EFFECT OF PLYOMETRIC AND WEIGHT TRAINING ON ANAEROBIC CAPACITY AMONG SEDENTARY COLLEGE MEN

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Abstract

The aim of this study was to finding out the effect of plyometric and weight training on anaerobic capacity among sedentary college men. To achieve the purpose of the study 45 sedentary college men were selected as subject at random from SCNR government Arts College, proddatur, Kadapa District, Andhra Pradesh. Their age ranged from 18 to 23 years.The subject were divided into three group namely experimental group A, experimental group B and Control group C. Experimental group A underwent to plyometric training, experimental group B underwent to weight training and group C acted as a control group they did not participate in any of the training programme other than their regular activates. The data were collected before and after the training period analysis of Covariance (ANCOVA) was applied, wherever 'f' ratio found significant among the three groups Scheffes post hoc test was applied to determine the significant differences between the paired adjusted post- test mean. The level of significance was fixed 0.05 level of significance. The result of the study showed that there was a significant improvement on anaerobic capacity in favor of experimental groups when compared with the control group.

Keywords: Plyometric training, weight training and anaerobic capacity.

Introduction

Anaerobic activities are high intensity short duration, explosive type of activities during which the circular-respiratory system will not be able to supply the full amount of oxygen needed by the working muscles. Hence, an individual will not be able to continue aerobic work for more than two minutes (Baumgartner and Jackson 1987). Anaerobic power is the amount of work performed using primarily anaerobic energy system (Baechle 1994). According to Jha (2009). Energy means ability or capacity to do a work and work is one application of force through distance. The ATP-PC system (Phosphate system) and anaerobic glycol sis (lactic acid system) are called as anaerobic metabolism. It means the synthesis of ATP through chemical reaction that does not require the presence of O_2 we breath. Anaerobic means without oxygen.

Plyometric refers to the exercises that enables a muscles to reach maximal strength in as short a time as possible (Thomas 1994).Plyometric training may improve the physiological performance by elastic strengthening loads the elastic components of the muscular system and thereby increase in the tension of the resulted (Basco and Komi 1979). Weight training is a systematic programme of exercise against some resistance for the development of the muscular system. Weight training programme can designed for a variety of purpose such as weight lifting, power lifting, body building and rehabilitation and general muscular condition by altering the intensity, duration and frequency (Heyward 1984).

Statement of the problem

The purpose of the study under investigation was intended to find the effect of plyometric and weight training on anaerobic capacity among sedentary college men.

Hypothesis

It was hypothesized that there would be significant improvement in anaerobic capacity due to the impact of Pylometric training and weight training when compared with control group.

Methodology

To achieve the purpose of the presented study, forty five sedentary college men were selected at random from SCNR government Arts College, proddatur, Kadapa District, Andhra Pradesh and their age ranged between 18 to 23 years. The selected subject were divided into three group namely experimental group A, experimental group B and Control group C. Experimental group A underwent to plyometric training, experimental group B underwent to weight training and group C acted as a control group they did not participate in any of the training programme other than their regular activities. The training was given for twelve weeks on alternative days in a week. The data were collected before and after the training period, Margaria-Kalamen Power test was used to find out the anaerobic capacity, the data were analyzed by applying the analysis of Covariance (ANCOVA), wherever the 'f' ratio founded to be significant among the groups, Scheffe's post hoc test was applied to find out the paired mean significant differences. The level of significance was fixed at 0.05 level.

Table-1

ANALYSIS OF COVARIANCE OF ANAEROBIC CAPACITY BETWEEN DIFFERENT GROUPS

	PTG	WTG	CG	SV	Sum of Square	df	Mean Square	'F'
Pretest								
Mean	79.43	79.91	82.85	B	107.98	2	53.99	
SD	19.93	18.37	21.15	W	16554.25	42	394.14	0.1
Posttest								
Mean	84.34	84.85	80.95	B	135.09	2	67.54	
SD	20.80	20.29	20.12	W	17490.39	42	416.43	0.1
Adjusted Post-test Mean	85.60	85.82	78.72	B W	485.77 287.23	2 41	242.88 7.006	34.

