CHAPTER - IV

RESULTS AND DISCUSSIONS

4.1 OVERVIEW

This chapter deals with the analysis of data collected from the subjects under the study. The purpose of this study was to find out the effects of aerobic rhythmic exercise and weight training on selected physiological, hematological, and kin anthropometric variables among college men obese students. The three groups namely an experimental group- I (Aerobic rhythmic exercises) , experimental group- II(Weight training) and group- III (Control group, No training was provided) were analyzed with the differences in the measures of selected physiological, hematological, and kin anthropometric variables in College men obese students to pre-test and post-test.

The subjects are selected at random but the groups were not equated in relation to factors to be examined. Hence the difference between the means at the three groups in the pre - test had to be taken into account during the analysis of the post - test difference between the means. This was achieved by the final means were adjusted for differences in the initial means and the adjusted means were tested for significance. When the post–test means were significant, the scheffe's hoc test was administered to find out the paired means significance difference.

4.2 TEST OF SIGNIFICANCE

They could the critical portion of the thesis in concluding by examining the hypothesis. This procedure of testing the hypothesis was done by accepting the research hypothesis or rejecting the same in accordance with the results in relation to the level of confidence fixed by 0.05 level of confidence.

4.3. LEVEL OF SIGNIFICANCE

The probability level below which the hypothesis is rejected is termed as the level of significance. The ’F’ ratio obtained by analysis of covariance was compared at 0.05 level of significance. An analysis of covariance of ‘F’ ratio 3.22 is needed for significance at the 0.05 level of confidence for the degrees freedom 2 and 42.

4.4 COMPUTATION OF ANALYSIS OF COVARIANCE AND SCHEFFE’S POST HOC TEST.

The following tables illustrate the statistical result of the effects of aerobic rhythmic exercise and weight training onVo2 max, Resting Pulse Rate, Mean Arterial Pressure, Hemoglobin count, Red Blood Cells (RBC), White Blood Cells (WBC), Fat Mass, Lean Body Massamong college men obese students. The ordered adjusted means and differences between the means of the groups under study were given in the following tables.

4.5. RESULTS ON RESTING PULSE RATE

The physiological variable resting pulse rate was measured through use instrument over Citizens make digital portable blood Pressure monitor. The results on the effects of aerobic rhythmic exercise and weight training on Resting pulse rate among college men obese students are presented in Table V.

TABLE-V

COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF RESTING PULSE RATE OF EXPERIMENTAL AND CONTROL GROUP

(Scores in Beats Per Minute)

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	73.867	74.400	74.533	Between	2	3.73333	1.86666	0.112
				Within	42	697.066	16.5968	
Post-test mean	71.400	70.333	74.467	Between	2	138.13	69.0666	4.541*
				Within	42	638.67	15.2063	
Adjusted mean	71.76	70.21	74.23	Between	2	122.799	61.3998	36.39*
				Within	41	69.1601	1.68683	
Mean Gain	2.467	4.067	0.066					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

Table V shows that the pre test mean scores of Resting Pulse Rate of Experimental group I Aerobic rhythmic exercise was 73.8. Experimental Group II Weight training was 74.40 and the control group was 74.53. The post-test means

showed differences due to Twelve weeks of Aerobic rhythmic exercise &Weight training and the mean values recorded were 71.40, 70.33, and 74.46 respectively.

The obtained F value on pre-test scores 0.112 was lesser than the required F value of 3.23 to be significant at 0.05 level. This proved that there was no significant difference between the groups at an initial stage and the randomization at the initial stage was equal.

The post-test scores analysis proved that there was a significant difference between the groups as the obtained F value at 4.541 was greater than the required F value of 3.23. This proved that the differences between the post-test mean the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 36.39 was greater than the required F value of 3.23. This proved that there were significant differences among the means due to Twelve weeks of Aerobic rhythmic exercise &Weight training on the physiological variable Resting Pulse Rate.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in table VI.

TABLE - VI

SCHEFFE'S POST-HOC TEST FOR RESTING PULSE RATE

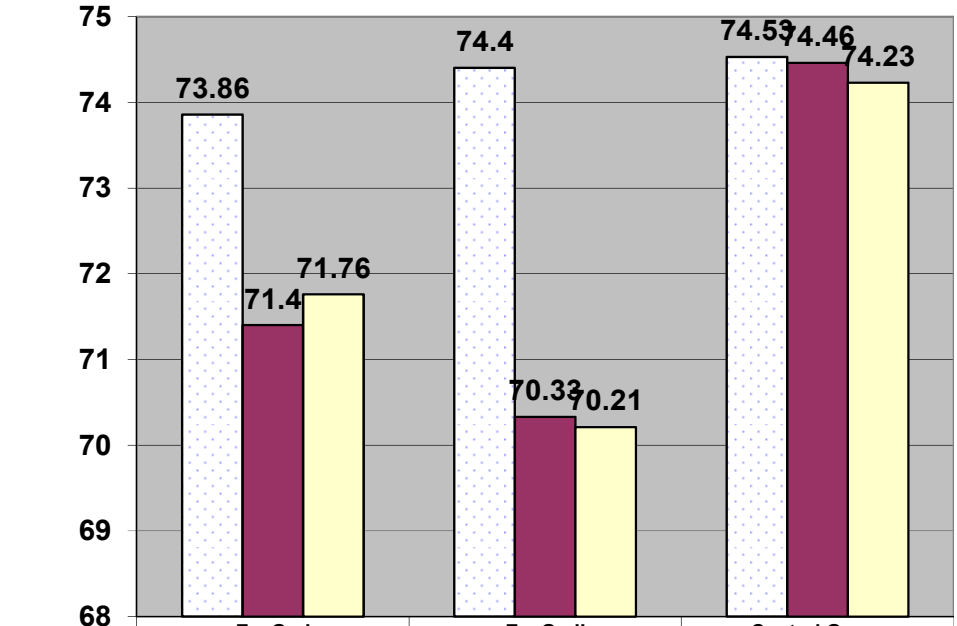
Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control Group	Mean Difference	Required C.I
71.76	70.21		1.549*	1.37
71.76		74.23	2.4648*	
	70.21	74.23	4.013*	

Table-VI shows that there was a significant difference between the Aerobic rhythmic exercise and control group and Weight training group and control group and Aerobic rhythmic exercise and Weight training group.

The obtained adjusted mean values were presented through the bar diagram in figure 1.

