



ANALYSIS OF CENTER OF GRAVITY OF THE HIGH JUMPER IN FOSBURY FLOP TECHNIQUES

KEYWORDS

Center of Gravity, High Jump Performance, Fosbury Flop Technique

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ABSTRACT

The purpose of this study was to analysis of center of gravity of the high jumper in Fosbury Flop techniques. The study was conducted only ten (N=10) high jumper who were randomly selected from various Colleges of Anna University, Chennai, Tamil Nadu, India during 2015-2016. The age of the subjects were ranged between 18 to 25. The position of centre of gravity of the body is a major factor in determining the soundness of the stance that is advocated in any techniques in any sport in order to accomplish the desired objective most effectively, So centre of gravity is selected as dependent variable and it was calculated by a formula. High jump performance was assessed through subjective rating techniques. Zero order correlation technique was used to find out the relationship between jumping performance and center of gravity. The results of the study showed there is a positive relationship between high jump performance and center of gravity of the jumper.

INTRODUCTION

Biomechanical principles are applied by scientists and professional in a number of fields in addressing problems related to human health and performance. Knowledge of basic biomechanical concepts is also essential for the competent physical education teacher, physical therapist, physician, coach, personal trainer or exercise instructor. An introductory course in biomechanics provides foundational understanding of mechanical principles and how they can be applied in analyzing movements of the human body.

Sport bio-mechanists have also directed efforts at improving the technique components of athletic performance. They have learned, for example, that factors contributing to superior performance in the long jump, high jump and pole vault include large horizontal velocity going into takeoff and a shortened last step that facilitates continued elevation of the total-body center of mass. Examples of well known athletes easily display the importance of biomechanical technology in improving performance.

A biomechanical analysis evaluates the motion of a living organism and the effect of forces on the living organism. The biomechanical approach to movement analysis can be qualitative, with movement observed and described, meaning that some aspect of the movement measured. The use of the term biomechanics in this text incorporates qualitative components with a more specific quantitative approach. In such an approach, the motion characteristics of a human or an object are described using such parameters as speed and direction, how the motion is created through application of forces both inside and outside the body, and the optimal body positions and actions for efficient, effective motion.

A Centre of gravity is the where the total weight of the body is said to be concentrated. Centre of gravity is involved in all the considerations of equilibrium centre of gravity are a major factor is determining the body position in any game (Bunn, 1955).

The high jump is an event in which the objective is to attain a maximum height through a process of transferring the body from a vertical to a horizontal position. In order to accomplish this factor there must be co-ordination of successive events which follow a running approach from which sufficient momentum is acquired to ensure clearance (Wickstrom, 1983).

METHODOLOGY

Ten (N=10) men high jump who have participated intercollegiate athletic meet during the year 2015-2016 were selected as subjects. Among various bio-mechanical variables, centre of gravity only selected as dependent variable.

Procedure for Calculating the Centre of Gravity of the Jumper:-

The total height of an individual is taken by the investigator from the floor. To find out the centre of gravity for an individual 56.18 percentage of his total height of the body is taken.

$$\text{Centre of gravity} = \frac{\text{Total Height} \times 56.18}{100}$$

The dependent variable was high jump performance which was assessed through subjective rating by three experts. The average of three experts was the individual criterion score.

Person's products moments correlation (zero order) was used to find out the relationship of selected anthropometrics and physical fitness variable with Basketball performance. The level of significance was set at 0.05. SPSS package was used for statistical analysis.

RESULTS & DISCUSSION

Table-1 Coefficients of Centre of Gravity with High Jump Performance

Sl No	Variables	Co-efficient of Correlation
1	Centre of Gravity and High Jump Performance	0.91*

*Significant at .05 level ($r(0.05(8))=0.835$)

Table 1- had shown the relationship of selected Centre of Gravity with High Jump performance. All the obtained correlation values were above the table value of 0.91. In this analysis centre of gravity was significant relationship with high jump performance.

CONCLUSION

From the above results and discussions the following conclusions were drawn

The results of the showed the selected Bio-Mechanical variable of Centre of gravity having significant relationship with High Jump performance.

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