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IMPACT OF CIRCUIT WEIGHT TRAINING ON SELECTED BIOCHEMICAL VARIABLES AMONG COLLEGE LEVEL WEIGHT LIFTERS

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ABSTRACT
The purpose of the study was to find out the impact of circuit weight training on selected biochemical variables among college level weight lifters. To achieve the purpose of the study thirty college level weight lifters have been randomly selected from Manonmaniam Sundaranar University,Tirunelveli, Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The experimental group participated in the of Circuit weight training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis ofcovariance (ANCOVA) to find out the significance difference, if any between the groups. The
0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between of Circuit weight training group and control group. And also of circuit weight training group showed significant improvement on total cholesterol, low density lipoprotein and high-density lipoprotein compared to control group.

Key words: total cholesterol, low density lipoprotein, weight lifters

INTRODUCTION

Circuit weight training was devised by British researchers Morgan and Adamson. As a training method for improvement in all functions of the body, aerobic and anaerobic exercises are conducted together aimed at improvement of muscle strength and muscle endurance. Circuit weight training utilizes small intensity loads and does not include resting between exercises. Weight training is a representative resistance exercise method with short exercise times and high loads. For weight training, resistance exercise tools, such as barbells and dumbbells, are used. This exercise method is used for body building, physical training, muscle strength training and recovery from injuries.

Biochemical parameters like blood lactate, haemoglobin, urea, uric acid and lipid profiles have an advantage in regulating the training load. Assessment of blood lactate levels duringpre and immediately post exercise can be useful to determine the lactate threshold level during training and competition Nielsen and Weber (2007). Hemoglobin represents the iron status ofthe body Suhr et al (2009). Oxygen is transported to muscle primarily by haemoglobin Suhr etal (2009). During aerobic exercise the demand of oxygen increases at the working muscle, soan optimum level of haemoglobin is required to perform at the highest level with high intensity. As swimming performance depend much on the aerobic component of the athlete, therefore the players need to maintain normal haemoglobin level to optimize performance. The serumlevel of urea and uric acid are used for assessment of training related stress Urhausen and

Kindermann (2002). During the training these parameters may be evaluated at regular intervalsto assess the training load imposed on the athlete Urhausen and Kindermann (2002).

METHODOLOGY

To achieve the purpose of the study thirty College level weight lifters have been randomly selected from Manonmaniam Sundaranar University,Tirunelveli, Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The experimental group participated in the of Circuit weight training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups weretested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed totest the level of significance difference, if any between groups.

RESULT

TABLE – I

DESCRIPTIVE ANALYSIS OF BIOCHEMICAL VARIABLES OF EXPERIMENTALAND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Total cholesterol	CWTG	168.13	10.52	155.26	1.47	155.13
		CG	167.26	9.75	161.92	9.95	162.06
2	High-density lipoprotein	CWTG	41.33	2.31	42.86	.57	42.86
		CG	41.06	2.68	40.72	2.26	40.72
3	Low density lipoprotein	CWTG	101.20	11.82	109.33	6.20	109.36
		CG	101.60	9.89	102.78	8.72	102.75

WTG = Circuit weight training group CG= Control group

The tables-I the pre, post-test means, standard deviations and adjusted means on total cholesterol, high-density lipoprotein and low density lipoprotein of weight lifters were numerical presented. The analysis of covariance on selected variables of circuit weight training and control group is presented in table – II.

TABLE – II

COMPUTATION OF ANALYSIS OF COVARIANCE ON BIOCHEMICALVARIABLES AMONG COLLEGE LEVEL WEIGHT LIFTERS

S.No	Variables	Test	Sum of variance	Sum ofsquares	Df	Meansquare	F ratio
1	Total cholesterol	Pre-test	B.G.	5.63	1	5.63	0.05
			W.G.	2882.66	28	102.95	
		Post-test	B.G.	332.50	1	332.50	6.56*
			W.G.	1417.45	28	50.62	
		Adjusted means	B.S.	359.67	1	359.67	8.59*
			W.S.	1130.34	27	41.86	
2	Low density lipoprotein	Pre-test	B.G.	.53	1	.53	0.08
			W.G.	176.26	28	6.29	
		Post-test	B.G.	34.24	1	34.24	12.49*
			W.G.	76.72	28	2.74	
		Adjusted means	B.S.	34.25	1	34.25	12.06*
			W.S.	76.68	27	2.84	

3	High-density lipoprotein	Pre-test	B.G.	1.20	1	1.20	0.01
			W.G.	3328.00	28	118.85	
		Post-test	B.G.	321.19	1	321.19	5.60*
			W.G.	1603.77	28	57.27	
		Adjusted means	B.S.	327.88	1	327.88	5.88*
			W.S.	1504.55	27	55.72	

**Significant at 0.05level of confidences*

(The table values required for significance at 0.05 level of confidence for 1 & 28 and 1 & 27 are 4.20 and 4.21 respectively).

