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Influences of Floor Aerobics, Step Aerobics and Combined Training on Biochemical Variables of Women Students

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Abstract

The purpose of the study was to find out the influences of floor aerobics, step aerobics and combined training on biochemical variables of women students. To achieve the purpose of the present study, one hundred and twenty women students from the colleges in Chennai, Tamilnadu, India were selected as subjects at random and their ages ranged from 18 to 22 years. The subjects were divided into four equal groups of thirty each. Pre test was conducted for all the subjects on selected bio-chemical variables. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group I, Experimental Group II, Experimental Group III and Control Group in an equivalent manner. Experimental Group I was exposed to floor aerobics training, Experimental Group II was exposed to step aerobics training, Experimental Group III was exposed to combined training and Control Group 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 subjects were tested on their biochemical variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant; Scheffe's post hoc test was used. In all cases 0.05 level of confidence was fixed to test hypotheses. The floor aerobics training had shown significant improvement in all the selected biochemical variables among women students after undergoing floor aerobics training for a period of twelve weeks. The step aerobics had shown significant improvement in all the selected biochemical variables among women students after undergoing the step aerobics for a period of twelve weeks. The combined training group had shown better performance on biochemical variables among women students than the other groups.

Keywords: Floor Aerobics, Step Aerobics, bio-Chemical, Women.

Introduction

Aerobic exercise and fitness can be contrasted with anaerobic exercise, of which strength training and short-distance running are the most salient examples. The two types of exercise differ by the duration and intensity of muscular contractions involved, as well as by how energy is generated within the muscle. New research on the endocrine functions of contracting muscles has shown that both aerobic and anaerobic exercise promote the secretion of myokines, with attendant benefits including growth of new tissue, tissue repair, and various anti-inflammatory functions, which in turn reduce the risk of developing various inflammatory diseases. Myokine secretion in turn is dependent on the amount of muscle contracted, and the duration and intensity of contraction. As such, both types of exercise produce endocrine benefits.

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Floor aerobics are done with count. Floor aerobics was developed in manner to avoid to do exercise in open place. Day by day the women took the advantageous that is to be performed. Step aerobics classes are offered at many gyms and fitness centers which have a group exercise program. Step aerobics was innovated by Gin Miller around 1989. After a knee injury, Gin consulted with an orthopedic doctor, who recommended she strengthen the muscles supporting the knee by stepping up and down on a milk crate and from this she developed the step regimen.

Methodology

The purpose of the study was to find out the influences of floor aerobics, step aerobics and combined training on biochemical variables of women students. To achieve the purpose of the present study, one hundred and twenty women students from the colleges in Chennai, Tamilnadu, India were selected as subjects at random and their ages ranged from 18 to 22 years. The subjects were divided into four equal groups of thirty each. Pre test was conducted for all the subjects on

selected bio-chemical variables. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group I, Experimental Group II, Experimental Group III and Control Group in an equivalent manner. Experimental Group I was exposed to floor aerobics training, Experimental Group II was exposed to step aerobics training, Experimental Group III was exposed to combined training and Control Group 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 subjects were tested on their biochemical variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant; Scheffe's post hoc test was used. In all cases 0.05 level of confidence was fixed to test hypotheses.

Results

Table I. Computation of analysis of covariance of floor aerobics training step aerobics training combined training and control groups on LDL

	FATG	SATG	CTG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	123.33	125.00	123.00	124.13	**BG**	71.73	3	23.91	1.19
					WG	2318.13	116	19.98	
Post-Test Means	110.23	110.56	105.96	123.33	**BG**	5067.55	3	1689.18	45.52*
					WG	4304.36	116	37.10	
Adjusted Post-Test Means	110.11	110.82	105.77	123.39	**BG**	5148.23	3	1716.07	47.12*
					WG	4187.87	115	36.41	

An examination of table - I indicated that the pre test means of floor aerobics training, step aerobics training, combined training and control groups were 123.33, 125.00, 123.00 and 124.13 respectively. The obtained F-ratio for the pre-test was 1.19 and the table F-ratio was 2.68. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 116. This proved that there were no significant difference between the experimental and control groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the floor aerobics training, step aerobics training, combined training and control groups were 110.23, 110.56, 105.96 and 123.33 respectively. The obtained F-ratio for the post-test was 45.52 and the table F-ratio was 2.68. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 116. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the floor aerobics training, step aerobics training, combined training and control groups were 110.11, 110.82, 105.77 and 123.39 respectively. The obtained F-ratio for the adjusted post-test means was 47.12 and the table F-ratio was 2.68. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 115. This proved that there was a significant difference among the means due to the experimental trainings on LDL. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table-II.

