

## Aerobics Training Programme on Body Fat and Selected Anthropometric Measurements of Obese Girls

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### Abstract

*Our daily life is a last and luxuries due to people are not physically fit and strong. They faced so many problem related to health. To cure those problems everyday requires exercise physical fitness and health are the integral parts of human life fitness and wellness of a person are correlated to each other. In fitness body proportion and composition are important parameters and which has roles relevance with health related fitness. Aerobics gives a tremendous helps in not only developing ones physical fitness ability but also helps in making our body into good physic or body shape it's also helps to reduce the BMI [Body mass index] there for the present study in titled "Aerobics training programme on body fat and selected anthropometrical measurements of obese girls". In this study a sampling of 50 females subjects were selected from Gyan Kendra Secondary School, Mumbai, by using the BMI formula by considering purposive sampling technique. They were in the age group of 12 to 14 years. The investigator were select two groups viz; experimental and control groups. The experimental group was given training in aerobic and control group were under gong day to day activity. The duration of experimental group is for eight weeks. From the interpretation of the data the results of Anthropometric measurements which shows significant enhancement in body weight in which 't' value is -4.02 which is statistically significant at the 0.01 level. B.M.I measurement 't' value is 2.94 which is significant at 0.05 level. Chest circumference 't' value is -4.38 is statistically significant at 0.01 level. Abdominal circumference 't' value is -4.16 which is significant at 0.01 level. Thigh circumference 't' value is -8.70 which is significant at 0.01 level. Triceps skin fold 't' value is -3.26 which is significant at 0.05 level. Sub scapula skin fold 't' value is -4.98 which is significant at 0.01 level. Therefore statistically concluded that the Aerobic exercise training programme has good effect on B.M.I anthropometric measurement and body fat.*

**Key words:** Aerobics Training, Body Composition, Obesity, Anthropometry

The lift of our modern civilization Due to scientific development enjoys the high level of physical comforts even know to men. Modern technology is trying hard to make our life easier, more luxurious more comfortable but less vigorous. Physical fitness is the most vital element of human life because for mane people, women and children like the courage of modern living is stress can institute a whole host of physical disorders, headache migraine, back trouble ect. Exercise fights this arch, energy of health and happiness. It is free and it takes few hours to do so that no need of sleeping pills or laxatives. Now a day the word "Aerobic" is a new and certainly fashionable one. Many

aerobic classes have opened in gymnasium and event the local hall, all around the country. Most of these classes have accompanying dance music. This is very useful as it gets the students all moving together and makes the whole thing a lot of fun.

Aerobic gives a tremendous helping not only developing ones physical fitness ability but also helps in making our body into good physic or body shape. Therefore the present study in titled,” Aerobics training programme on body fat and selected anthropometrical measurements of obese girls”

The objective of the study was as follows

- ❖ To study the effect of aerobic training on body Weight of experimental group and as compared to controlled group.
- ❖ To study the effect of aerobic training on Height of experimental group and as compared to controlled group.
- ❖ To study the effect of aerobic training on B.M.I of experimental group and as compared to controlled group.
- ❖ To study the effect of aerobic training on Chest circumference of experimental group and as compared to controlled group.
- ❖ To study the effect of aerobic training on Abdominal circumference of experimental group and as compared to controlled group.
- ❖ To study the effect of aerobic training on Thigh circumference of experimental group and as compared to controlled group.
- ❖ To study the effect of aerobic training on Triceps skin fold of experimental group and as compared to controlled group.
- ❖ To study the effect of aerobic training on Sub scapula skin fold of experimental group and as compared to controlled group.
- ❖ To study the effect of aerobic training on Thigh skin fold of experimental group and as compared to controlled group.