In the table the results of analysis of covariance on total cholesterol, high-density lipoprotein and low density lipoprotein. The obtained 'F' ratio of 0.05, 0.08 and 0.01 for Pre-test means was less than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on total cholesterol, high-density lipoprotein and low density lipoprotein. The obtained 'F' ratio of 6.56, 12.49 and 5.60 for post-test means was greater than the table valueof 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on total cholesterol, high-density lipoprotein and low density lipoprotein. The obtained 'F' ratio of 8.59, 12.06 and

5.88 for adjusted post-test means was greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence on total cholesterol, high-density lipoprotein and low density lipoprotein. The result of the study indicated that there was a significant difference among the adjusted post test means of circuit weight training group andcontrol group. And also circuit weight training group showed significant improvement on total cholesterol, high-density lipoprotein and low density lipoprotein compared to control group.

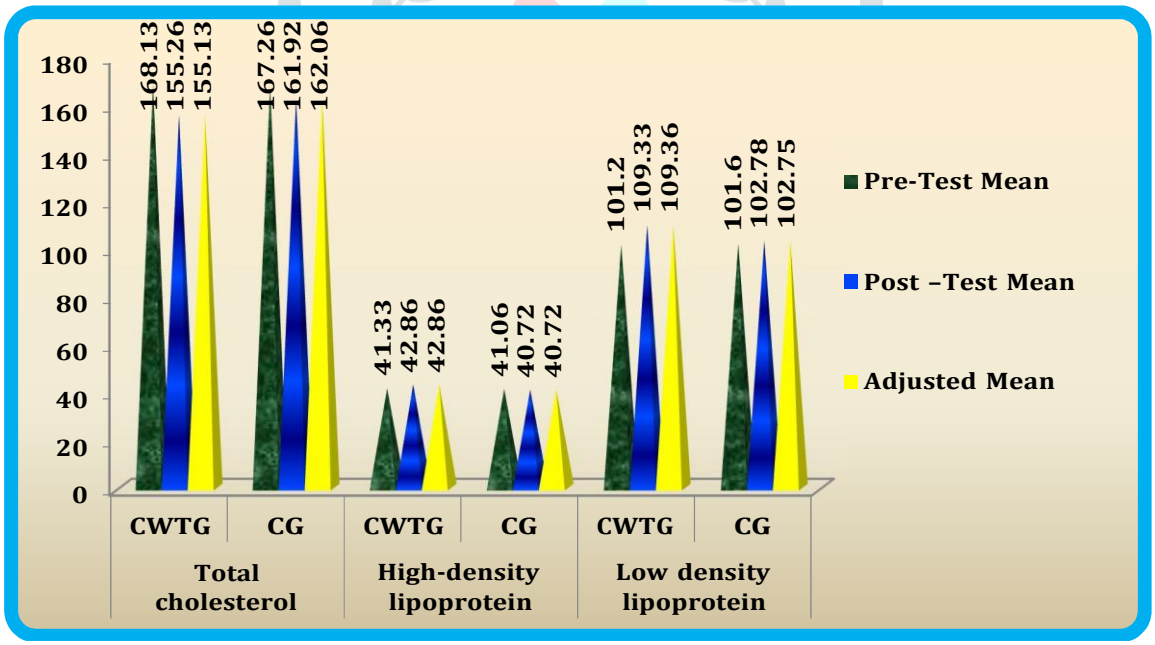

Figure-I THE PRE, POST AND ADJUSTED MEAN VALUES OF TOTAL CHOLESTEROL, HIGH-DENSITY LIPOPROTEIN AND LOW DENSITY LIPOPROTEIN OF CIRCUIT WEIGHT TRAINING GROUP AND CONTROL GROUP ARE GRAPHICALLY REPRESENTED IN THE FIGURE-I

DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group which underwent circuit weight training had showed significant improved in the selected variables namely such as total cholesterol, high-density lipoprotein and low density lipoprotein when compared to the control group. The control group did not show significant improvement in any of the selected variables. The past studies on selected biochemical variables reveals Seyed Morteza Tayebi et al (2010), Kelley et al (2009), Jurimae et al (1990).

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in all the biochemicalvariables of total cholesterol, high-density lipoprotein and low density lipoprotein.
2. The control group did not show significant improvement in any of selected variables.

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