A Study on Relationship between Leg Power and Long Jump Performance

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DOI: https://doi.org/10.51244/IJRSI.2026.13020004

Received: 04 February 2026; Accepted: 13 February 2026; Published: 23 February 2026

ABSTRACT

The purpose of the study was to find out the relationship between leg power and long jump performance. For the accomplishment of the objective of the study total 30 intercollegiate level male long jump athletes were randomly selected as subjects. The age range of the selected subjects were 18 to 25 years. The leg power was assessed with the help of vertical jump and horizontal jump tests. To analyse the collected data the descriptive statistics, mean, SD and Pearson's coefficient of correlation was employed with the help of SPSS 21.1. the level of significance was 0.05 level.

Key Words: Leg Power, vertical jump, horizontal jump and long jump perfromace

INTRODUCTION

Long jump is an event that requires an athlete to jump and land at the farthest distance.Starting, pushing off, Flight in the air, and landing are the four stages of movement that must be taken into account when implementing the long jump. Several long jump techniques were created in order to attain excellent performance.

One can observe the long jump style while floating in midair. The IAAF states that there are three different kinds of long jump styles: 1) squatting, 2) hanging or sneaker, and 3) walking in the air. For Long Jump to reach greater heights, total physical fitness and technical proficiency are necessary. According to Mochamad Sajoto (1988), if an athlete wishes to succeed, their physical condition growth must be good. Strength, endurance, muscle explosive power, speed, coordination, flexibility, agility, balance, accuracy, and reaction are among the physical attributes that athletes must possess. Lack of attention to the components of an athlete's or student's physical condition in athletics is good because, based on all the components of physical condition mentioned above, their maintenance and improvement cannot be separated from one another, allowing their performance in various sports to increase. In national and international competitions, performance falls short of expectations; for example, a person who wishes to practise the long jump takes longer to do so. This fact demonstrates that learning technical skills is not the only thing that requires attention; the physical aspect also requires it.

When developing a student or athlete, coaches hardly ever consider physical characteristics. Even still, this is seen to be important to consider when beginning to train or develop an athlete in order to maximise their performance. Hence, the objective of the study was to know the influence of leg power on long jump performance.

METHODOLOGY

Selection of Subjects:

The purpose of the study was to find out the relationship between leg power and long jump performance. For the accomplishment of the objective of the study total 30 intercollegiate level male long jump athletes were randomly selected as subjects. The age ranges of the selected subjects were 18 to 25 years.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue II February 2026

Selection of Variables:

The vertical jump and Horizontal jumps were selected as leg power variables.

Selection of Tests:

The vertical jump and standing broad jump tests were administered to the selected subjects to assess the vertical jump performance and Horizontal jump performance respectively. The vertical jump was scored in centimetres and horizontal jump was scored in meters.

RESULTS AND DISCUSSIONS:

The descriptive statistics Mean and SD of vertical jump and horizontal jumps of selected subjects were presented in table – 1.

Table-1 The Mean and SD of vertical jump and horizontal jumps

Descriptive Statistics			
	N	**Mean**	**Std. Deviation**
Vertical Jump	30	51.12	2.62
Horizontal Jump	30	2.69	.194

The table 1 explains that the mean and SD of Vertical jump was 51.12 and 2.62 respectively. The mean and SD of Horizontal jump was 2.69 and .194 respectively.

The descriptive statistics Mean and SD of vertical jump and horizontal jumps of selected subjects were presented in figure – 1.

