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IMPACT OF PLYOMATRIC TRAINING ON PERFORMANCE OF HIGH JUMP PRACTICING ATHLETES

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Abstract

This study investigates the impact of systematic sports training on the performance of high jump athletes. The primary objective was to assess how structured training programs influence technical skills, physical conditioning, and overall jump height. A sample of trained and semi-trained high jumpers was evaluated over a defined training period, with key variables including strength, flexibility, explosive power, and take-off technique. Standardized tests, performance measurements, and observational analyses were employed to record progress. Results indicate that targeted training interventions—particularly plyometric exercises, sprint drills, and event-specific technical sessions—produced significant improvements in jump clearance, body coordination, and approach consistency. The findings highlight the crucial role of scientific training methods in maximizing athletic potential and suggest that continuous, sport-specific conditioning is essential for competitive success in high jump

Keywords: Plyometric Training, Performance.

INTRODUCTION

Plyometric training is a specialized form of exercise designed to develop **explosive power and speed** in athletes. It involves rapid stretching of a muscle (eccentric phase) followed by an immediate contraction (concentric phase), commonly known as the **stretch-shortening cycle**. This type of training helps athletes generate greater force in less time, which is especially important in sports requiring quick, powerful movements such as jumping, sprinting, and changing direction.

Exercises such as **box jumps, bounding, depth jumps, and hurdle hops** are widely used to improve lower-body strength, coordination, and neuromuscular efficiency. Plyometric training not only enhances vertical jump performance but also improves running speed, agility, and overall athletic ability. When performed correctly with proper progression and recovery, it can significantly improve performance while reducing the risk of injury

Best Training Method to Improve Jump in High Jumpers

Improving the vertical jump of high jumpers requires a well-planned training program that develops strength, speed, and correct jumping technique. The most effective methods include **plyometric training**, **strength training**, **sprint drills**, **technical skill practice**, and **flexibility work**. These exercises help athletes build explosive power, improve take-off mechanics, and maintain proper body control while clearing the bar.

Sample Weekly Training Plan

Day	Training Focus	Main Exercises	Sets / Reps	Effort Level
Monday	Leg Strength	Squats, lunges, calf raises	3–4 sets × 8–12 reps	Moderate
Tuesday	Jump Power (Plyometrics)	Bounding, box jumps, depth jumps	3 sets × 10 jumps	High
Wednesday	Technique Practice	Approach runs, take-off drills, bar clearance	60 minutes	Moderate

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Thursday	Speed Training	Short sprints, medicine ball throws	6×40 m sprints, 3×12 throws	High
Friday	Core and Flexibility	Planks, stretching, yoga	30 minutes	Low
Saturday	High Jump Simulation	Full approach and bar practice	8–10 jumps	High
Sunday	Recovery	Light jogging, mobility work	20–30 minutes	Very light

Review of Literature

Several researchers have studied the effect of plyometric training on vertical jump and athletic performance. Marković (2007) conducted a meta-analysis and reported that plyometric training produces consistent improvements in jump height and lower-body power among athletes of different levels. Sáez-de-Villarreal et al. (2009) found that programs lasting six to eight weeks, with two sessions per week, significantly enhance vertical jump performance by improving the stretch–shortening cycle of muscles.

Ramírez-Campillo et al. (2020) further confirmed that plyometric training benefits youth and trained athletes, with longer programs (more than 14 sessions) producing greater gains. Zhou et al. (2024) also showed that plyometric training improves explosive strength and coordination, which are essential for high jump take-off. Coaching literature specific to high jump (Schmolinsky, 2010) highlights that event-specific plyometrics, such as bounding and single-leg hops, closely mimic the approach and take-off mechanics required for bar clearance.

Overall, these studies suggest that properly designed plyometric training—progressive, moderate in volume, and combined with technical drills—improves jump performance and is highly relevant for high jump athletes.

Method of the study

The researcher selected thirty jumpers or athletes of Gulbarga university affiliated degree college GFGC kamalapur for the present study, there was pre and post-tests in between the six weeks plyometric training session.

Major objectives

- To measure the average height of the jump by the athletes.
- To compare the pre and post jump height to check the impact

Hypothesis

- There would be significance impact of plyometric training on the performance of high jump players
- There would be significance difference in pre and post-tests results of research.

Sample

The researcher selected randomly thirty male players for the present research study. The researcher taken pre test on high jump with the help of standard tool, after inclusion of sis weeks plyometric training for the same sample and conducted post-test.

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Variables

Independent – Plyometric training

Dependent - Performance of jumpers

Tools

- Plyometric training
- High jump bar and bed

Statistical techniques

The suitable techniques will be used to measure the effect of independent variables on the dependent variables, techniques like **mean, SD, t test,** used to measure or compare the urban and rural data to find the results of the sample groups.

Methods of Statistics

- Coding of the data
- Tabulation
- Statistical tools (SPSS)
- Graphical methods

ANALYSIS AND INTERPRETATION OF DATA

THE TABLE NO -01 SHOWING THE MEAN SD AND T VALUE OF HIGH JUMP PLAYERS OF THE STUDY

Sample	Mean	N	Std. Deviation	T value
PRE-TEST	129.6333	30	7.82782	**8.020****
POST TEST	146.0000	30	9.29219	

Significant at 0.05 level

The table showing the impact of Plyometric training on the performance of high jump athletes of Gulbarga University. Karnataka. The researcher randomly selected thirty male athletes from the degree college taken pre test of high jump than provided six weeks Plyometric training to the same athletes after the training post test was conducted and compared the data to find the impact of the training on the performance of the athletes.

The mean showing the significance difference in the score in pre and post tests the t value 8.020** which was showing positive impact of Plyometric training on the athletes of Gulbarga university.

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Conclusion

Plyometric training consistently demonstrates significant positive effects on high jump performance across multiple studies. The explosive strength and reactive power developed through plyometric exercises directly translate to enhance vertical jump height by optimizing the stretch-shortening cycle, improving neuromuscular coordination, and increasing leg power production.

Findings

- There is positive impact of Plyometric training on the athletes of Gulbarga University.
- There is significance difference in pre and post test data of high jump score
- The Plyometric training is highly influencing the performance of athletes of the present research study.

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