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Research article

EFFECT OF AEROBIC DANCE AQUAROBICS AND COMBINED TRAINING ON SELECTED BIOCHEMICAL VARIABLES OF ENGINEERING COLLEGE STUDENTS

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Abstract

The purpose of the study was to find out the effect of aerobic dance aquarobics and combined training on selected biochemical variables of engineering college students. To achieve the purpose of the present study, forty five engineering college students from Tamil Nadu, India were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups of fifteen each. Group I acted as Experimental Group I (Aerobic dance training), Group II acted as Experimental Group II (Aquarobics training) Group III acted as Experimental Group III (Combined training). The duration of experimental period was 12 weeks. After the experimental treatment, all the forty five subjects were tested on High density lipoprotein, and Low density lipoprotein. The 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 difference. Whenever the 'F' ratio for adjusted mean was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses. The combined training group had shown significant changes in both High density lipoprotein and Low density lipoprotein of engineering college students than the aerobic dance training group and aquarobics training group.

Key words: *Aerobic dance, Aquarobics, High density lipoprotein, and Low density lipoprotein.*

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INTRODUCTION

The body can procure this energy in two different ways: Without oxygen (anaerobic) – when there is not enough oxygen, waste products will pile up in the muscles. With oxygen (aerobic) – this means that the exercise is performed under circumstances where there is enough oxygen in the muscles. To improve endurance the fractioned should train aerobic system and move to lactate threshold. Aerobic training can be divided into three overlapping training intensity areas: low, moderate and high intensity training. The overall purpose of aerobic training is to improve the oxygen transport in the circulation, improve the muscle's ability to use the available oxygen and to improve the ability to recuperate after hard exercise. Nowadays aerobics have been performed in different nature for specific reasons.

Aerobic exercises can also be done without the use of equipment. Many people who do not have gym memberships or who do not want to purchase any kind of equipment engage in this option for aerobic exercise. Once again, aerobic exercises include activities that last for a long period of time with a high heart rate. Jogging and running long distances are the most common forms of aerobic exercise that can be done without any kind of equipment. Another example of aerobic exercise, which is an alternative to jogging and running that many people actually find enjoyable and fun, is dancing. Specific kinds of dance include jazz, tap, hip hop and others.

Aquarobics is often part of an exercise regimen for those who have sustained injury to the bones or joints, but in order to get the full benefit of such exercise, it needs to be practiced in waist to shoulder deep water. The farther one's upper body is from the water, the less impact reduction will be accomplished. Aquarobics practiced in water at least waist or chest deep will significantly reduce impact on the legs, reducing some of the unwanted side-effects of regular aerobics classes like shin splints. However, deeper water also requires harder work to move one's body through water resistance.

METHODS AND MATERIALS

The purpose of the study was to find out the effect of aerobic dance aquarobics and combined training on selected biochemical variables of engineering college students. To achieve the purpose of the present study, forty five male engineering college students from Tamilnadu, were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups of fifteen each. Group I acted as Experimental Group I (Aerobic dance training), Group II acted as Experimental Group II (Aquarobics training) Group III acted as Experimental Group III (Combined training). The duration of experimental period was 12 weeks. After the experimental treatment, all the forty five subjects were tested on their selected 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 difference. Whenever the 'F' ratio for adujested test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses.

RESULTS AND DISCUSSION

TABLE I
COMPUTATION OF ANALYSIS OF COVARIANCE OF MEANS OF AEROBIC DANCE AQUAROBICS AND COMBINED TRAINING GROUP ON HIGH DENSITY LIPOPROTEIN (HDL)

	ADT	AQT	CT	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	61.22	62.15	61.73	BG	6.55	2	3.27	0.58
				WG	235.79	42	5.61	
Post-Test Means	68.25	68.90	73.40	BG	236.42	2	118.21	9.42*
				WG	526.70	42	12.54	
Adjusted Post-Test Means	68.36	68.79	73.40	BG	233.55	2	116.77	9.30*
				WG	514.36	41	12.54	

An examination of table – I indicated that the pre test means of aerobic dance training group, aquarobics training group and combined training group were 61.22, 62.15 and 61.73 respectively. The obtained F-ratio for the pre-test was 0.58 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there were no significant differences between the experimental and combined training group indicating that the process of randomization of the group was perfect while assigning the subjects to group.

The post-test means of the aerobic dance training group, aquarobics training group and combined training group were 68.25, 68.90 and 73.40 respectively. The obtained F-ratio for the post-test was 9.42 and the table F-ratio was 3.22. Hence post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that the differences between the post test means of the subjects were significant.

The adjusted post-test means of the aerobic dance training group, aquarobics training group and combined training group were 68.36, 68.79 and 73.40 respectively. The obtained F-ratio for the adjusted post-test means was 9.30 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. 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- II

TABLE II
SCHEFFE'S TEST FOR DIFFERENCES BETWEEN ADJUSTED POST TEST PAIRED MEANS ON HIGH DENSITY LIPOPROTEIN (HDL)

Adjusted Post-test means			Mean Difference	Required CI
Aerobic Dance Training	Aquarobics Training	Combined Training		
68.36	68.79	---	0.43	3.28
68.36	---	73.40	5.04*	
---	68.79	73.40	4.61*	

**** 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 aerobic dance training group and combined training group (5.04) and between aquarobics training group and combined training group (4.61). There was no significant difference between aerobic dance training group and aquarobics training group (0.43) at 0.05 level of confidence with the confidence interval value of 3.28.