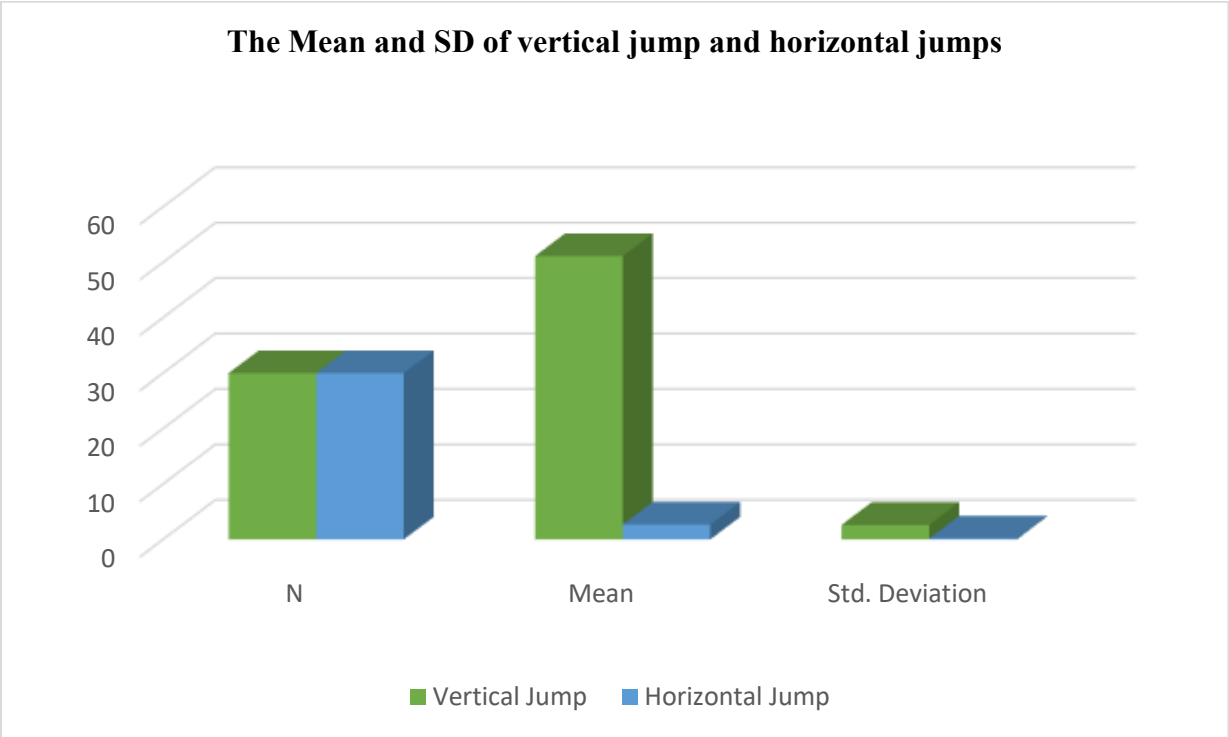

Figure-1: Mean and SD of vertical jump and horizontal jumps of selected subjects

The correlation analysis of leg power with the long jump performance was presented in table 2.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue II February 2026

Table-2 The correlation analysis of leg power with the long jump performance

Correlations				
		Performance	**VJ**	**HJ**
Performance	**Pearson Correlation**	1	.541	-.811
	Sig. (2-tailed)		.001*	.000*
	N	30	30	30

*Significant at 0.05 level

Table 3 showed the results of correlation analysis. Results showed that leg power were significantly correlated with long jump performance. From the above table it was cleared that the vertical jump score had moderate positive correlation ($r = .541$, $p = 0.001$, $p< 0.05$) and horizontal jump score had strong positive correlation ($r = .811$, $p = 0.000$, $p< 0.05$). Both horizontal and vertical jumps were employed as plyometric exercises to build It has been demonstrated that leg explosiveness (power) increases jump since the action of these two jumps has a similarity to the long jump take-off phase, which includes leg muscle stretch and shortening cycles. According to Muraki, Ae, Koyama, and Yokozawa, a long jumper must convert horizontal velocity into vertical velocity during the take-off period in order to enhance jumping distance. In order to increase long jump performance, power from vertical and horizontal jumps can aid to maximise take-off velocity.

CONCLUSIONS

On the basis of the study the following conclusions were drawn;

There was a correlation found between leg power and long jump performance. This reflect the importance of leg power training to be included as part of long jump training program.

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