FIGURE - 1

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON RESTING PULSE RATE



	Ex. Gr. I	Ex. Gr. II	Control Group
PRE	73.86	74.4	74.53
POST	71.4	70.33	74.46
ADJUSTED	71.76	70.21	74.23

4.5.1. DISCUSSION ON FINDINGS OF RESTING PULSE RATE

The results presented in table V showed that the obtained adjusted means on Resting Pulse Rate among Aerobic rhythmic exercise group was 71.76 followed by Weight training group with the mean value of 70.21 and control group mean value of 74.23. The difference among pre-test scores Post-test scores and adjusted mean

scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.112, 4.541 and 36.39 respectively. It was found that obtained F value on pre-test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post-test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.23.

The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks of treatment in the Aerobic rhythmic exercise group and Weight training group there was a significant improvement (decrease) in Resting Pulse Rate than the control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely the Aerobic rhythmic exercise group and Weight training proved that there was a significant difference.

The result of this study on Resting Pulse Rate has in line with the study conducted by **Stampfer MJ, et.al. (2000).**

4.6.RESULTS ON MEAN ARTERIAL PRESSURE

The physiological variable Mean Arterial Pressure was measured through use instrument over Citizens make digital portable blood Pressure monitor. The results on the effects of aerobic rhythmic exercise and weight training on mean arterial pressure among college men obese students are presented in table VI.

TABLE-VI

COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF MEAN ARTERIAL PRESSURE OF EXPERIMENTAL AND CONTROL GROUP

(Total Scores in mm/hg-P mean = Diastolic pressure + 1/3 pulse pressure.)

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	99.067	98.533	98.200	Between	2	5.73333	2.8666	0.240
				Within	42	501.566	11.9420	
Post-test mean	93.633	94.400	98.067	Between	2	168.43	84.2166	4.206*
				Within	42	840.77	20.0182	
Adjusted mean	93.16	94.47	98.48	Between	2	228.263	114.131	14.82*
				Within	41	315.629	7.6982	
Mean Gain	5.43	4.13	0.133					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

Table VI shows that the pre-test mean scores of Mean Arterial Pressure of Experimental group I Aerobic rhythmic exercise was 99.06. Experimental Group II Weight training was 98.53 and the control group was 98.20. The post-test means showed differences due to Twelve weeks of Aerobic rhythmic exercise &Weight training and mean values recorded were 93.63, 94.40 and 98.20 respectively.

The obtained F value on pre test scores 0.240 was lesser than the required F value of 3.23 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 4.206 was greater than the required F value of 3.23. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 14.825 was greater than the required F value of 3.23. This proved that there was Significant differences among the means due to Twelve weeks of Aerobic rhythmic exercise &Weight training on the physiological variable Mean Arterial Pressure .

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in table VII.

TABLE - VII

SCHEFFE'S POST-HOC TEST FOR MEAN ARTERIAL PRESSURE

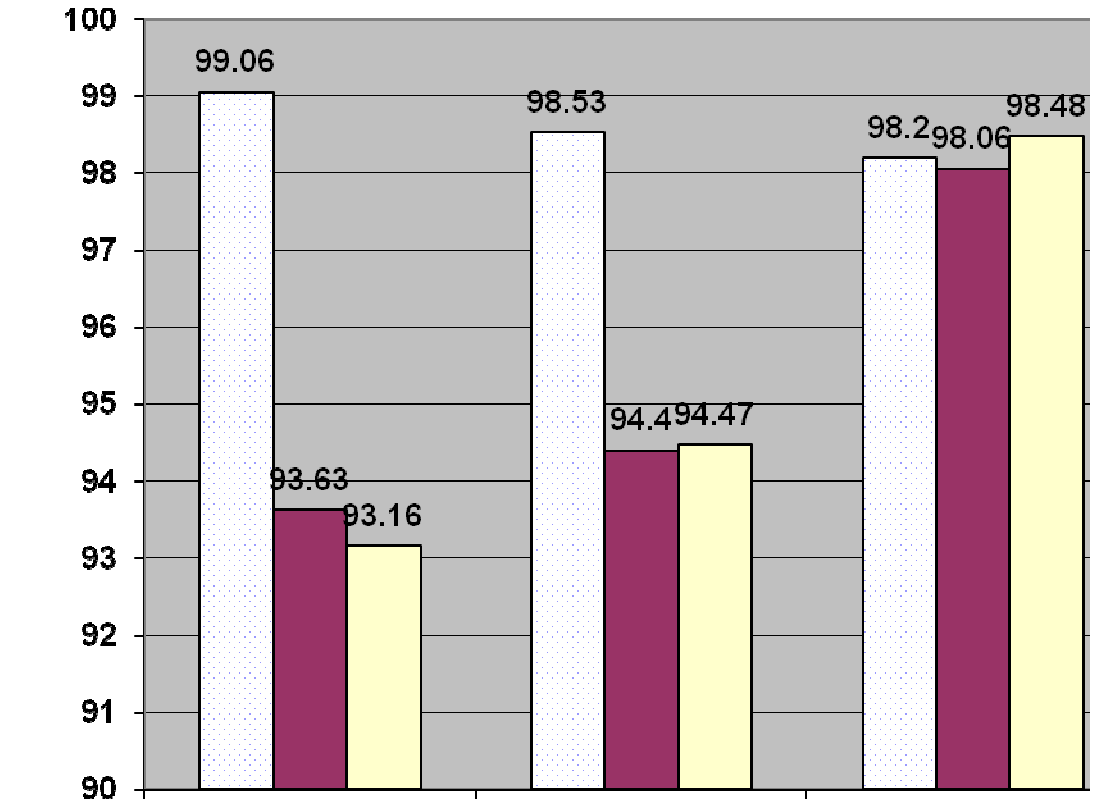
Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control Group	Mean difference	Required C.I
93.16	94.47		1.312	2.93983
93.16		98.48	5.320	2.93982997
	94.47	98.48	4.008	2.93982997

Table-VII shows that there was a significant difference between Aerobic rhythmic exercise and control group and Weight training group and control group and Aerobic rhythmic exercise and Weight training group.

The obtained adjusted mean values were presented through bar diagram in figure 2.

FIGURE - 2

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON MEAN ARTERIAL PRESSURE



	Ex. Gr. I	Ex. Gr. II	Control Group
PRE	99.06	98.53	98.2
POST	93.63	94.4	98.06
ADJUSTED	93.16	94.47	98.48

4.6.1. DISCUSSION ON FINDINGS OF MEAN ARTERIAL PRESSURE

The results presented in table VI showed that the obtained adjusted means on Mean Arterial Pressure among Aerobic rhythmic exercise group was 93.16 followed by Weight training group with the mean value of 94.47 and control group mean value of 98.48. The difference among pre-test scores Post-test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.240, 4.206 and 14.825 respectively. It was found that obtained F value on pre-test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post-test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.23.