FIGURE I
PRE POST AND ADJUSTED POST TEST MEANS OF AEROBIC DANCE AQUAROBICS AND COMBINED TRAINING GROUP ON HIGH DENSITY LIPOPROTEIN (HDL)

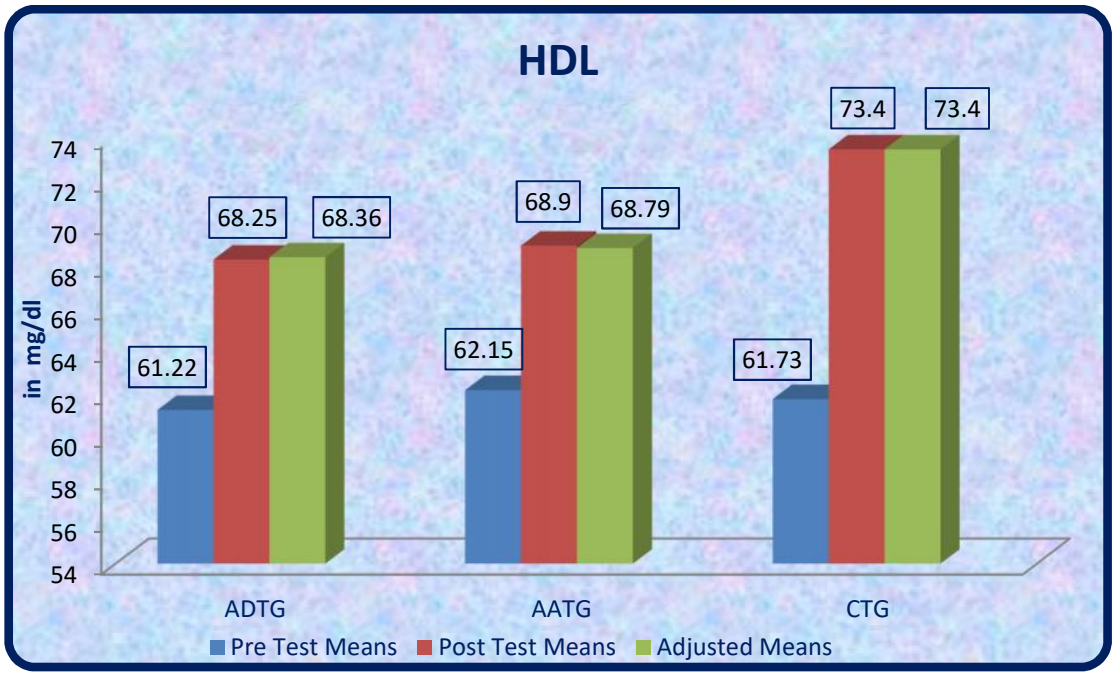


TABLE – III
COMPUTATION OF ANALYSIS OF COVARIANCE OF MEANS OF AEROBIC DANCE AQUAROBICS AND COMBINED TRAINING GROUPS ON LOW DENSITY LIPOPROTEIN (LDL)

	ADT	AQT	CT	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	105.94	106.80	106.64	BG	6.27	2	3.13	0.83
				WG	157.01	42	3.73	
Post-Test Means	95.99	95.51	93.46	BG	54.32	2	27.16	3.96*
				WG	287.44	42	6.84	
Adjusted Post-Test Means	95.93	95.55	93.48	BG	51.90	2	25.95	3.72*
				WG	285.55	41	6.96	

An examination of table - III indicated that the pre test means of aerobic dance training aquarobics and combined training groups were 105.94, 106.80 and 106.64 respectively. The obtained F-ratio for the pre-test was 0.83 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there were no significant differences between the experimental and combined training groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups.

The post-test means of the aerobic dance training aquarobics and combined training groups were 95.99, 95.51 and 93.46 respectively. The obtained F-ratio for the post-test was 3.96 and the table F-ratio was 3.22. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that the differences between the post test means of the subjects were significant.

The adjusted post-test means of the aerobic dance training, aquarobics and combined training groups were 95.93, 95.55 and 93.48 respectively. The obtained F-ratio for the adjusted post-test means was 3.72 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. 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- IV

