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Effect of Plyometric Training on Selected Body Composition among Basketball Players

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Abstract

The purpose of the study was to investigate the effect of plyometric training on selected body composition among basketball players. It was hypothesized that there would be significant differences on selected body composition due to the effect of plyometric among basketball players. For the present study the 30 male basketball players from Ernakulam district, Kerala state, India were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent plyometric training and Group 'B' have not underwent any training. Body composition was assessed by Bioelectrical Impedance Analyzer. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05. The plyometric training had positive impact on BMI and percent body fat among basketball players.

Keywords: Plyometric, BMI, Percent Body Fat, Basketball.

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Introduction

Basketball which originated from America and has been most popular in that country has now become a game of international repute. It is played nearly everywhere in the world. Basket ball is a game much similar to the one played in ancient times by Mayas of Mexico. Basketball was invented by Dr.James Naismith in 1891. The first tournament was conducted in the year 1892. The first professional league was formed in the United States in 1899. A soccer ball was earlier used. By 1941, in was changed to the present day molded ball. The courts have also undergone many changes. The courts were small and irregular in the beginning. In 1915, the National Joint rules committee was formed to set up single code governing the game.

Plyometrics, employed to develop power and explosive responsiveness, uses the Stretch-Shorten Cycle (SSC). The whole idea is to develop the most amount of force in the shortest possible time. When a muscle is flexed or shortened, it's under tension and will react with a more powerful and explosive contraction due to stored elastic energy. Unlike most other aerobic exercises, gravity becomes a major factor in the workout routine. Strength and flexibility are prerequisites for Plyometric training. The laws of Physics apply. A one-g force is equal to your weight. Two or more g's of force may be exerted by an individual during a jump. For example, a 250-pound (114 kg) individual would subject forces equal to or greater than 500 lbs (227 kg) of pressure on hip, knee and ankle joints. A 100 (45 kg) pound person would experience force equal to or greater than 200 pounds (91 kg). It's obvious that too much Plyometric training can be damaging to joints, as is the case with all types of exercise (Donald, 1998).

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Methodology

The purpose of the study was to investigate the effect of plyometric training on selected body composition among basketball players. It was hypothesized that there would be significant differences on selected body composition due to the effect of plyometric among basketball players. For the present study the 30 male basketball players from Ernakulam district, Kerala state, India were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent plyometric training and Group 'B' have not underwent any training. Body composition was assessed by Bioelectrical Impedance Analyzer. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05.

Results

The findings pertaining to analysis of co-variance between experimental group and control group on selected body composition among basketball players for pre-post test respectively have been presented in table I to II.

Table I. ANCOVA between Experimental Group and Control Group on BMI of Basketball players for Pre, Post and Adjusted Test

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	24.80	24.24	BG	2.35	1	2.35	1.42
			WG	46.08	28	1.64	
Post Test Mean	22.26	24.14	BG	26.69	1	26.69	19.80*
			WG	37.75	28	1.34	
Adjusted Post Mean	22.09	24.31	BG	35.28	1	35.28	45.22*
			WG	21.06	27	0.78	

*** Significant at 0.05 level.** **df: 1/27= 4.21**

Table I revealed that the obtained 'F' value of 45.22 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of BMI of basketball players between experimental group and control group. The graphical representation of data has been presented in figure I.

Figure I. Comparisons of Pre – Test Means Post – Test Means and Adjusted Post – Test Means for Control group and Experimental Group in relation to BMI