Table II. The scheffe's test for the differences between the adjusted post test means on LDL

Adjusted Post-Test Means				Mean Difference	Confidence Interval
FATG	**SATG**	**CTG**	**CG**		
110.11	110.82	---	---	0.71	4.41
110.11	---	105.77	---	4.34*	
110.11	---	---	123.39	13.28*	
---	110.82	105.77	---	5.05*	
---	110.82	---	123.39	12.57*	
---	---	105.77	123.39	17.62*	

**** Significant at 0.05 level of confidence***

The multiple comparisons showed in Table II proved that there existed significant differences between the adjusted means of floor aerobics training with combined group (4.34), step aerobics training with combined group (13.28), floor aerobics training with control group (5.05), step aerobics training with control group (12.57) and combined group with control group (17.62) . There was no significant difference between floor aerobics training and step aerobics training group (0.71) at 0.05 level of confidence with the confidence interval value of 4.41. The pre, post and adjusted means on LDL were presented through bar diagram for better understanding of the results of this study in Figure-I.

Figure I. Pre post and adjusted post test differences of the, floor aerobics training step aerobics training combined training and control groups on LDL

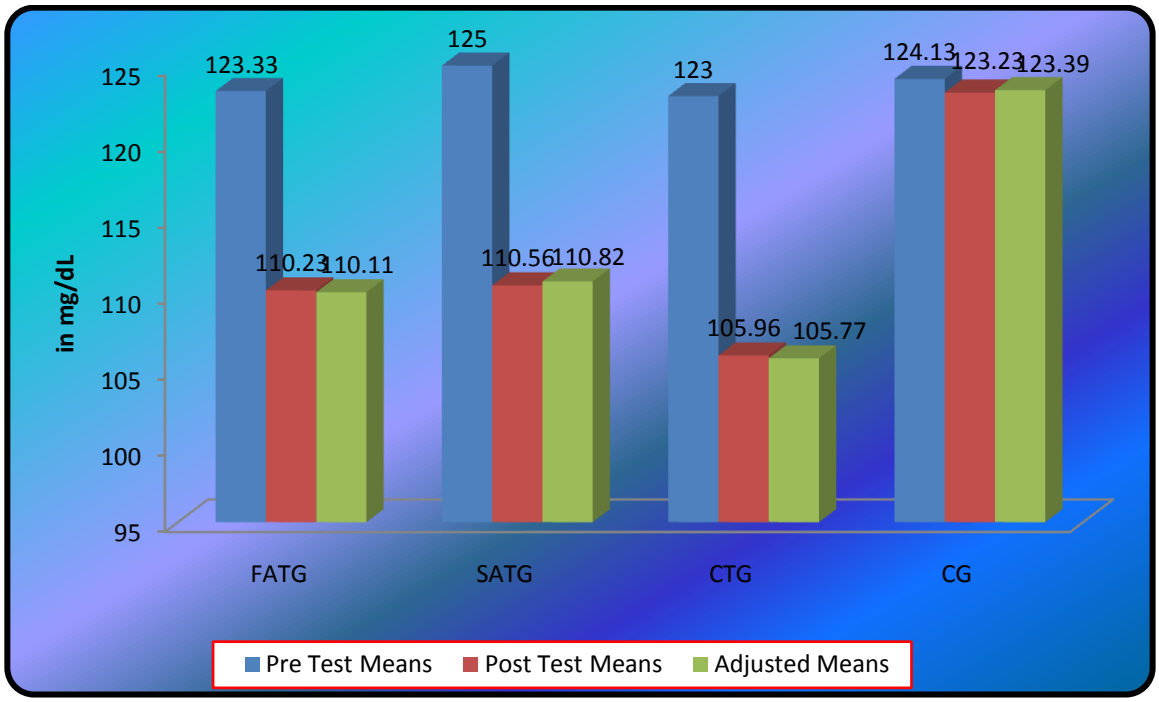


Table III. Computation of analysis of covariance of floor aerobics training step aerobics training combined training and control groups on HDL

	FATG	SATG	CTG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	53.23	52.90	53.40	52.96	**BG**	4.89	3	1.63	0.52
					WG	360.23	116	3.10	
Post-Test Means	58.93	58.66	63.86	52.66	**BG**	1891.20	3	630.40	133.28*
					WG	548.66	116	4.73	
Adjusted Post-Test Means	58.93	58.65	63.87	52.66	**BG**	1880.96	3	626.98	131.48*
					WG	548.37	115	4.76	

An examination of table - III indicated that the pre test means of floor aerobics training, step aerobics training, combined training and control groups were 53.23, 52.90, 53.40 and 52.96 respectively. The obtained F-ratio for the pre-test was 0.52 and the table F-ratio was 2.68. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 116. This proved that there were no significant difference between the experimental and control groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the floor aerobics training, step aerobics training, combined training and control groups were 58.93, 58.66, 63.86 and 52.66 respectively. The obtained

F-ratio for the post-test was 133.28 and the table F-ratio was 2.68. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 116. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the floor aerobics training, step aerobics training, combined training and control groups were 58.93, 58.65, 63.87 and 52.66 respectively. The obtained F-ratio for the adjusted post-test means was 131.48 and the table F-ratio was 2.68. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 115. This proved that there was a significant difference among the means due to the experimental trainings on HDL. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table-IV.

