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Influence Aerobic Exercises on Selected Bio-Chemical Variables among Women Anemic Patients

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Abstract
The purpose of the study was to find out the effect of aerobic exercises on selected bio-chemical variables among women anemic patients. To achieve the purpose of the present study, thirty women anemic patients were selected from Namakkal district, Tamilnadu as subjects and their age shall ranged from 20 to 30. The subjects were divided into two equal groups. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=30) were randomly assigned to two equal groups of fifteen subjects each. The groups were assigned as aerobic exercises group (AEG) and control group (CG) in an equivalent manner. RBC, WBC and haemoglobin were assessed by blood test. The experimental group were participated the training for a period of six weeks to find out the outcome of the training package. The aerobic exercises group (AEG) had shown significant improvement in all the selected bio-chemical variables.

Keywords: Aerobic Exercises, Anemic, RBC, WBC, Hemoglobin.

Introduction

Aerobic exercise is a moderate intensity workout that extends over a certain period of time and uses oxygen in this process. Aerobics has become the most happening workout trend among the youth. Not only is performing aerobic exercise interesting, but also is very beneficial for health. There are different types of aerobics like fitness walking, jogging, swimming, kickboxing, inline skating, bicycling etcetera. In line skating or rollerblading is one of the most popular sports that are luring millions of people into trying it. It helps to strengthen lower back and works a great deal in enhancing cardiovascular development. Kickboxing is extremely useful for quick weight loss, as it helps in burning about 350-450 calories during a 50 minute workout session. At the initial level, kickboxing consists of some basic stretches and cardio warm up (Cooper, 1969). 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 improve the ability to recuperate after hard exercise. Anemia is a decrease in number of red blood cells (RBCs) or less than the normal quantity of hemoglobin in the blood. However, it can include decreased oxygen-binding ability of each hemoglobin molecule due to deformity or lack in numerical

development as in some other types of hemoglobin deficiency.

Methodology

The purpose of the study was to find out the effect of aerobic exercises on selected bio-chemical variables among women anemic patients. To achieve the purpose of the present study, thirty women anemic patients were selected from Namakkal district, Tamilnadu as subjects and their age shall ranged from 20 to 30. The subjects were divided into two equal groups. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=30) were randomly assigned to two equal groups of fifteen subjects each. The groups were assigned as aerobic exercises group (AEG) and control group (CG) in an equivalent manner. The experimental group were participated the training for a period of six weeks to find out the outcome of the training package. The following variables were selected,

Table I. Bio-Chemical Variables

S.No	Variables	Tests
1	RBC	
2	WBC	Blood Test
3	Hemoglobin	

Analysis of covariance (ANCOVA) was applied because the subjects were selected random, but the groups were not equated in relation to the factors to be examined. Hence the difference between means of the two groups in the pre-test had to be taken into account

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during the analysis of the post-test differences between the means. This was achieved by the application of the analysis of covariance, where the final means were adjusted for differences in the initial means, and the adjusted means were tested for significance. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.

Results

Table I. Computation of analysis of covariance of mean of aerobic exercises and control groups on RBC (in million/cu mm blood)

	Aerobic exercises	Control Group	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	3.36	3.46	BG	0.09	1	0.09	1.12
			WG	2.42	28	0.08	
Post-Test Means	4.32	3.41	BG	6.55	1	6.55	131.00*
			WG	1.41	28	0.05	
Adjusted Post-Test Means	4.33	3.39	BG	6.87	1	6.87	171.75*
			WG	1.14	27	0.04	

An examination of table - I indicated that the pretest means of aerobic exercises and control groups were 3.36 and 3.46 respectively. The obtained F-ratio for the pre-test was 1.12 and the table F-ratio was 4.19. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 1 and 28. The post-test means of the aerobic exercises and control groups were 4.32 and 3.41 respectively. The obtained F-ratio for the post-test was 131.00 and the table F-ratio was 4.19. Hence the pre-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 28. The adjusted post-test means of the aerobic exercises and control groups were 4.33 and 3.39 respectively. The obtained F-ratio for the adjusted post-test means was 171.75 and the table F-ratio was 4.21. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 27. The pre, post and adjusted post test mean values of aerobic exercises and control groups, on RBC are graphically represented in the figure -I.

