

A Study of Selected Linear Kinematic Variable on the Long Jump Performance

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ABSTRACT

The purpose of the study was to determine the link between the linear kinematic variables of long jump performance and the most important linear kinematic variable for improving long jump performance. Long jump performance demands skill, strength, and quickness. The objective is to cover the maximum horizontal distance from the takeoff point to where the athlete lands in the sandpit. In this study the subjects were taken the 10 (Ten) male elite Long Jumpers of 18 to 25 years of age group from Lakshmibai National Institute of Physical Education, Gwalior. The study also used the multiple -correlation statistical technique for the analysis of the data. The result of the study has been observed the variables center of gravity at the moment of takeoff and velocity at take-off were significant as their ($P < 0.05$)

Introduction

The Greek word "ATHLON," which meaning a contest, is where the word "athlete" originates. The sport was invented and included in the Olympics because it was thought that fighters needed to nimble and able to dodge obstacles like leaping across ditches or streams. Ellery Clark, who leaped 6.35 meters to earn the first gold medal in the modern Olympics, won the inaugural long jump gold medal in 1896. An athlete is someone who participates in a physical contest. Running and jumping are two examples of rapid saltatoric motions that alternate between aerial and contact phases. The force generated at the end

of each contact phase cancels out the vertical momentum (Seyfarth, Friedrichs, & Blickhan, 1999). Long jump performance will improve as the approach run and take-off become reliable and technically sound. The area of biomechanics known as kinematics is dedicated to the description of body motion. Kinematics is the study of how far, how quickly, and how consistently a body moves. The study also focus on the performance of the long jump by analyzing the technique such as center of gravity in various phases and velocity of the athlete during the execution. The purpose of the study was to find out that which variable could be the most correlated to the performance. The athletes' distance is determined by measuring how close the point of sand that they disrupted with their body was to a set line.

Material

The study is conducted on 10 subjects and all the data were gathered using trained officials. The athlete distance and speed were measured in meters per second and degree, respectively, and the angles were measured to the closest point. The program Kinovea software was used to measure the center of gravity.

Method

For the study 10 male Long Jump athletes who participate in intervarsity 18 to 25 years of age group. The selection of sample the purposive technique was used for the purpose of the study.



Results

Correlation coefficient statistic technique was used to find out the significant relationship between the selected kinematics variables at level of 0.05.

During the Long Jump the mean and standard deviation athlete CG during take off is 1.5610±.13585, CG during Flight is 2.7260±.18656, CG during landing is 1.3130±.15542, Velocity at Take off is 7.0680±2.67932 (see table Table 1).

The product moment coefficient correlation of the variable CG during tak-off is .788 with p-value .007, CG during Flight is .026 with p-value .943, CG during landing is .566 with p-value .088, Velocity at Take off is .866 with p-value is .001

Table 1

DESCRIPTIVE STATISTICS OF LINEAR KINEMATIC VARIABLES AND LONG JUMP PERFORMANCE

	Mean	Std. Deviation	N
Height COG Take off	1.5610	.13585	10
Height COG Flight	2.7260	.18656	10
Height COG Landing	1.3130	.15542	10
Velocity at Take off	7.0680	2.67932	10

Table 1 shows the descriptive values of all the selected independent variables. The mean and standard deviation are shown in the above table.

Table 2

COEFFICIENT OF CORRELATION(r) OF SELECTED LINEAR KINEMATIC VARIABLES WITH THE LONG JUMP PERFORMANCE OF PLAYERS.

	Correlation(r)	Sig



Height COG Take off	.788	.007
Height COG Flight	.026	.943
Height COG Landing	.566	.088
Velocity at Take off	.866	.001

Discussion and Finding

The coefficient of correlation (r) of selected linear and angular kinematic variables with long jump performance are presented separately. The results of the product moment correlation to find out the relationship between selected independent variables and long jump performance i.e., height COG take off, Height COG Flight, Height COG Landing and Velocity at Take off.

Results of this study indicated that there was significant correlation between height COG take off and long jump performance. The coefficient correlation(r) was .788 and it was significant ($p < 0.05$). The correlation between variables was positive.

There was no significant correlation between Height COG Flight and long jump performance. The coefficient correlation was .026 and it was insignificant ($p > 0.05$).

There was a significant correlation between height COG landing and long jump performance. The coefficient correlation(r) was .566 and it was insignificant ($p > 0.05$). Furthermore, a significant positive correlation was found between velocity at take-off and long jump performance. The coefficient correlation was .866 and it was found significant ($p < 0.05$).

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