

Effect Of Plyometric Training and Strength Training on Selected Body Composition Variables Among Male Kabaddi Players of Palamuru University Telangana

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Abstract—The purpose of the study to find out the effect of plyometric training and strength training on selected Body Composition Variables among Male Kabaddi Players of Palamuru University Telangana state. To achieve the purpose of (45) forty-five college level male kabaddi players of palamuru university, Telangana state. Their age category from 19-24 years, they were divided in three groups, Group- 1 underwent plyometric training group (PTG) Group-2 underwent strength training group (STG) and Group- 3 control (CG). They did not participate in any special training, apart from their regular curricular activities. Training was given for twelve weeks and alternative three days per week. The pre and post-test were conducted before and after training for twelve weeks. The data collected from three groups before and after training period were statistically analyzed by using “t” test at 0.05 level of confidence was fixed to test the significant. The result of the study shows there is a significant difference between the experimental groups and control group. The criterion variable namely Bone Mass Percentage and Body Fat Percentage has been selected as dependent variables for this study. The training period would be the twelve weeks. The result shows that bone mass and body fat of the selected subjects was significantly improved on experimental groups of due to the effect of plyometric training and strength training.

Index Terms—Bone Mass Percentage, Body Fat Percentage, Plyometric Training and Strength Training.

I. INTRODUCTION

Kabaddi is basically a combative sport, with seven players on each side played for a period of 40 minutes with a 5 minutes break (20-5-20). The core idea of the game is to score points by raiding into the opponent's

court and touching as many defense players as possible without getting caught on a single breath. One player, chanting Kabaddi, Kabaddi, Kabaddi Charges into the opponent court and try to touch the opponent closest to him, while the seven opponents make maneuvers to catch the attacker. This is Kabaddi, the match of one against seven, known as the game of struggle. The players on the defensive side are called “Antis” while the player of the offence is called the “Raider”. The attack in Kabaddi is known as a ‘Raid’. The antis touched by the raider during the attack are declared ‘out’ if they do not succeed in catching the raider before he returns to home court. These players can resume play only when their side scores points against the opposite side during their raiding turn or if the remaining players succeed in catching the opponent's raider.

II. PLYOMETRIC TRAINING

This training focuses on learning to move from a muscle extension to a contraction in a rapid or "explosive" manner, such as in specialized repeated jumping. The amortization phase (transition from eccentric to contraction) must be very short (milliseconds), as a slow transition will not fully release elastic energy stored in eccentric phase, and instead some stored energy leaks away as heat. SSC training loads tendons elastically and when done properly, it can yield benefits including improved landing mechanics, force absorption, joint stability and greater force and power output, with transferability to many athletic activities, such as sprinting, where similar repetitive movements are required. Progressive

plyometric training can also help to reduce the chances of injury, especially to the lower leg, ankle and foot.

III. STRENGTH TRAINING

Strength training, also known as weight training or resistance training, is exercise designed to improve physical strength. It may involve lifting weights, bodyweight exercises (e.g., push-ups, pull-ups, and squats), isometrics (holding a position under tension, like planks), and plyometrics (explosive movements like jump squats and box jumps). Training works by progressively increasing the force output of the muscles and uses a variety of exercises and types of equipment. Strength training is primarily an anaerobic activity, although circuit training also is a form of aerobic exercise. Strength training can increase muscle, tendon, and ligament strength as well as bone density, metabolism, and the lactate threshold; improve joint and cardiac function; and reduce the risk of injury in athletes and the elderly. For many sports and physical activities, strength training is central or is used as part of their training regimen. (Brooks GA 2020)

IV. METHODOLOGY

EXPERIMENTAL DESIGN

The study was formulated as a true random group design, consisting of a pre-test and post-test. Forty-

five (N=45) male kabaddi players from M.V.S. Govt. Degree & P.G College Mahabubnagar, SCNM Govt Degree College Narayanpet, and Swami Vivekananda Degree College & P.G College, Mahabubnagar, Telangana, India. Were selected as subjects and their ages ranged from 19 to 24 years. The subjects (N=45) were randomly assigned to three equal groups of fifteen (15) subjects each namely, Experimental Group-I, Experimental Group-II, and Control Group in an equivalent manner. Experimental Group-I was involved Plyometric Training Experimental Group-II was exposed to Strength Training and Control Group-III was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. After the experimental treatment, all the forty-five (45) subjects were tested on their body composition variables. This final test scores formed as post-test scores of the subjects. The pretest and post-test scores were subjected to statistical analysis by using paired 't' test and Analysis of Covariance (ANCOVA) to find out the significance difference among the mean differences, whenever the 'F' ratio was found to be significant, pair wise comparison was used to find out paired mean significant difference. In all cases 0.05 level of significance was fixed to test the hypotheses.

V. RESULTS;

TABLE -I COMPUTATION OF ANALYSIS OF COVARIANCE ON BONE MASS PERCENTAGE OF EXPERIMENTAL AND CONTROL GROUPS (Electronic body fat scale - percentage)

Test	Means			Sources of Variance	Sum of Square	DF	Mean Square	F	'p' Value
	Plyometric Training Group (PTG)	Strength Group (STG)	Control Group (CG)						
Pre	1.69	1.67	1.66	B	0.01	2	0.003	0.16	0.86
				W	0.90	42	0.02		
Post	1.98	2.14	1.65	B	1.91	2	0.95	33.70*	0.03
				W	1.19	42	0.03		
Adjusted Post	1.97	2.15	1.67	B	1.79	2	0.89	68.72*	0.01
				W	0.53	41	0.01		

*Significant difference at 0.05 level of confidence

Table I displays that the pre-test mean on bone mass percentage of plyometric training group (PTG) was 1.69, strength training group (STG) was 1.67, and control group (CG) was 1.66.