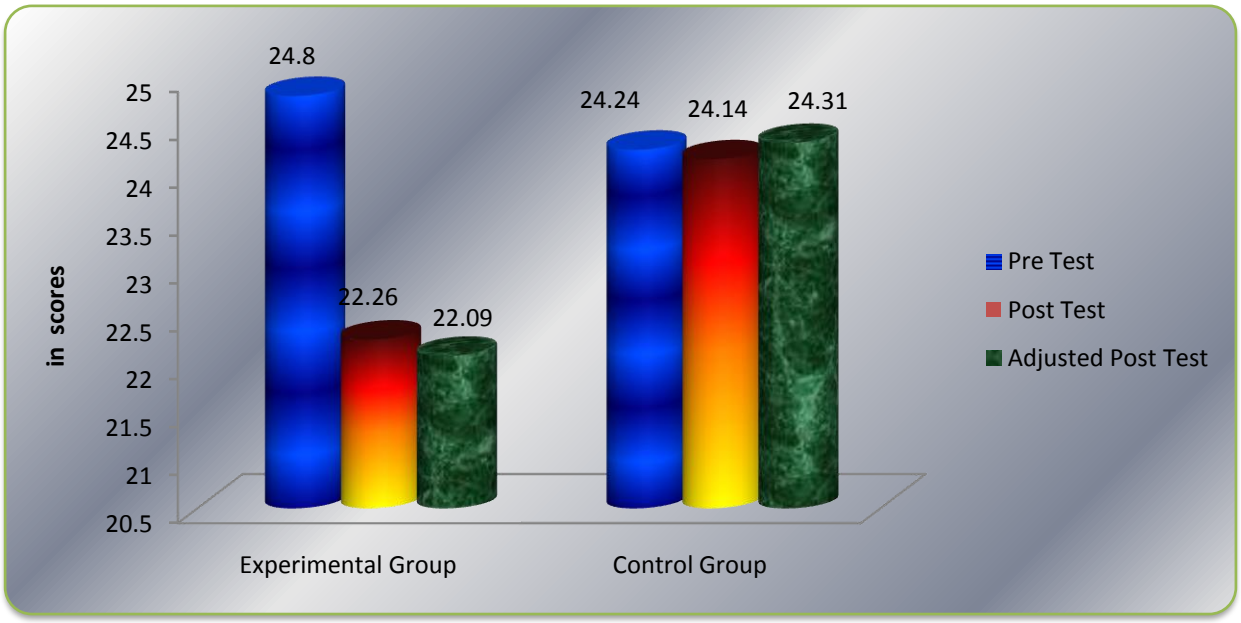


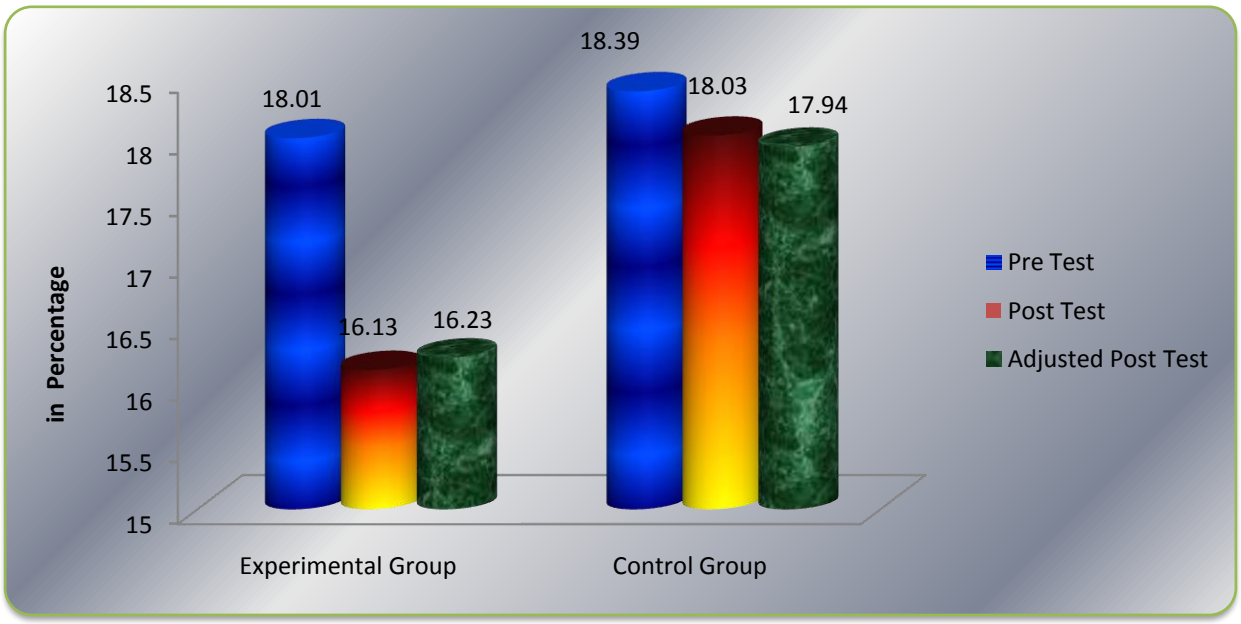
Table II. ANCOVA between Experimental Group and Control Group on Percent body fat of Basketball players for Pre, Post and Adjusted Test

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	18.01	18.39	BG	1.10	1	1.10	1.38
			WG	22.42	28	0.80	
Post Test Mean	16.13	18.03	BG	27.09	1	27.09	17.99*
			WG	42.17	28	1.50	
Adjusted Post Mean	16.23	17.94	BG	20.91	1	20.91	15.39*
			WG	36.68	27	1.35	

*** Significant at 0.05 level.** **df: 1/27= 4.21**

Table II revealed that the obtained 'F' value of 15.39 was found to be significant at 0.05 level with df 1, 27 s the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of percent body fat of basketball players between experimental group and control group. The graphical representation of data has been presented in figure II.

Figure II. Comparisons of Pre – Test Means Post – Test Means and Adjusted Post – Test Means for Control group and Experimental Group in relation to Percent body fat



In case of body composition i.e. BMI and percent body fat the results between pre and post (12 weeks) test has been found significantly higher in experimental group in comparison to control group. The findings of the present study have strongly indicates that plyometric training of twelve weeks have significant effect on selected body composition i.e., BMI and percent body fat of basketball players. Hence the hypothesis earlier set that plyometric training programme would have been significant effect on selected body composition in light of the same the hypothesis was accepted.

Conclusions

On the basis of findings and within the limitations of the study the following conclusions were drawn:

1. The plyometric training had positive impact on BMI and percent body fat among basketball players.
2. The experimental group showed better improvement on BMI and percent body fat among basketball players than the control group.

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