



A STUDY ON BAT-LIFT IN RELATION TO THE BATTING TECHNIQUE OF FRONT FOOT STRAIGHT DRIVE IN CRICKET

Physical Education

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ABSTRACT

The purpose of the study was to determine the relationship between selected kinematic variables of bat-lift and batting technique in Front foot straight drive. Five (N=5) male cricket players who represented Visva-Bharati University, WB, were selected as subjects for the study. Videography technique was used to film the subjects in frontal plane of the bat-lift. Joint point method was used in order to obtain the values of selected angular kinematic variables from developed stick figures with the help of Kinovea software. The performance in batting was recorded by the scores in front foot straight drives, which was obtained by using a Five Point scale by three judges. To determine the degree of relationship between selected kinematic variables with the batting performance in front foot straight drive, Pearson's Product Moment Correlation Method was used. The results have shown the significant values of coefficient of correlation of right hip joint and left hip joint of the selected kinematic variables.

KEYWORDS

Kinematic Analysis, Bat-lift, Front Foot Straight Drive, Cricket Batting

INTRODUCTION

In cricket batting during hitting a ball, a batsman needs to swing the bat backwards before swinging the bat forward; when explaining the front foot straight drive E. D. Ferdinands, (2005) stated that the drive is effective, when the drive will be smashed with tremendous power, if the bat-lift just extends above the waistline; which can give an significant advantage against fast bowling. Hence the lifting and backward swinging of the bat are more important to batsman pre-delivery movements than simply as agents of leverage. In bat-lift there are two actions involved in preparing to play a stroke: the reflex action of lifting the toe of the bat off the ground (bat-lift), and then the decision as to how much power you need for your shot (Whether attacking or defending), which the batsman then translate into a decision as to how far back to swing the bat (backswing). During bat-lift the toe of the bat is quick tap into the pitch or the feet, or a small undulation of movement arises through the wrist that gets the bat moving off the ground which ensues concurrently with the pre-delivery movement of the feet and body. The timing of these movements depends individual to individual, but most batsmen shows similar movements like flexion of elbow during bat-lifts, a bending movement and a setting of the neck, a flexing and tensing of the knees which is referred as the ready position (Woolmer, 2008). These influencing factors of bat-lift may have a relationship with the front foot straight drive and as no research has been attempted to establish this fact the research scholar undertook this study to find out the relationship between the two important factors in batting. The study was delimited to five (N=05) male university players of eighteen to twenty five (18-25) years of age of Visva-Bharati University, W.B. The Bat-lift was recorded in one plane only. Selected angular kinematic variables were:

Angular Kinematic Variables:

1. Ankle joints
2. Knee joints
3. Hip joints
4. Shoulder joints
5. Elbow joints

METHODS

The subjects for the present study were five (N=05) male cricket players from Visva-Bharati. All subjects ranged between the chronological age of 18-24 years and were right handed batsman who participated in the East-Zone Intersarsity tournament for Visva-Bharati. To determine the degree of relationship between selected kinematic variables of bat-lift with the batting performance in cricket shot, Pearson's Product Moment Correlation Method was used.

Criterion Measure and Scores of Subjects on cricket Shot

The technique of Front foot straight drive in batting of each selected subjects were used as the criterion measures for the purpose of the present study. The techniques of the subjects were assessed by three judges.

The technique was recorded on the basis of the following Criteria which are explained below:

Design Variables:

1. Set-up: Grip, Stance & bat-lift , 2. Front foot movement, 3. Weight Transfer, 4. Impact 5. Follow Through

Collection of Data and Filming Protocol

The Videography technique was employed to register the bat-lift. Panasonic 3CCD video camera was used for the purpose of the study. The camera was placed at a distance of 11 feet at Frontal Plane; the height of the camera (lenses) was fixed at a height of 1.07 metre from the ground. For obtaining individual Videography, the subjects were photographed in a controlled condition. The kinematical variables of the body were calculated at moment bat-lift. The authors developed stick figures from which selected kinematical variables were calculated by using Kinovea Software. The stick figures were developed by using Joint-point method.