Depending upon the research findings from review of literature and scholars won understanding about the selected problem and her won understanding, personal experience, it was hypothesized that

- Ho<sub>1</sub> There is no significant difference in the mean score of body Weight of Control and Experimental group.
- Ho<sub>2</sub> There is no significant different in the mean score of standing Height of Control and Experimental group.
- Ho<sub>3</sub> There is no significant different in the mean score of B.M.I Control and Experimental group.
- Ho<sub>4</sub> There is no significant different in the mean score of Chest circumference of Control and Experimental group.
- Ho<sub>5</sub> There is no significant different in the mean score of abdominal circumference of Control and Experimental group.
- Ho<sub>6</sub> There is no significant different in the mean score of Thigh circumference of Control and Experimental group.

- Ho<sub>7</sub> There is no significant different in the mean score of Triceps skin fold of Control and Experimental group.
- Ho<sub>8</sub> There is no significant different in the mean score of Sub scapula skin fold of Control and Experimental group.
- Ho<sub>9</sub> There is no significant different in the mean score of Thigh skin fold of Control and Experimental group.

The present research has come across certain problems, which she could not control during the actual commencement of experiment, are as follows

- ❖ It was not possible to control the day to day activities of the subjects selected for experimental as well as control group
- ❖ The food habits, standard of living rest, and sleep of the selected subjects was not be controlled because the participants were coming from different socio-economic background
- ❖ The schoolgirls to be participated in this study will have on background of an aerobics exercise

## **Method**

### ***Subjects***

A sampling of 50 females subjects were selected from GYAN KENDRA SECONDARY SCHOOL by using the BMI formula by considering purposive sampling technique. They were in the age group of 12 to 14 years.

### ***Procedures***

There were two groups viz one was a control group and another was experimental group. The experimental group's subjects were expos to training in aerobic exercise for total period of eight weeks, where as the control group's subjects' has not received the above training. However the subjects of control group were engaged with physical education activity. Daily program consist warming up exercises for 10 minutes, training for 40 minutes and cooling down for 10 minutes. The duration of training was 60 minutes 5days per week for a total period of eight weeks.

To accomplish the study following dependent variables were include.

**Blue print of Dependent variables**

<b>Variables</b>	<b>Test</b>	<b>Unit</b>
Height	Standing height	C.M
Weight	Body weight	Kilogram
BMI	Weight (in kg)\Height (in Mts) <sup>2</sup>	Kgm <sup>2</sup>
Chest circumferences	Chest circumferences	C.M
Abdomen circumferences	Abdomen circumferences	C.M
Thigh circumferences	Thigh circumferences	C.M
Triceps skin fold	Triceps skin fold	M.M
Sub scapular skin fold	Sub scapular skin fold	M.M
Thigh skin fold	Thigh skin fold	M.M

**Independent variables**

Marching Grapevine L – Step V-step A-step Lunges  
 Mambo Cha-Cha-Cha Knee list Press down

The data were analyzed by using ‘t’ scale with the help of SPSS software.

**Results**

**I. Result Of Selected Variables On The Controlled Group (Within group)**

In the case of weight measured in **body weight** the mean scores of pre and post tests of the controlled group are 54.84 (±9.46) and 54.86 (±9.49) respectively, whereas, the mean difference is - .02 and ‘t’ value is - .22 which is not significant at 0.05 level (p>0.05). In the case of **Height** measured in standing height test the mean scores of pre and post test of the controlled group are 151.64 (±6.84) and 152.64 (±6.27) Respectively, whereas, the mean difference is-1.00 and ‘t’ value is which is -0.87 which is not significant at 0.05 level (p>0.05). In the case of **BMI** measured in Weight (in kg) / Height (in mts)<sup>2</sup> formula of the controlled group are 23.72 (±2.68) and 23.56 (±2.69) respectively, whereas, the mean difference is .16 and ‘t’ value is 1.52 which is not significant at 0.05 level (p>0.05) In the case of **Chest circumference** as measured in chest circumference test the mean scores of pre and post tests of the controlled group are 34.68(±2.86) and 34.84(±2.87) respectively, whereas, the mean difference is - .16 and ‘t’ value