The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks of treatment in Aerobic rhythmic exercise group and Weight training group there was significant improvement (decrease) in Mean Arterial Pressure than the control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Aerobic rhythmic exercise group and Weight training proved that there was a significant difference.

The result of this study on Mean Arterial Pressure has in line with the study conducted by **Sclavo M. (2001).**

4.7. RESULTS ON VO2 MAX

The physiological variable Vo2 Max was measured through use instrument over Citizens make digital portable blood Pressure monitor. The results on the effects of aerobic rhythmic exercise and weight training on Vo2 Max among college men obese students are presented in table VIII.

TABLE-VIII

COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF VO2 MAX OF EXPERIMENTAL AND CONTROL GROUP

(Scores in no.s) $$VO_2\ max = \frac{d_{12} - 505}{45}$$

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	41.873	41.353	40.947	Between	2	6.47244	3.23622	0.1398
				Within	42	971.944	23.1415	
Post-test mean	45.820	44.447	41.160	Between	2	172.02	86.0095	5.4451*
				Within	42	663.42	15.7956	
Adjusted mean	45.49	44.47	41.46	Between	2	131.229	65.6148	12.164*
				Within	41	221.146	5.39382	
Mean Gain	3.947	3.094	0.213					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

Table VIII shows that the pre-test mean scores of Vo2 Max of Experimental group I Aerobic rhythmic exercise was 41.873. Experimental Group II Weight training was 41.353 and the control group was 40.947. The post-test means showed differences due to Twelve weeks of Aerobic rhythmic exercise &Weight training and the mean values recorded were 45.820, 44.447 and 41.160respectively.

The obtained F value on pre-test scores 0.139 was lesser than the required F value of 3.23 to be significant at 0.05 level. This proved that there was no significant difference between the groups at an initial stage and the randomization at the initial stage was equal.

The post-test scores analysis proved that there was a significant difference between the groups as the obtained F value at 5.44 was greater than the required F value of 3.23. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 12.16 was greater than the required F value of 3.23. This proved that there were Significant differences among the means due to Twelve weeks of Aerobic rhythmic exercise &Weight training on the physiological variable Vo2 Max

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in Table IX.

TABLE - IX

SCHEFFE'S POST-HOC TEST FOR VO2 MAX

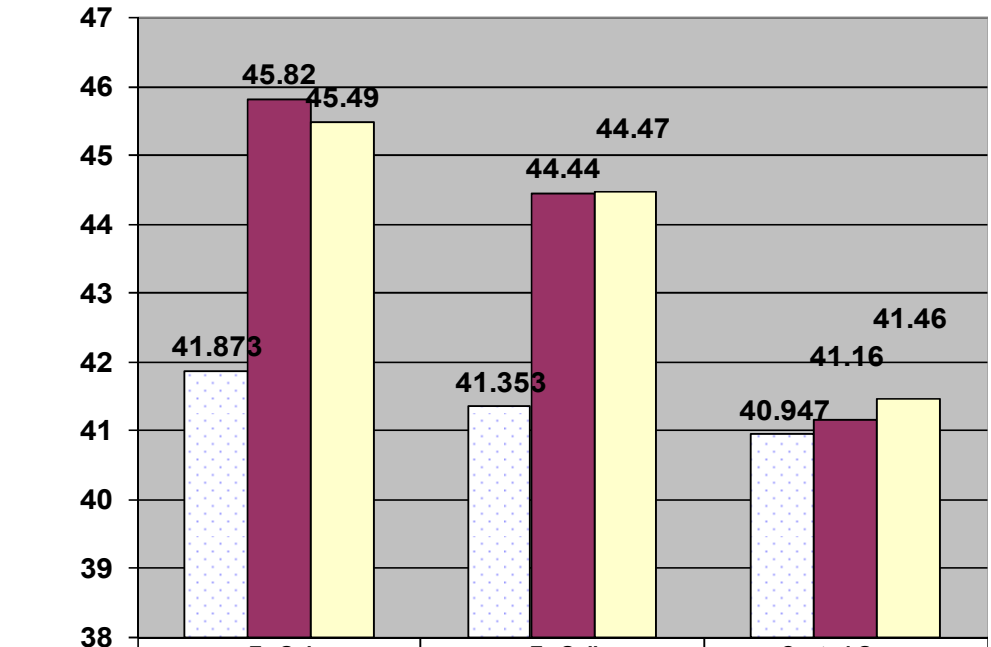
Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group– II (Weight training)	Control Group	Mean difference	Required C.I
45.49	44.47		1.023	2.460
45.49		41.46	4.0358*	
	44.47	41.46	3.0128*	

Table - IX shows that there was a significant difference between Aerobic rhythmic exercise and control group and Weight training group and control group and Aerobic rhythmic exercise and Weight training group.

The obtained adjusted mean values were presented through bar diagram in figure 3.

FIGURE - 3

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON VO2 MAX



	Ex.Gr.I	Ex.Gr.II	Control Group
PRE	41.873	41.353	40.947
POST	45.82	44.447	41.16
ADJUSTED	45.49	44.47	41.46

4.7.1. DISCUSSION ON FINDINGS OF VO2 MAX

The results presented in table VIII showed that the obtained adjusted means on Vo2 Max among Aerobic rhythmic exercise group was 45.49 followed by Weight training group with a mean value of 44.47 and control group mean value of 41.46. The difference among pre-test scores Post-test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.139, 5.44, and 12.16 respectively. It was found that obtained F value on pre-test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post-test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.23.

The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks treatment the Aerobic rhythmic exercise group and Weight training group there was significant improvement (decrease) in Vo2 Max than the control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Aerobic rhythmic exercise group and Weight training proved that there was a significant difference.

The result of this study on Vo2 Max has in line with the study conducted by **Balabins (2001).**

4.8. RESULTS ON HEMOGLOBIN COUNT

The physiological variable Hemoglobin Count was measured through use instrument over Citizens make digital portable blood Pressure monitor. The results on the effects of aerobic rhythmic exercise and weight training on Hemoglobin Count among college men obese students are presented in Table X.