RESULT:

The relationship of selected angular kinematic variables at the Bat-lift with the performance of subjects in Cricket shot is presented in table-2:

Table- 2 Means And Coefficient Of Correlation Of Selected Angular Kinematic Variables Of Bat-lift At Frontal Plane (N=5)

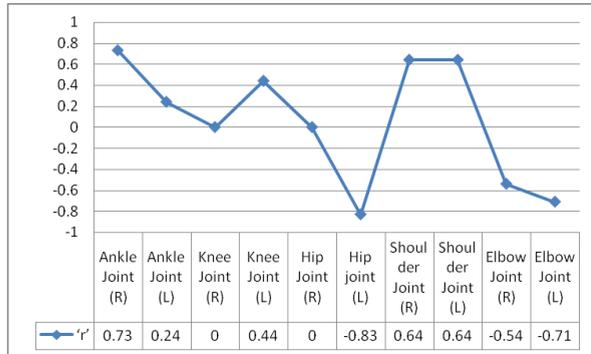
Sl.No	ANGLE	MEAN	'r'
1	Ankle Joint (R)	121.8	0.73
2	Ankle Joint (L)	103.4	0.24
3	Knee Joint (R)	170.4	0.92*
4	Knee Joint (L)	162.2	0.44
5	Hip Joint (R)	88	0.95*
6	Hip joint (L)	116.8	-0.83
7	Shoulder Joint (R)	172.8	0.64
8	Shoulder Joint (L)	105.2	0.64
9	Elbow Joint (R)	58	-0.54
10	Elbow Joint (L)	95.8	-0.71

* Significant at 0.05 level. = 0.88

The hypothesis was accepted since, calculated value of 'r' for the right knee joint and right hip joint is higher than tabulated value of 'r' (=0.878). Thus correlation between angular kinematic variables of bat-lift with the performance of subjects in Cricket shot is significant at .05 level of significance.

The graphical representation of relationship of selected angular kinematic variables at moment of bat-lift with the performance of subjects in front foot straight drive is presented in figure-2:

Figure-2 Relationship Of Selected Angular Kinematic Variables Of Bat-lift At Frontal Plane With The Front Foot Straight Drive In Cricket (N=5)



DISCUSSION

The angular kinematic variables at the moment bat-lift the right knee joint and right hip joint exhibited significant relationship with the performance of subjects' front foot straight drive. The result of the study is in association with the study of Dr. Paul Hurrion 2009 where he stated that 'to apply power in the drive, a batsman must set the base of support, so that he or she can step into a position, halt (no further movement) then soothe the specific joint, working from the ground up, looking at; ankle, knee, hip, pelvis, torso, shoulders, arms, then finally bat. It may be done to the fact that any skill execution in cricket is not solely depending on one or two joint movement; it is the combination of movement (Kinetic Chain) at different joint so it does not mean that the angles at different joints at selected moment do not play any important role while executing front foot straight drive.

A significant result may also be obtained by increasing the size of the sample and using the sophisticated equipments like cinematography technique.

The low values of coefficient of correlation of these variables with the technique may be due to small sample size and non -availability of sophisticated equipments.

Since, the results have shown significant relationship with the kinematic variables of bat-lift to the technique of subjects in the Front Foot Straight Drive, so the Hypothesis as stated earlier is accepted in those variables. As no research has been attempted earlier to establish the relationship of kinematic variables of bat-lift with the technique of front foot straight drive in cricket as a result this study was not corroborated to any other studies.

CONCLUSIONS

Based on the analysis and within the limitations of the present study, following conclusion was drawn:

The angular kinematic variables of bat-lift; right hip joint and left hip joint has exhibited significant relationship with the technique of subjects in Front Foot Straight Drive

The research needs further investigation like Biomechanical study of the inconsistency of the batsman's movements further; there is also a need for scientific research into batting in women's cricket, which has been insufficiently researched to date.

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