The observed 'p' value on pre-test 0.86 was higher than the 'p' value of 0.05 to be significant at 0.05 level of confidence. This showed that there were no statistically significant differences on the pre-tests among the experimental and control groups showing

that the process of assigning of the groups was perfect while assigning the subjects to groups.

The post-test analysis showed that there was a statistically significant difference among the groups, as they obtained 'p' value 0.03 was lower than the 'p' value of 0.05. This was proved that there were significant differences among the post-test means of all the groups.

Taking into consideration of the pre and post-test among the groups, the adjusted post-test was calculated and subjected to statistical treatment. The observed 'p' value of 0.01 was smaller than the required 'p' value of 0.05. This showed that there were significant differences among the means of experimental groups due to the allotted trainings on bone mass percentage.

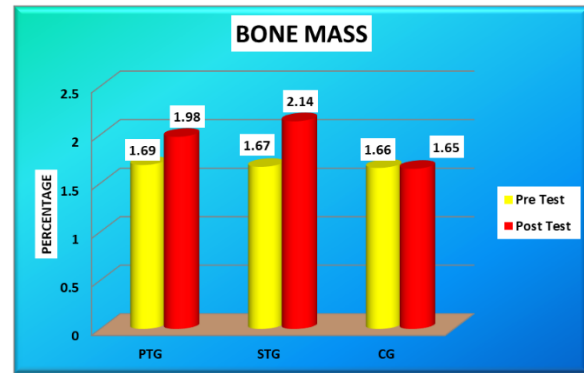


Figure -I Cylinder Diagram Displaying the Mean Difference of Pre and Post-Tests Scores on Bone Mass Percentage of Experimental and Control Groups

TABLE II COMPUTATION OF ANALYSIS OF COVARIANCE ON BODY FAT PERCENTAGE OF EXPERIMENTAL AND CONTROL (Tanita BCM-Percentage)

Test	Means			Sources of Variance	Sum of Square	DF	Mean Square	F	'P' Value
	Plyometric Training Group (PTG)	Strength Group (STG)	Control Group (CG)						
Pre	20.96	20.86	20.86	B	0.10	2	0.05	0.02	0.99
				W	93.75	42	2.23		
Post	19.43	19.22	21.01	B	28.62	2	14.31	6.76*	0.03
				W	88.89	42	2.12		
Adjusted Post	19.37	19.26	21.04	B	29.95	2	14.98	54.58*	0.01
				W	11.25	41	0.27		

*Significant difference at 0.05 level of confidence

Table II displays that the pre-test mean of body fat percentage of plyometric training group (PTG) was 20.96, strength training group (STG) was 20.86 and control group (CG) was 20.86.

The observed 'p' value on pre-test 0.99 was higher than the 'p' value of 0.05 to be significant at 0.05 level of confidence. This showed that there were no statistically significant differences on the pre-tests among the experimental and control groups showing that the process of assigning of the groups was perfect while assigning the subjects to groups.

The post-test analysis showed that there was a statistically significant difference among the groups, as the obtained 'p' value 0.03 was lower than the 'p' value of 0.05. This was proved that there were significant differences among the post-test means of all the groups.

Taking into consideration of the pre and post-test among the groups, the adjusted post-test was

calculated and subjected to statistical treatment. The observed 'p' value of 0.01 was smaller than the required 'p' value of 0.05. This showed that there were significant differences among the means of experimental groups due to the allotted trainings on body fat percentage.

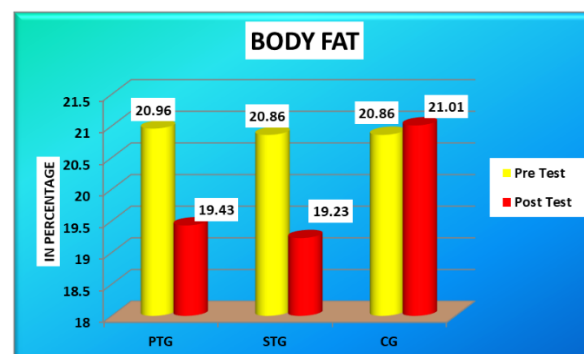


Figure -II Cylinder Diagram Displaying the Mean Difference of Pre and Post-Tests Scores on Total Body Fat Percentage of Experimental and Control Groups

VI. CONCLUSIONS

From the analysis of the data and results of this research study, the following conclusions were arrived:

1. The plyometric training positively improved the prescribed body composition variables namely bone mass percentage and body fat percentage of college level male kabaddi players due to the twelve weeks of plyometric training.
2. The strength training effectively improved the prescribed body composition variables namely bone mass percentage and body fat percentage of college level male kabaddi players due to the twelve weeks of strength training.

VII. RECOMMENDATIONS

On the basis of results arrived from this research study, the following recommendations were created.

1. The results predicted in this research study may be utilized by physical education teacher, fitness trainer and coaches for their training programme to enhance the selected motor fitness performance of college level female players.
2. The results arrived in this research study may be utilized by physical education teacher, fitness trainer and coaches for their training programme to enhance the selected physiological performance of college level men players.
3. The results found in this research study may be utilized by physical education teacher, fitness trainer and coaches for their training programme to enhance the selected body composition performance of college level men players.

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