 camera was used having the frequency of 30 frames per second. The videography was taken in sagittal plan. Selected phases were taken out from the Kinovia 8.23 software. The data was analyzed by using independent t test to find out the difference between two groups the result reveals that there is a difference in center of mass between intermediate and beginner badminton players (Verma, 2013).
Keywords: Sagittal Plain, Centre of Mass, Kinovea, Cross court Drop shot.

INTRODUCTION

Biomechanics is the study of mechanical laws which are related to the movement structure of living structure which investigate the force that act on the body of an organism. Now a day's Biomechanics is widely used in orthopedics which help to design the biomaterial for clinical and medical purpose. Badminton is a Racket game playing over a net in rectangular court either by two players or four players with a shuttle. Cross court drop shot is one of the dominant skill in badminton where shuttle land very slowly at opponent court. Cross court drop shot bring the opponent forward from his stable position. It is an offensive technique in Badminton.

METHODOLOGY

Total ten male [N=10] badminton players out of which Five [N=5] Right handed Advance Badminton players (who represented intervarsity/state) and Five[N=5] Right handed intermediate badminton players who have been learning badminton since one year or more(not played any tournament) of Lakshmibai National Institute of Physical Education, Gwalior from the Badminton match practice group were selected as the subject for the present study and there range of mean age, mean height and mean weight were 19±.75 years, 169.9±4.55 cm and 63.4±6.55kg respectively.The kinematic variableselected for purpose of study was Height of center of mass at point of contact. To get the reliable measurement, the following instruments video camera, tripod stand, steel tape were used, available at the Biomechanics research laboratory and competitive Badminton court, shuttle, racket, marker, available in badminton hall of Lakshmibai National Institute of Physical Education, Gwalior, and there reliability were ensured by the manufactures. All measurement concern to the kinematic variables were taken by the research scholar under the supervision of professionals. The

videography was taken by a Skillful photographer. So, the data collection for the present study was considered reliable. To find out the mean difference in selected kinematic variables, Independent t test was used. The level of significance was set at 0.05

FINDINGS

Table-1
COMPARATIVE STUDY OF CENTRE OF MASS WITH CROSS COURT DROP SHOT

Var.	Group	Mean	SD	Std. Error of Mean
Centre of Mass	Intermediate	111.03	9.86125	4.41009
	Advance	132.50	13.04205	5.83258

Table-1 reveals that mean and standard deviation of centre of mass of Intermediate players is 111.03 and on the other hand mean and standard deviation of Advance badminton players' is 132.50 respectively. Graphical representation of above table is made in Fig. no. 1.
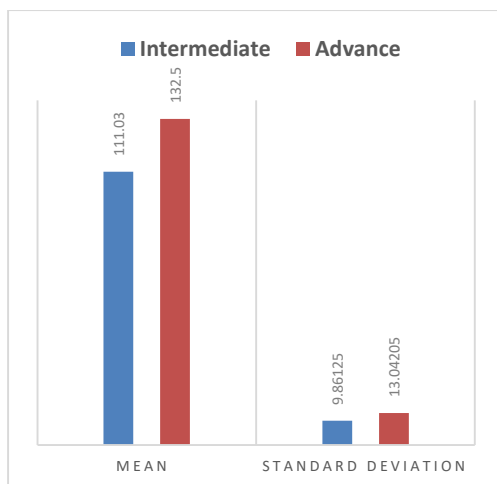

Fig. No. 1: Mean and Standard Deviation value of Intermediate and Advance groups

Table-2
THE RESULTS OF THE INDEPENDENT t TEST OF CENTRE OF MASS OF CROSS COURT DROP SHOT

Var.	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	p- value
Centre of mass	1.402	.270	2.937	8	.019*

* 0.05 level of significance

The finding of table showed the outcome of the Levene's Test for Equality of Variances for the homogeneity of the variance within group in which significance value in case of Linear kinematic variable is greater than the level of significance [p>0.05] so in that case all selected variable were not violated. The outcome of the t test for equality of mean in case of linear kinematics variable is less than the level of significance [p<0.05] the null hypothesis of the selected group is rejected and it may reveal that there is difference between intermediate and Advance player(Verma J. P., 2013).

DISCUSSION OF FINDINGS

The finding showed, the Linear kinematic variable showed significant difference in centre of mass at the forehand cross court drop shot skill in the present study as the t test for equality of mean variable is less than significance [p<0.05] hence null hypothesis is rejected(Verma J. P., 2013). We can say that during the cross court drop shot in badminton one hence to increase his center of mass of the body.

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