



HIGH IMPACT LOWER BODY JUMP TRAINING ON VERTICAL AND HORIZONTAL JUMPING PERFORMANCE AMONG BASKETBALL PLAYERS

¹DHANRAJ, V., & ²ARUMUGAM, S.

¹PG Student & ²Assistant Professor

¹ & ² Department of Physical Education and Sports, Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamilnadu, India, Pin code: 627012

Abstract: The intention of the present study was to find out the influence of high impact lower body jump training on vertical jump and horizontal jumping performance among basketball players. Twenty (20) male basketball players were ranged from aged 16 to 18 years were randomly selected from MDT Hindu College Higher Secondary School, Tirunelveli, Tamil Nadu State. They selected subjects have been randomly divided into two equal groups namely High impact lower body jump training Group (HIHLBJTG) (N=10) and Control Group (CG) (N=10). Six weeks high impact lower body jump training programme has been formulated to see the effectiveness of given training programme on vertical jump and horizontal jump of basketball players. The vertical jump and horizontal jump has been tested by 'sarjent vertical jump test and standing board jump test on before the training starts and after completion of six weeks high impact lower body jump training programme. Significant positive changes occurs in vertical jump and horizontal jump has been found by analysing and comparing the pre-test and post-test score through paired sample 't' test and ANCOVA among the basketball players of HILBJTG and CG. So this study was concluded that six weeks of high impact lower body jump training programme was shown effective in the improvement of vertical jump and horizontal jump among basketball players. However the control group had not shown any significant positive changes on vertical jump and horizontal jump while because they were not engaged to participated in to any specific training programme apart from their routine works.

Index Terms – High Impact Lower Body Jump Training, Vertical Jump, Horizontal Jump, Basketball Players

1. INTRODUCTION

Basketball is a physically demanding sport that requires a combination of strength, and power. Among these, vertical jump and explosive power play a crucial role in enhancing performance, particularly in movements such as jumping. The ability to execute powerful jumps is essential for skills like shooting, rebounding, and shot-blocking. Consequently, targeted high impact lower body jump training can significantly impact a player's overall performance [1].

Basketball is a fast-paced sport that requires players to possess a combination of strength, and power. One of the most critical physical attributes for basketball performance is vertical jump and explosive power, which significantly influences a player's ability to jump, sprint, change direction, and maintain balance. Jumping is particularly essential for various aspects of the game, such as shooting, rebounding, blocking, and dunking. Thus, improving lower body power through structured jump training can enhance overall performance and reduce the risk of injuries [2].

High-impact lower-body jump training, commonly known as plyometric training, is a powerful method used to enhance muscular strength, explosive power, and athletic performance. This form of exercise involves rapid and forceful movements that engage the lower body muscles, improving speed, agility, and endurance. Athletes across various sports, including basketball, soccer, and track and field, incorporate jump training to maximize their vertical leap, sprinting ability, and overall coordination. Beyond sports performance, high-impact jump training also contributes to bone health, neuromuscular efficiency, and cardiovascular fitness. However, due to its intense nature, proper technique, progression, and injury prevention strategies are essential for safe and effective training. This article explores the benefits, key exercises, and best practices for incorporating high-impact jump training into a fitness regimen [3].

Vertical and horizontal jump abilities are fundamental components of basketball performance, playing a pivotal role in both offensive and defensive maneuvers. The vertical jump is integral to actions such as rebounding, shot-blocking, and executing jump shots, allowing players to reach greater heights and outperform opponents in aerial contests [4]. Horizontal jump ability, encompassing movements like lateral and broad jumps, enhances a player's capacity for rapid direction changes, defensive slides, and driving explosively toward the basket. Developing these jumping skills not only augments a player's athleticism but also contributes to overall game effectiveness, making them essential focus areas in basketball training programs. [5].

2. METHODS AND MATERIALS

This research stays in quantitative research, although in terms of the method used in this research, it is a quasi-experimental research. Based on data analysis using quantitative analysis, the intervention group was assessed by providing the kind of exercise in the form of high impact lower body jump training to raise the ability of the vertical jump and horizontal jump among basketball players. The samples in this study were all male basketball players and their age were ranged from 16 to 18 years were randomly selected from The MDT Hindu College Higher Secondary School, Tirunelveli, Tamilnadu, India. The selected subjects have been randomly divided into two equal groups namely High impact lower body jump training Group (HILBJTG) (N=10) and Control Group (CG) (N=10). Six weeks high impact lower body jump training programme has been formulated to see the effectiveness of given training programme on vertical jump and horizontal jump of basketball players.