TABLE-X

COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF HEMOGLOBIN COUNT OF EXPERIMENTAL AND CONTROL GROUP

(Scores in per deciliter (g/dl)

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	10.220	9.820	10.227	Between	2	1.62711	0.81355	1.164
				Within	42	29.3373	0.69850	
Post-test mean	13.613	12.893	10.413	Between	2	84.58	42.2909	63.640*
				Within	42	27.91	0.66453	
Adjusted mean	13.56	13.01	10.35	Between	2	87.4357	43.7178	79.606*
				Within	41	22.5160	0.54917	
Mean Gain	3.393	3.073	0.186					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

Table X shows that the pre-test means scores of Hemoglobin Count of Experimental group I Aerobic rhythmic exercise was 10.220. Experimental Group II Weight training was 9.820 and control group was 10.227. The post-test means

showed differences due to Twelve weeks of Aerobic rhythmic exercise &Weight training and mean values recorded were 13.613, 12.893 and 10.413 respectively.

The obtained F value on pre-test scores 1.1647 was lesser than the required F value of 3.23 to be significant at 0.05 level. This proved that there was no significant difference between the groups at the t initial stage and the randomization at the initial stage was equal.

The post-test scores analysis proved that there was a significant difference between the groups as the obtained F value at 63.640 was greater than the required F value of 3.23. This proved that the differences between the post-test mean of the subjects were significant.

Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 79.606 was greater than the required F value of 3.23. This proved that there were Significant differences among the means due to Twelve weeks of Aerobic rhythmic exercise &Weight training on the physiological variable Hemoglobin Count.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in Table XI.

TABLE - XI

SCHEFFE'S POST-HOC TEST FOR HEMOGLOBIN COUNT

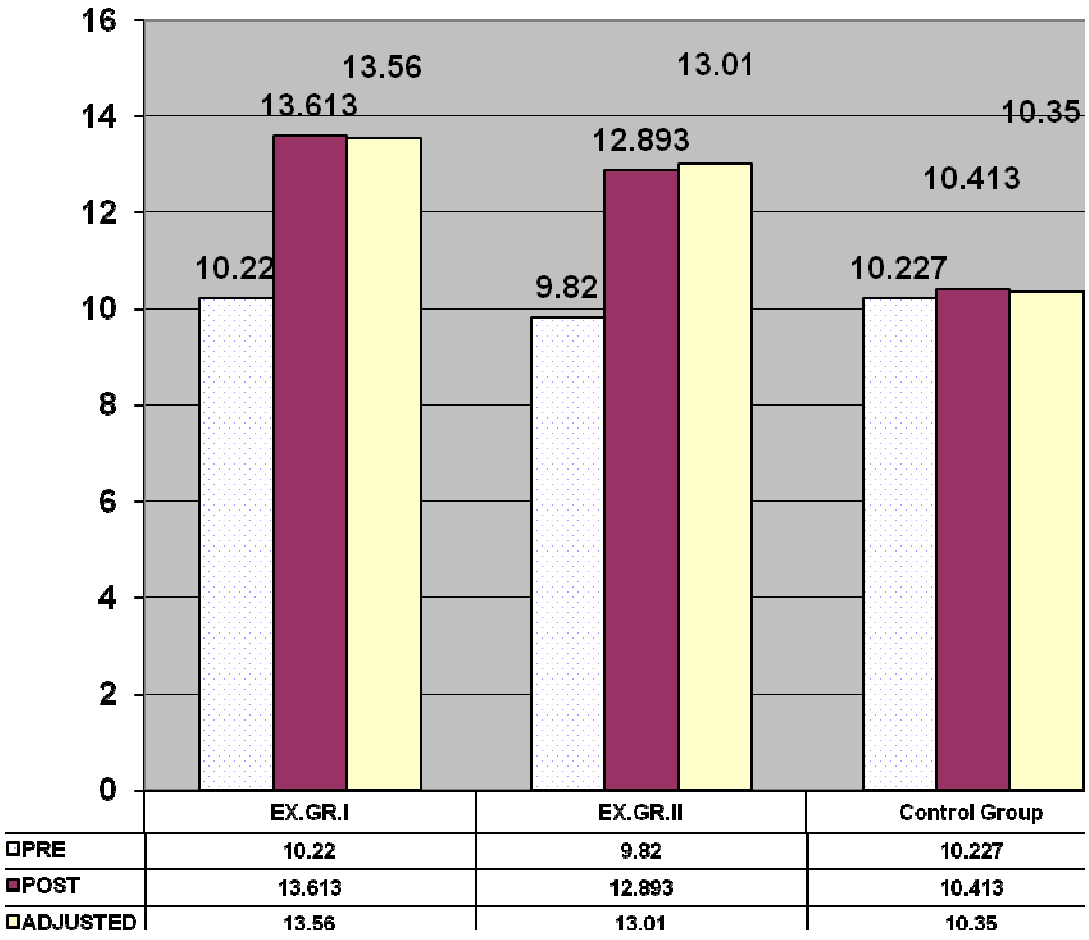
Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control Group	Mean difference	Required C.I
13.56	13.01		0.548*	0.4851
13.56		10.35	3.204*	
	13.01	10.35	2.655*	

Table-XI shows that there was a significant difference between Aerobic rhythmic exercise and control group and Weight training group and control group and Aerobic rhythmic exercise and Weight training group.

The obtained adjusted mean values were presented through bar diagram in figure 4.

FIGURE - 4

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON HEMOGLOBIN COUNT



4.8.1. DISCUSSION ON FINDINGS OF HEMOGLOBIN COUNT

The results presented in table X showed that the obtained adjusted means on Hemoglobin Count among Aerobic rhythmic exercise group was 13.56 followed by Weight training group with the mean value of 13.01 and control group mean value of 10.35. The difference among pre-test scores Post-test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 1.1647, 63.640, and 79.606 respectively. It was found that obtained F value on pre-test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post-test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.23.

The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks treatment the Aerobic rhythmic exercise group and Weight training group there was significant improvement (decrease) in Hemoglobin Count than the control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Aerobic rhythmic exercise group and Weight training proved that there was a significant difference.

The result of this study on Hemoglobin Count has in line with the study conducted by **Doggre ll SA. (2002).**

4.9. RESULTS ON RED BLOOD CELLS (RBC)

The physiological variable Red Blood Cells (RBC) was measured through use instrument over Citizens make digital portable blood Pressure monitor. The results on the effects of aerobic rhythmic exercise and weight training on Red Blood Cells (RBC) among college men obese students are presented in Table XII.