TABLE –IV

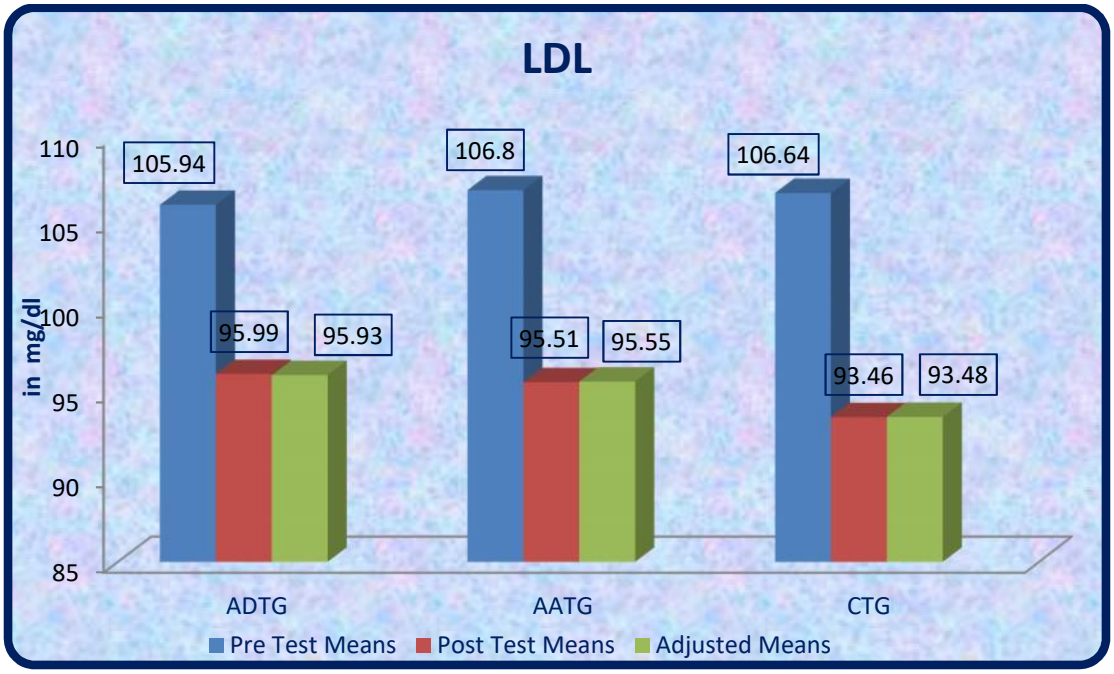
The scheffe's test for the differences between the adjusted post test paired means on Low Density Lipoprotein (LDL)

Adjusted Post-test means			Mean Difference	Required CI
Aerobic Dance Training	Aquarobics Training	Combined Training		
95.93	95.55	---	0.38	2.44
95.93	---	93.48	2.45*	
---	95.55	93.48	2.07	

**** 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 aerobic dance training with combined training group (2.45). There was no significant difference between aerobic dance training and aquarobics training group (0.38) and between aquarobics training group and combined training group (2.07) at 0.05 level of confidence with the confidence interval value of 2.44.

FIGURE–II
PRE POST AND ADJUSTED POST TEST DIFFERENCES OF THE AEROBIC DANCE AQUAROBICS AND COMBINED TRAINING GROUPS ON LOW DENSITY LIPOPROTEIN (LDL)



DISCUSSION ON FINDINGS

HIGH DENSITY LIPOPROTEIN (HDL)

It is observed that there is a significant differences on the high density lipoprotein (HDL) between the adjusted post-test means of three groups aerobic dance training group, aquarobics training group and combined training group.

However, the results of the Scheffe's post hoc test has indicated that there is a significant difference between aerobic dance training group and combined training group; and between aquarobics training group and combined training group in high density lipoprotein (HDL). But there is no significant difference between aerobic dance training group and aquarobics training group in high density lipoprotein (HDL) of Engineering college students.

In analyzing the effect of 12 weeks combined training, it had significantly increased the high density lipoprotein

(HDL) than other two groups. Further, both the Aerobic Dance Training Group and Aquarobics Training group showed similar effect on high density lipoprotein. This result is in line with the study conducted earlier by Prasad, et al. (2006), Mosher, et al. (2005) & Kin, et al. (2001).

LOW DENSITY LIPOPROTEIN (LDL)

It is observed that there is a significant differences on the low density lipoprotein (LDL) between the adjusted post-test means of three groups aerobic dance training group, aquarobics training group and combined training group.

However, the results of the Scheffe's post hoc test has indicated that there is a significant difference between aerobic dance training group and combined training group in low density lipoprotein (LDL). But there is no significant difference between aerobic dance training group and aquarobics training group; and between aquarobics training group and combined training group in low density lipoprotein (LDL) of Engineering college students.

In analyzing the effect of 12 weeks combined training, it had significantly reduced the low density lipoprotein (LDL) than the aerobic dance training group. Further, both the Aerobic Dance Training Group and Aquarobics Training group showed similar effect on low density lipoprotein. This result is in line with the study conducted earlier by Yong, et al. (2013), Prasad, et al. (2006), Mosher, et al. (2005) & Kin, et al. (2001).

CONCLUSIONS

- It is concluded that the combined training significantly increased the high density lipoprotein (HDL) than other two groups.
- It is concluded that the Aerobic Dance Training Group and Aquarobics Training group showed similar effect on high density lipoprotein.
- It is concluded that the combined training significantly reduced the low density lipoprotein (LDL) than the aerobic dance training group.
- It is concluded that the Aerobic Dance Training Group and Aquarobics Training group showed similar effect on low density lipoprotein.

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