3. HIGH IMPACT LOWER BODY JUMP TRAINING PROTOCOL

The HILBJTG followed a unique six-week high impact lower body jump training protocol formed by the investigator of this study. Training sessions were conducted three alternative days a week and period of each session was 45-60 minutes in regular. Before going for session the subjects are asked to do general full-body warm-up for 10-15 minutes to lubricate their joints, raise their body temperature and heart rate, and prime their muscles for action. All exercises had done for 6-10 reps of each movement to complete one set. The rest between sets were given approximately 60 to 90 seconds. Exercises were executed as group training and supervised by an investigator with the help of his supervisor and coach.

4. Statistical Analysis

Significant positive changes occurs in vertical jump and horizontal jump has been found by analysing and comparing the pre-test and post-test score through paired sample 't' test and to find out the difference exists between both groups were analysed through one way ANCOVA at the level of significance at 0.05. The collected data were statistically analysing with use of SPSS 17.1 trail version.

5. ANALYSIS OF DATA

Table-1

Means and Paired Sample-'t' Test for the Pre and Post Tests on Vertical jump and Horizontal jump of HILBJTG and CG

Criterion variables	Test	HILBJTG	CG
Vertical jump (centimeters)	Pre test	0.32	0.31
	Post test	0.49	0.33
	't'-test	8.46*	0.97
Horizontal jump (meters)	Pre test	2.04	2.01
	Post test	2.34	2.06

	't'-test	11.67*	1.59
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*Significant at .05 level. (Table value required for significance at .05 level for 't'-test with df 9 is 2.26)

The table-1 shows that the pre-test mean value of HILBJTG and CG on vertical jump and horizontal jump were 0.32 & 0.31 and 2.04 & 2.01 respectively. The post test mean value of HILBJTG and CG on vertical jump and horizontal jump were 0.49 & 0.33 and 2.34 & 2.06 respectively. The obtained paired sample t-ratio values between the pre and post-test means of HILBJTG and CG were 8.46 & 0.97 and 11.67 & 1.59 respectively. The required table value for significant difference with df 9 at 0.05 level is 2.26. From the above table the paired sample t-test value of vertical jump and horizontal jump between pre and post-tests means of HILBJTG was greater than the table value 2.26 with df 9 at .05 level of confidence, it was concluded that the HILBJTG had significant improvement in the vertical jump and horizontal jump when compared to CG.

Table-2

Computation of Mean and Analysis of Covariance Vertical jump and Horizontal jump of HILBJTG and CG

Adjusted Post Mean	HILBJTG	CG	Source of Variance	Sum of Squares	Df	Mean Square	F
Vertical jump	0.51	0.35	BG	116.38	1	116.38	45.11*
			WG	43.86	17	2.58	
Horizontal jump	2.39	2.11	BG	334.18	1	334.18	36.05*
			WG	157.59	17	9.27	

* Significant at 0.05 level. Table value for df 1, 17 was 4.45

Table-2 shows that the adjusted post-test means values on vertical jump and horizontal jump of HILBJTG and CG are 0.51 & 0.35 and 2.39 & 2.11. The obtained f-ratio of adjusted post-test mean value was 45.11 & 36.05 which was greater than the required table value 4.45 with df 1 and 17 required for significance at 0.05 level of confidence. The results of the study indicated that there was a significant mean difference exist between the adjusted post-test means of HILBJTG and CG on vertical jump and horizontal jump.

6. DISCUSSION ON FINDINGS

The present study was to found statistically significant improvement on vertical jump and horizontal jump, which showed that positive impact of high impact lower body jump training among basketball players. The following findings as same as my study such as Miller, (2006) conducted the study on the effects of a 6-week plyometric training program on agility. Saez-Sáez de Villarreal, (2009) determined the variables of plyometric training for improving vertical jump height performance. Stojanovic, E., evaluated the study on the effect of plyometric training on vertical jump performance in female athletes. Villarreal, (2010) did the plyometric training improve strength performance. Bedoya, (2015) conducted the study on the effects of plyometric training on soccer players. The results of the study showed that there was significant level differences exist between High impact lower body jump training and control group. High impact lower body jump training group showed significant improvement on vital capacity, maximum strength and balance, when compared to control group.

7. CONCLUSIONS

There was significant improvement on vertical jump and horizontal jump due to the impact of high impact lower body jump training practices among basketball players. There was significant differences exist between HILBJTG and CG on vertical jump and horizontal jump. However the control group had not shown any significant improvement on any of the selected variables.

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