TABLE-XII

COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF RED BLOOD CELLS (RBC) OF EXPERIMENTAL AND CONTROL GROUP

(Scores in per cubic millimeter)

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	4.883	4.672	4.638	Between	2	0.53003	0.26501	0.851
				Within	42	13.0780	0.31138	
Post-test mean	5.976	5.537	4.823	Between	2	10.15	5.07624	13.97*
				Within	42	15.25	0.36319	
Adjusted mean	5.96	5.54	4.84	Between	2	9.33836	4.66918	12.75*
				Within	41	15.0054	0.36598	
Mean Gain	1.093	0.865	0.185					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

Table XII shows that the pre-test mean scores of Red Blood Cells (RBC) of Experimental group I Aerobic rhythmic exercise was 4.883. Experimental Group II

Weight training was 4.672 and control group was 4.638. The post test means showed differences due to Twelve weeks of Aerobic rhythmic exercise &Weight training and mean values recorded were 5.97, 5.53, and 4.823 respectively.

The obtained F value on pretest scores 0.8510 was lesser than the required F value of 3.23 to be significant at 0.05 level. This proved that there was no significant difference between the groups at an initial stage and the randomization at the initial stage was equal.

The post-test scores analysis proved that there was a significant difference between the groups as the obtained F value at 13.976 was greater than the required F value of 3.23. This proved that the differences between the post-test mean at the subjects were significant.

Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 12.75 was greater than the required F value of 3.23. This proved that there were Significant differences among the means due to Twelve weeks of Aerobic rhythmic exercise &Weight training on the physiological variable Red Blood Cells (RBC) .

Since significant improvements were recorded. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in Table XIII.

TABLE - XIII

SCHEFFE'S POST-HOC TEST FOR RED BLOOD CELLS (RBC)

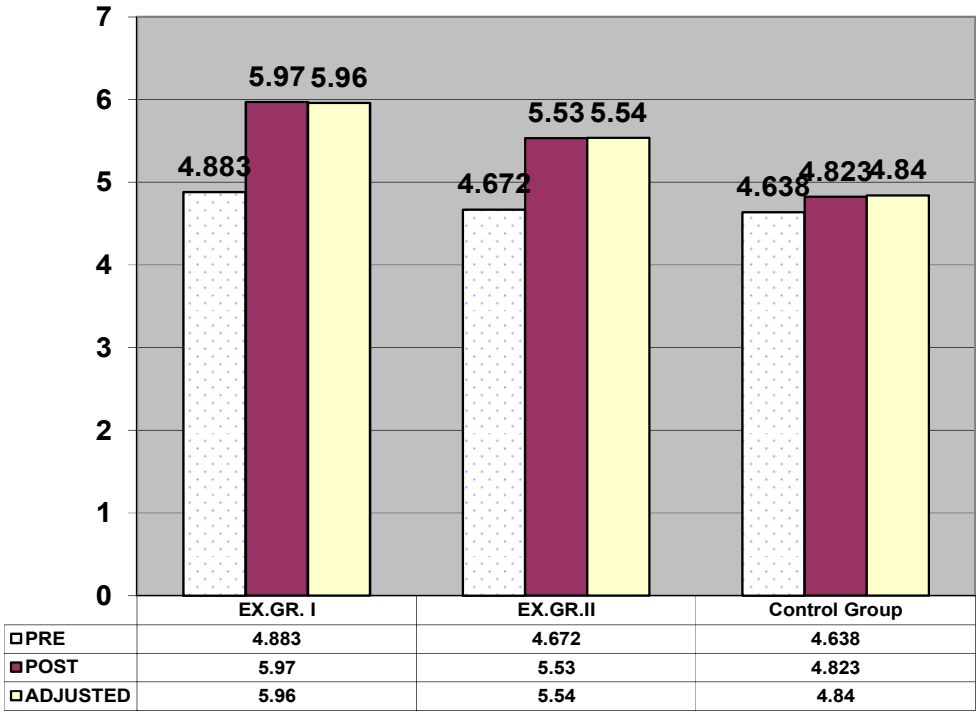
Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control Group	Mean difference	Required C.I
5.96	5.54		0.410*	0.4040002
5.96		4.84	1.119*	
	5.54	4.84	0.709*	

Table-XIII shows that there was a significant difference between Aerobic rhythmic exercise and control group and Weight training group and control group and Aerobic rhythmic exercise and Weight training group.

The obtained adjusted mean values were presented through bar diagram in figure 5.

FIGURE - 5

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON RED BLOOD CELLS (RBC)



	EX.GR. I	EX.GR.II	Control Group
PRE	4.883	4.672	4.638
POST	5.97	5.53	4.823
ADJUSTED	5.96	5.54	4.84

4.9.1. DISCUSSION ON FINDINGS OF RED BLOOD CELLS (RBC)

The results presented in table XII showed that the obtained adjusted means on Red Blood Cells (RBC) among Aerobic rhythmic exercise group was 5.96 followed by Weight training group with the mean value of 5.54 and control group mean value of 4.84. The difference among pre-test scores Post-test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.8510, 13.976, and 12.75 respectively. It was found that obtained F value on pre-test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post-test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.23.

The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks treatment the Aerobic rhythmic exercise group and Weight training group there was significant improvement (decrease) in Red Blood Cells (RBC) than the control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Aerobic rhythmic exercise group and Weight training proved that there was a significant difference.

The result of this study on Red Blood Cells (RBC) has in line with the study conducted by **Praet et.al. (2008).**

4.10. RESULTS ON WHITE BLOOD CELLS (WBC)

The physiological variable White Blood Cells (WBC) was measured through use instrument over Citizens make digital portable blood Pressure monitor. The results on the effects of aerobic rhythmic exercise and weight training on White Blood Cells (WBC) among college men obese students are presented in Table XIV.

TABLE - XIV

COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF WHITE BLOOD CELLS (WBC) OF EXPERIMENTAL AND CONTROL GROUP

(Scores in per microliter)

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	5.244	5.193	5.257	Between	2	0.03420	1.75556	0.626
				Within	42	0.46398	2.8	
Post-test mean	6.491	6.285	5.228	Between	2	13.77	1180.82	101.87*
				Within	42	1.23	11.5905	
Adjusted mean	6.49	6.28	5.23	Between	2	13.3991	1162.2	98.484*
				Within	41	1.22287	11.8009	
Mean Gain	1.247	1.092	0.029					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

Table XIV shows that the pre-test mean scores of White Blood Cells (WBC) of Experimental group I Aerobic rhythmic exercise was 5.244. Experimental Group II Weight training was 5.193 and control group was 5.257. The post-test means showed differences due to Twelve weeks of Aerobic rhythmic exercise &Weight training and mean values recorded were 6.491, 6.285, and 5.228 respectively.