*Significant at 0.05 level of significance

(The table value required for significant at 0.05 level with df 2 and 42& 2and 41are 3.23 and 3.23 respectively)

The table I show that the pre-test mean values on anaerobic capacity of Plyometric training group (PTG), weight training group (WTG) and Control group (CG) were 79.43, 79.91and 82.85 respectively. The obtained 'F' ratio of 0.13 for pre-test scores is less than the table value of 3.23 for df 2 and 42 required for significant at 0.05 level of significance on anaerobic capacity. The post-test mean values on anaerobic capacity of Plyometric training group (PTG), weight training group (WTG) and Control group (CG) were 84.34, 84.85 and 80.95 respectively. The obtained 'F' ratio of 0.16 for post-test scores is less than the table value of 3.23 for df 2 and 42 required for significant at 0.05 level of significance on anaerobic capacity. The adjusted post-test mean values on anaerobic capacity of Plyometric training group (PTG), weight training group (WTG) and Control group (CG) were 85.60, 85.82 and 78.72 respectively. The obtained 'F' ratio of 34.67 for adjusted-post-test scores is greater than the table value of 3.23 for df 2 and 41 required for significant at 0.05 level of significance on anaerobic capacity.

Table-2

POST HOC TEST FOR THE DIFFERENCES BETWEEN PAIRED ADJUSTED POST- TEST MEANS OF ANAEROBIC CAPACITY

PTG	WTG	CG	MD	CI
85.60	85.82	-	0.22	2.45
85.60	-	78.72	6.88*	
-	85.82	78.72	7.10*	

*Significant at 0.05 level of significance

The table II shows that adjusted mean differences mean values between PTG and CG, WTG and CG were 6.88 and 7.10 respectively on anaerobic capacity that was greater than required significance interval value 2.45 at 0.05 level of significance. Hence, the above comparison was significant. The comparison of PTG and WTG was 0.22 this was lesser than the required confidential value 2.45. Hence these comparisons were insignificant. The pre, post and adjusted post- test mean values of plyometric training group, weight training group and Control group on anaerobic capacity are graphically represented in the figure-1

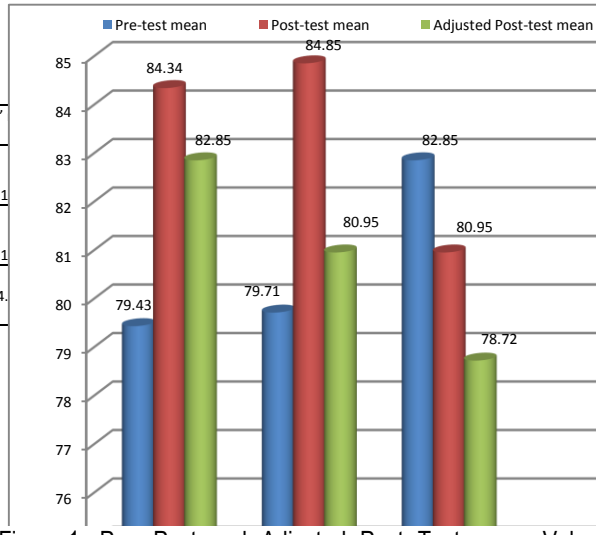

Figure-1: Pre, Post and Adjusted Post Test mean Values different groups.

Discussion on Hypothesis

Its mention in the hypotheses that there would be significant improvement on anaerobic capacity due to the impact of plyometric training and weight training when compared with control group. Hence the research hypotheses accepted.

Discussion on Findings

The result of the study indicated that there was a significant difference between the adjusted post-test means of plyometric training group and control group, weight training group and control group. The above result is in agreement with the Hetzler et al.,(1997), Tabata Izumi et al., (1995), Tabata et al., (1996) and Balciunas et al.,(2006).

Conclusion

The result of the study showed that significant improvement on anaerobic capacity due to the effect of plyometric training and weight training when compared with control group.

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