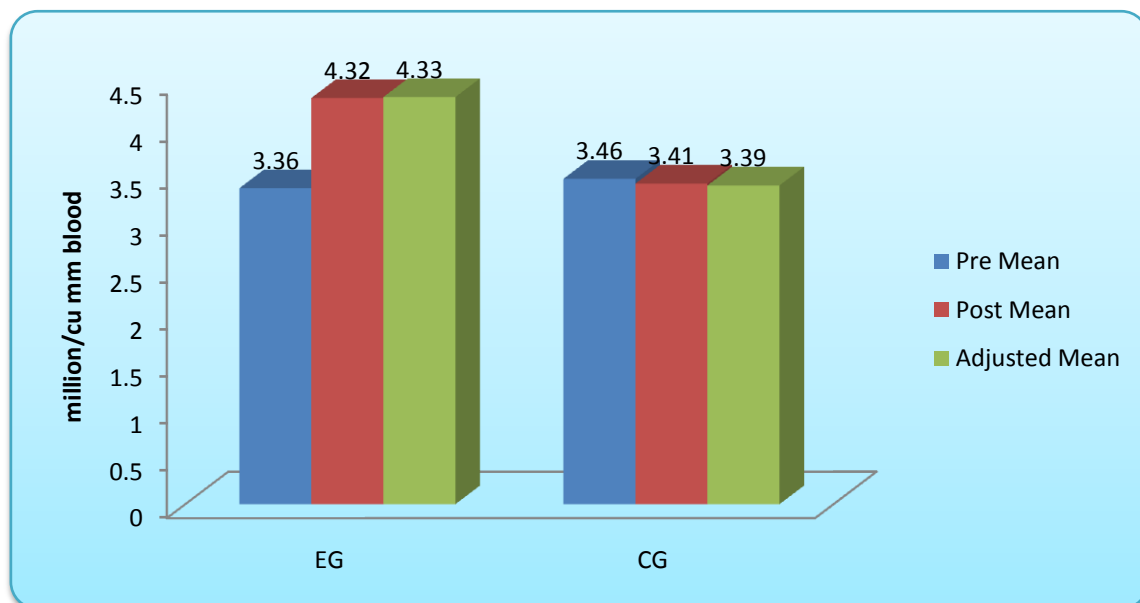**Figure I.** Pre and post test differences of the aerobic exercises and control groups on RBC

Table II. Computation of analysis of covariance of mean of aerobic exercises and control groups on WBC (in microliter of blood)

	Aerobic exercises	Control Group	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	3989.93	4126.00	BG	138856.03	1	138856.03	1.92
			WG	2021258.93	28	72187.82	
Post-Test Means	4663.20	4057.46	BG	275184.53	1	2751846.53	13.37*
			WG	5011862.13	28	178995.10	
Adjusted Post-Test Means	4671.87	4033.79	BG	2724533.80	1	2724533.80	14.77*
			WG	4978812.54	27	184400.50	

An examination of table – II indicated that the pretest means of aerobic exercises and control groups were 3989.93 and 4126.00 respectively. The obtained F-ratio for the pre-test was 1.92 and the table F-ratio was 4.19. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 1 and 28. The post-test means of the aerobic exercises and control groups were 4663.20 and 4057.46 respectively. The obtained F-ratio for the post-test was 15.37 and the table F-ratio was 4.19. Hence the pre-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 28. The adjusted post-test means of the aerobic exercises and control groups were 4671.87 and 4033.79 respectively. The obtained F-ratio for the adjusted post-test means was 14.77 and the table F-ratio was 4.21. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 27. The pre, post and adjusted post test mean values of aerobic exercises and control groups, on WBC are graphically represented in the figure -II.

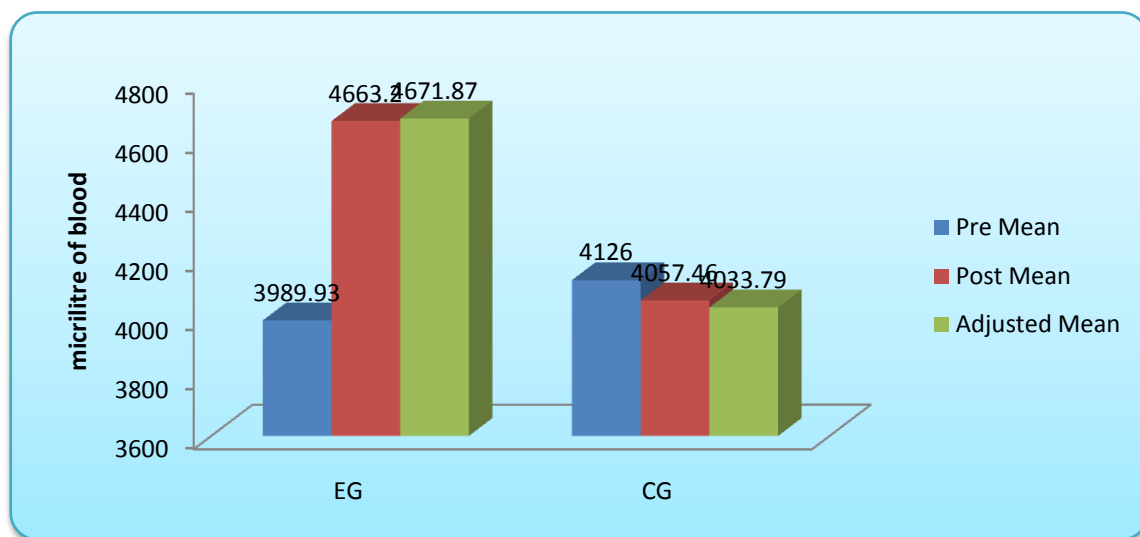**Figure II.** Pre and post test differences of the aerobic exercises and control groups on WBC