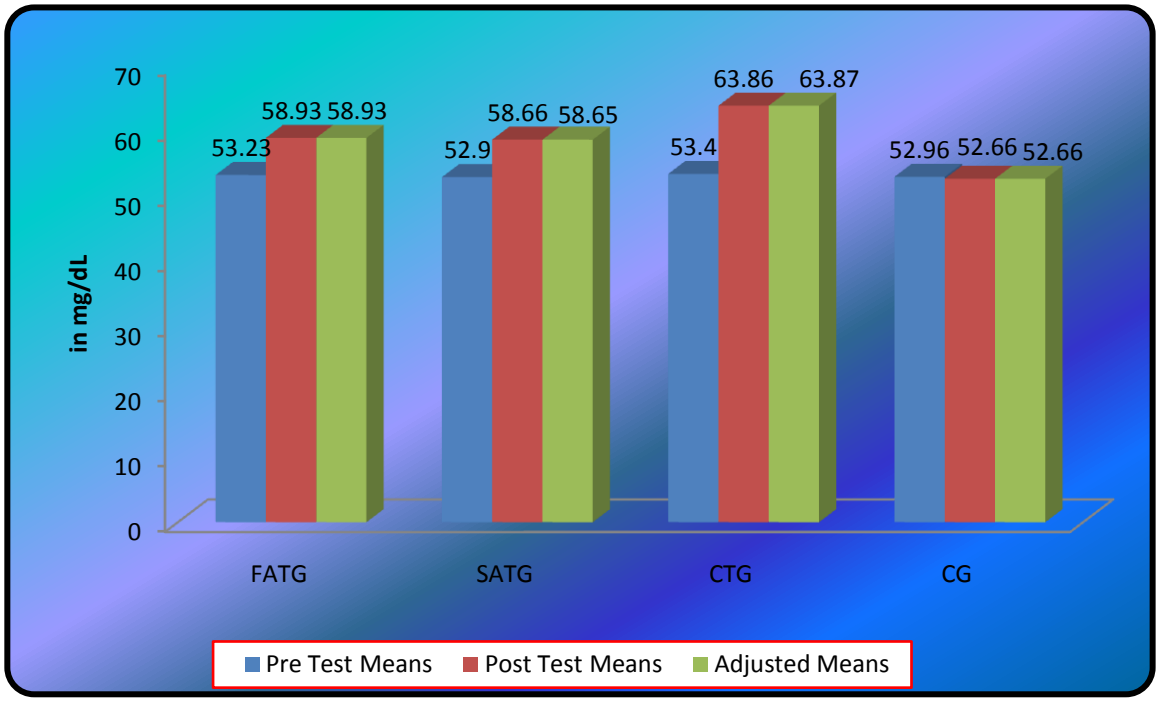
Table IV. The scheffe's test for the differences between the adjusted post test means on HDL

Adjusted Post-Test Means				Mean Difference	Confidence Interval
FATG	SATG	CTG	CG		
58.93	58.66	---	---	0.27	1.58
58.93	---	63.87	---	4.94*	
58.93	---	---	52.66	6.27*	
---	58.66	63.87	---	5.21*	
---	58.66	---	52.66	6.00*	
---	---	63.87	52.66	11.21*	

**** Significant at 0.05 level of confidence***

The multiple comparisons showed in Table IV proved that there existed significant differences between the adjusted means of floor aerobics training with combined group (4.94), step aerobics training with combined group (6.27), floor aerobics training with control group (5.21), step aerobics training with control group (6.00) and combined group with control group (11.21) . There was no significant difference between floor aerobics training and step aerobics training group (0.27) at 0.05 level of confidence with the confidence interval value of 1.58. The pre, post and adjusted means on HDL were presented through bar diagram for better understanding of the results of this study in Figure-II.

Figure II. Pre post and adjusted post test differences of the, floor aerobics training step aerobics training combined training and control groups on HDL



Conclusions

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

1. The floor aerobics training had shown significant improvement in all the selected biochemical variables among women students after undergoing floor aerobics training for a period of twelve weeks.
2. The step aerobics had shown significant improvement in all the selected biochemical variables among women students after undergoing the step aerobics for a period of twelve weeks.
3. The combined training group had shown better performance on biochemical variables among women students than the other groups.

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