The obtained F value on pre-test scores 0.626 was lesser than the required F value of 3.23 to be significant at 0.05 level. This proved that there was no significant difference between the groups at an initial stage and the randomization at the initial stage was equal.

The post-test scores analysis proved that there was a significant difference between the groups as the obtained F value at 101.87 was greater than the required F value of 3.23. This proved that the differences between the post-test mean of the subjects were significant.

Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 98.484 was greater than the required F value of 3.23. This proved that there were Significant differences among the means due to Twelve weeks of Aerobic rhythmic exercise &Weight training on the physiological variable White Blood Cells (WBC).

Since significant improvements were recorded. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in Table XV.

TABLE - XV

SCHEFFE'S POST-HOC TEST FOR WHITE BLOOD CELLS (WBC)

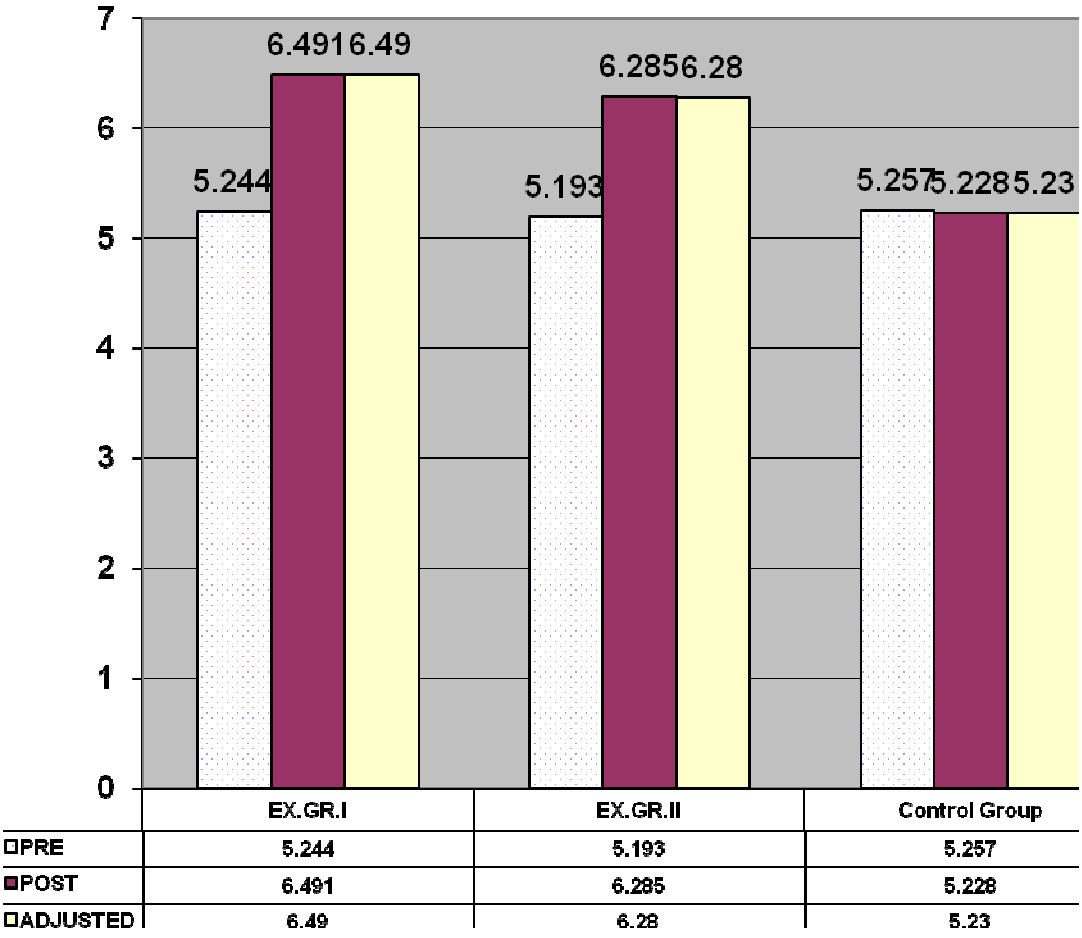
Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control Group	Mean difference	Required C.I
6.49	6.28		0.213*	0.18298869
6.49		5.23	1.261*	
	6.28	5.23	1.048*	

Table-XV shows that there was a significant difference between Aerobic rhythmic exercise and control group and Weight training group and control group and Aerobic rhythmic exercise and Weight training group.

The obtained adjusted mean values were presented through bar diagram in figure 6.

FIGURE - 6

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON WHITE BLOOD CELLS (WBC)



4.10.1. DISCUSSION ON FINDINGS OF WHITE BLOOD CELLS (WBC)

The results presented in table XIV showed that the obtained adjusted means on White Blood Cells (WBC) among Aerobic rhythmic exercise group was 6.49 followed by Weight training group with the mean value of 6.28 and control group mean value of 5.23. The difference among pre-test scores Post-test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.626, 101.87, and 98.484 respectively. It was found that obtained F value on pretes-t score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post-test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.23.

The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks of treatment Aerobic rhythmic exercise group and Weight training group there was significant improvement (decrease) in White Blood Cells (WBC) than the control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Aerobic rhythmic exercise group and Weight training proved that there was a significant difference.

The result of this study on White Blood Cells (WBC) has in line with the study conducted by **Michael T.Smith, (2005).**

4.11. RESULTS ON FAT MASS

The Kin anthropometric Variable Fat Mass was measured through use instrument over Citizens make digital portable blood Pressure monitor. The results on the effects of aerobic rhythmic exercise and weight training on Fat Mass among college men obese students is presented in Table XVI.

TABLE-XVI

COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF FAT MASS OF EXPERIMENTAL AND CONTROL GROUP

(scores in = percentage fat X body weight (kg)

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	30.671	29.182	30.814	Between	2	24.5004	12.2502	2.27
				Within	42	226.152	5.38459	
Post-test mean	25.969	27.337	31.163	Between	2	217.44	108.718	88.49*
				Within	42	51.60	1.22848	
Adjusted mean	26.01	27.23	31.22	Between	2	219.651	109.826	91.223*
				Within	41	49.3605	1.20391	
Mean Gain	4.711	1.812	0.349					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

Table XVI shows that the pre-test mean scores of Fat Mass of Experimental group I Aerobic rhythmic exercise was 30.671. Experimental Group II Weight training was 29.182 and control group was 30.814. The post-test means showed differences due to Twelve weeks of Aerobic rhythmic exercise &Weight training and mean values recorded were 25.96, 27.33, and 31.16 respectively.