Table III. Computation of analysis of covariance of mean of aerobic exercises and control groups on hemoglobin (g/dL)

	Aerobic Exercises	Control Group	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	8.54	8.48	BG	0.77	1	0.77	0.85
			WG	25.45	28	0.90	
Post-Test Means	12.72	8.62	BG	138.54	1	138.54	87.68*
			WG	44.40	28	1.58	
Adjusted Post-Test Means	12.75	8.66	BG	130.05	1	130.05	90.94*
			WG	38.66	27	1.43	

An examination of table – III indicated that the pretest means of aerobic exercises and control groups were 8.54 and 8.48 respectively. The obtained F-ratio for the pre-test was 0.85 and the table F-ratio was 4.19. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 1 and 28. The post-test means of the aerobic exercises and control groups were 12.72 and 8.62 respectively. The obtained F-ratio for the post-test was 87.68 and the table F-ratio was 4.19. Hence the pre-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 28. The adjusted post-test means of the aerobic exercises and control groups were 12.75 and 8.66 respectively. The obtained F-ratio for the adjusted post-test means was 90.94 and the table F-ratio was 4.21. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 27. The pre, post and adjusted post test mean values of aerobic exercises and control groups, on hemoglobin are graphically represented in the figure -III.

Figure III. Pre and post test differences of the aerobic exercises and control groups on hemoglobin
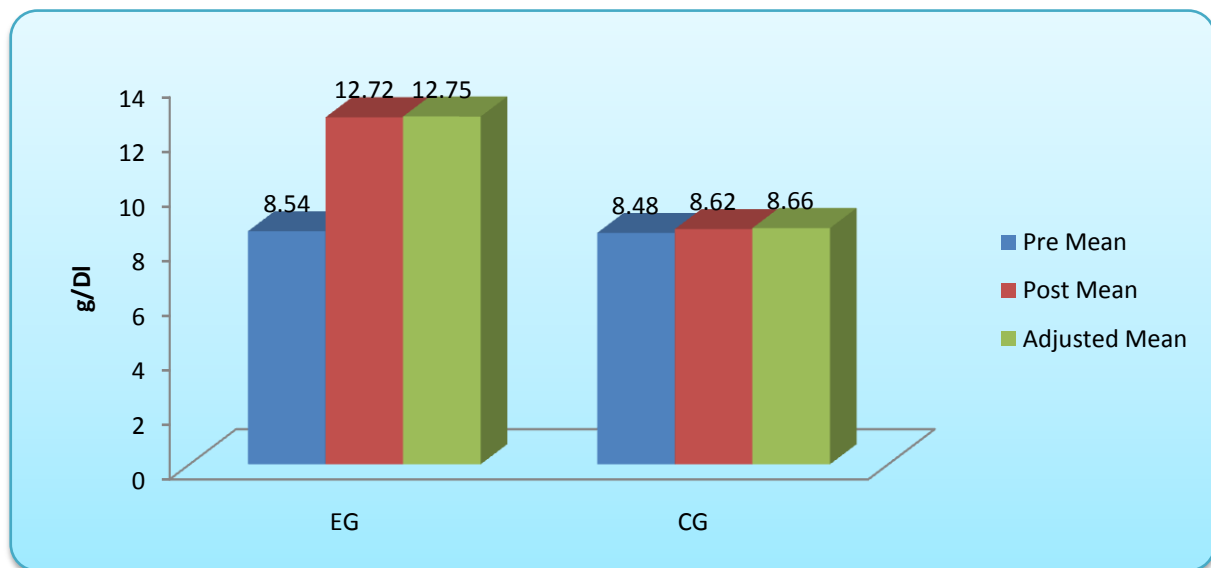
Conclusions

Within the limitation of the present study, the conclusions were drawn.

1. The aerobic exercises group (AEG) had shown significant improvement in all the selected bio-chemical variables.
2. The experimental group had shown significant improvement in all the selected bio-chemical than the control group.

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