The obtained F value on pre-test scores 2.275 was lesser than the required F value of 3.23 to be significant at 0.05 level. This proved that there was no significant difference between the groups at an initial stage and the randomization at the initial stage was equal.

The post-test scores analysis proved that there was a significant difference between the groups as the obtained F value at 88.49 was greater than the required F value of 3.23. This proved that the differences between the post-test mean of the subjects were significant.

Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 91.22 was greater than the required F value of 3.23. This proved that there were Significant differences among the means due to Twelve weeks of Aerobic rhythmic exercise &Weight training on the Kin anthropometric Variable Fat Mass.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in Table XVII.

TABLE - XVII

SCHEFFE'S POST-HOC TEST FOR FAT MASS

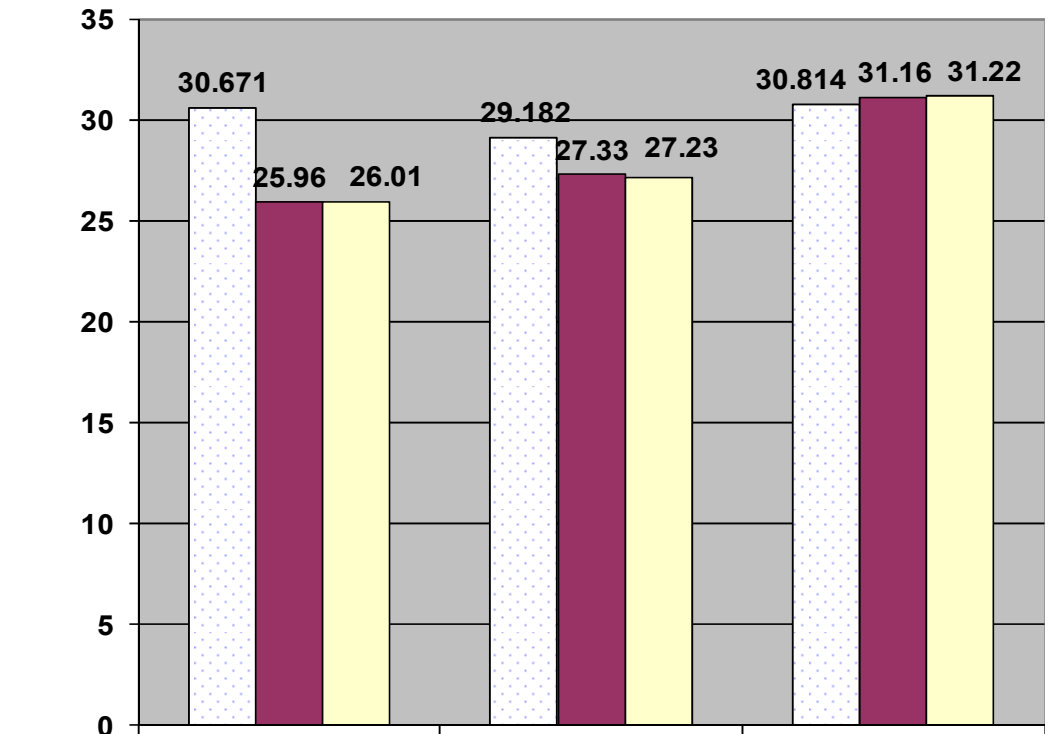
Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control Group	Mean difference	Required C.I
26.01	27.23		1.220*	1.162
26.01		31.22	5.20*	
	27.23	31.22	3.98*	

Table-XVII shows that there was a significant difference between Aerobic rhythmic exercise and control group and Weight training group and control group and Aerobic rhythmic exercise and Weight training group.

The obtained adjusted mean values were presented through bar diagram in figure 7.

FIGURE - 7

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON FAT MASS



	Ex.Gr.I	Ex.Gr.II	Control Group
PRE	30.671	29.182	30.814
POST	25.96	27.33	31.16
ADJUSTED	26.01	27.23	31.22

4.11.1. DISCUSSION ON FINDINGS OF FAT MASS

The results presented in table XVI showed that the obtained adjusted means on Fat Mass among Aerobic rhythmic exercise group was 26.01 followed by Weight training group with the mean value of 27.23 and control group mean value of 31.22. The difference among pre-test scores Post-test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 2.275, 88.49, and 91.22 respectively. It was found that obtained F value on pre-test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post-test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.23.

The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks treatment the Aerobic rhythmic exercise group and Weight training group there was a significant improvement (decrease) in Fat Mass than the control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Aerobic rhythmic exercise group and Weight training proved that there was a significant difference.

The result of this study on Fat Mass has in line with the study conducted by **Yeater (1999).**

4.12. RESULTS ON LEAN BODY MASS

The Kin anthropometric Variable Lean Body Mass was measured through use instrument over Citizens make digital portable blood Pressure monitor. The results on the effects of aerobic rhythmic exercise and weight training on Lean Body Mass among college men obese students are presented in Table XVIII.

TABLE- XVIII

COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF LEAN BODY MASS OF EXPERIMENTAL AND CONTROL GROUP

(Scores in body weight (kg) – Fat Mass (kg)

Test	Experimental Group – I (aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	48.800	49.067	49.133	Between	2	0.93333	0.46666	0.0848
				Within	42	231.066	5.50158	
Post-test mean	57.600	54.867	47.333	Between	2	848.13	424.066	87.88*
				Within	42	202.67	4.82539	
Adjusted mean	57.62	54.86	47.32	Between	2	850.476	425.238	87.03*
				Within	41	200.323	4.88594	
Mean Gain	8.8	5.8	1.8					

* F(0.05) (2,42 and 2, 41) = 3.23. *Significant at 0.05 level of confidence.

Table XVIII shows that the pre-test mean scores of Lean Body Mass of Experimental group I Aerobic rhythmic exercise was 48.80. Experimental Group II Weight training was 49.06 and control group was 49.13. The post-test means showed differences due to Twelve weeks of Aerobic rhythmic exercise &Weight training and mean values recorded were 57.60, 54.86, and 47.33 respectively.

The obtained F value on pre-test scores 0.084 was lesser than the required F value of 3.23 to be significant at 0.05 level. This proved that there was no significant difference between the groups at an initial stage and the randomization at the initial stage was equal.

The post-test scores analysis proved that there was significant difference between the groups as the obtained F value at 87.88 was greater than the required F value of 3.23. This proved that the differences between the post-test mean of the subjects were significant.

Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 87.03 was greater than the required F value of 3.23. This proved that there were Significant differences among the means due to Twelve weeks of Aerobic rhythmic exercise &Weight training on the Kin anthropometric Variable Lean Body Mass.

Since significant improvements were recorded. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in Table XIX.

TABLE - XIX

SCHEFFE'S POST-HOC TEST FOR LEAN BODY MASS

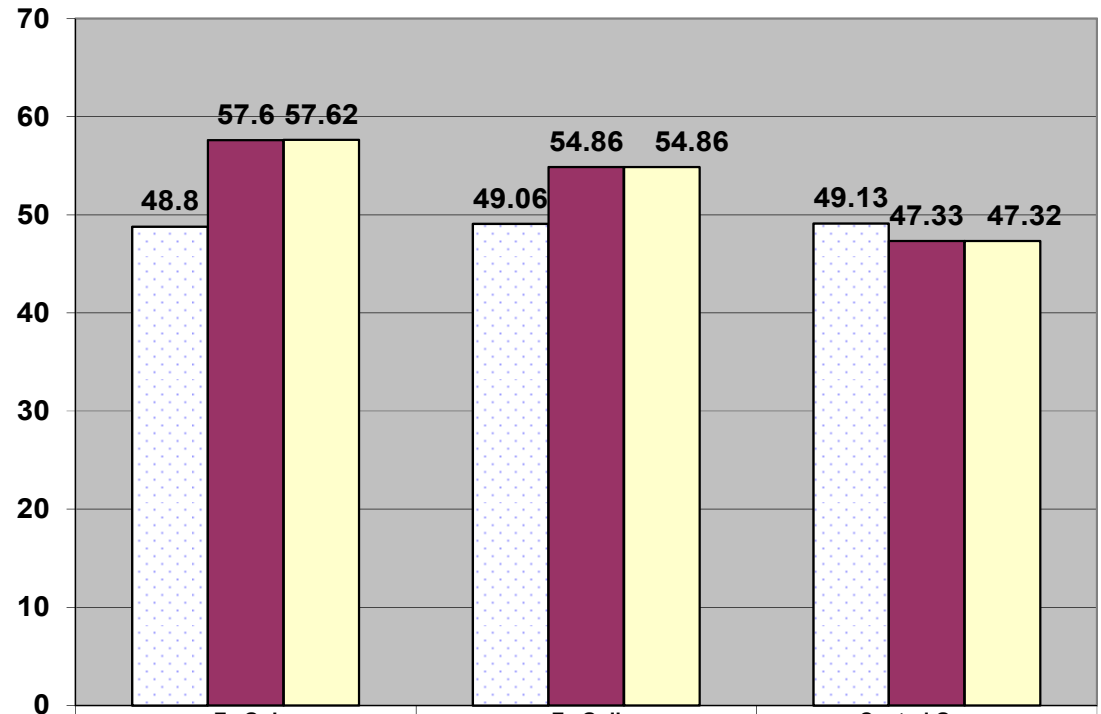
Experimental Group – I (Aerobic rhythmic exercise)	Experimental Group – II (Weight training)	Control Group	Mean difference	Required C.I
57.62	54.86		2.760*	2.34206993
57.62		47.32	10.300*	
	54.86	47.32	7.540*	

Table - XIX shows that there was a significant difference between Aerobic rhythmic exercise and control group and Weight training group and control group and Aerobic rhythmic exercise and Weight training group.

The obtained adjusted mean values were presented through bar diagram in figure 8.

FIGURE - 8

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST-TEST VALUES OF CONTROL GROUP, TWO EXPERIMENTAL GROUPS ON LEAN BODY MASS



	Ex.Gr.I	Ex.Gr.II	Control Group
PRE	48.8	49.06	49.13
POST	57.6	54.86	47.33
ADJUSTED	57.62	54.86	47.32

4.12.1. DISCUSSION ON FINDINGS OF LEAN BODY MASS

The results presented in table XVIII showed that the obtained adjusted means on Lean Body Mass among Aerobic rhythmic exercise group was 57.62 followed by Weight training group with the mean value of 54.86 and control group mean value of 47.32. The difference among pre-test scores Post-test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.084, 87.88, and 87.03 respectively. It was found that obtained F value on pre-test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post-test Scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.23.

The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks treatment the Aerobic rhythmic exercise group and Weight training group there was significant improvement (decrease) in Lean Body Mass than the control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Aerobic rhythmic exercise group and Weight training proved that there was a significant difference.

The result of this study on Lean Body Mass has in line with the study conducted by **Jankowski(1999).**

4.13 DISCUSSION ON HYPOTHESES

Thus the researcher has successfully completed the study and presented the results clearly and proceeded with the summary and conclusions along with recommendations in the next chapter.

The formulated first hypotheses results is presented in tables V to XIX proved that there would be a significant improvement of Aerobic rhythmic exercise group on selected physiological, hematological and kin anthropometric variables such as (Vo2 max, Resting Pulse Rate, Mean Arterial Pressure, Hemoglobin count, Red Blood Cells (RBC), White Blood Cells (WBC), Fat Mass, Lean Body Mass) than the control group among college men obese students. Hence the first research hypothesis was accepted and (null hypothesis was rejected).

The formulated second hypotheses results are presented in tables V to XIX proved that there would be a significant improvement of Weight training group on selected physiological, hematological and kin anthropometric variables such as (Vo2 max, Resting Pulse Rate, Mean arterial Pressure, Hemoglobin count, Red Blood Cells (RBC), White Blood Cells (WBC), Fat Mass, Lean Body Mass) than the control group among college men obese students. Hence the second research hypothesis was accepted and (null hypothesis was rejected).

The formulated third hypothesis results are presented in tables V to XIX proved that there would be a significant difference between of Aerobic rhythmic exercise group and Weight training group on selected Physical, Physiological, and psychological variables such as (Flexibility, Systolic blood pressure, Body mass

index, Resting Pulse Rate, stress, anxiety and self confidence) among Men with andropause. Hence the third (research hypothesis) was accepted and (null hypothesis was rejected).

Hence the discussion on hypothesized has accepted at 0.05 level of confidence.

Thus the researcher has successfully completed the study and presented the results clearly and proceeded with the summary and conclusions along with recommendations in the next chapter.