is -1.69 which is not significant at 0.05 level ( $p>0.05$ ) In the case of **abdominal circumferences** as measured by abdominal circumferences test the mean scores of pre and post test of the controlled group are 33.26( $\pm 3.03$ ) and 33.24 ( $\pm 3.48$ ) respectively, whereas, the mean difference is .02 and 't' value is .13 which is not significant at 0.05 level ( $p>0.05$ ). In the case of Thigh circumferences as measured in **Thigh Circumferences** test the mean scores of pre and post test of the controlled group are 22.80( $\pm 2.27$ ) and 23.16 ( $\pm 2.34$ ) respectively, whereas, the mean difference is - .36 and 't' value is -2.69 which is significant at 0.05 level ( $p<0.05$ ). In the case of **Triceps skin fold** as measured in Triceps skin Fold test the mean scores of pre and post test of the controlled group are 23.60( $\pm 6.36$ ) and 23.80( $\pm 6.39$ ) respectively, whereas, the mean difference is - .20 and 't' value is - 1.15 which is not significant at 0.05 level ( $p<0.05$ ). In the case of **Sub scapular skin fold** as measured in Sub Scapular skin fold test the mean scores of pre and post test of the controlled group are 27.36( $\pm 7.95$ ) and 27.52 ( $\pm 8.12$ ) respectively, where as, the mean difference is - .16 and 't' value is -1.00 which is not significant at 0.05 level ( $p<0.05$ ). In the case of **Thigh skin fold** as measured in Thigh skin Fold test the mean scores of pre and post test of the controlled group are 37.40( $\pm 8.56$ ) and 37.72( $\pm 8.81$ ) respectively, where as, the mean difference is - .32 and 't' value is -1.78 which is not significant at 0.05 level ( $p<0.05$ )

**Table 1**  
**Comparison of mean between the pre & post of the control group**

Variable	Score Unit	Pre-Test Mean $\pm$ S.D	Post-Test Mean $\pm$ S.D	Mean Difference	Standard Error	't'	Significance
Weight	Kg	54.84 ( $\pm 9.46$ )	54.86 ( $\pm 9.49$ )	- .02	0.9	- .22	.824 $P>0.05$
Height	C.M.	151.64 ( $\pm 6.84$ )	152.64 ( $\pm 6.27$ )	-1.00	1.15	-.87	.393 $P>0.05$
BMI	Kgm <sup>2</sup>	23.72 ( $\pm 2.68$ )	23.56 ( $\pm 2.69$ )	.16	.10	1.52	.140 $P>0.05$
Chest circumference	C.M.	34.68 ( $\pm 2.86$ )	34.84 ( $\pm 2.87$ )	- .16	.09	-1.69	.103 $P>0.05$
Abdominal circumference	C.M.	33.26 ( $\pm 3.03$ )	33.24 ( $\pm 3.48$ )	.02	.16	.13	.900 $P>0.05$
Thigh circumference	C.M.	22.80 ( $\pm 2.27$ )	23.16 ( $\pm 2.34$ )	- .36	.13	-2.69	.013 $P<0.05$
Triceps Skin fold	M.M.	23.60 ( $\pm 6.36$ )	23.80 ( $\pm 6.39$ )	- .20	.17	-1.15	.260 $P>0.05$
Sub Scapular Skin fold	M.M.	27.36 ( $\pm 7.95$ )	27.52 ( $\pm 8.12$ )	- .16	.16	-1.00	.327 $P>0.05$

Thigh Skin fold	M.M.	37.40 (±8.56)	37.72 (±8.81)	-.32	.18	-1.78	.088 P>0.05
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## II. Result of Selected Variables on the Experimental Group

Table 2

Comparison of mean between the pre & post of the Experimental group

Variable	Score Unit	Pre-Test Mean ±S.D	Post-Test Mean ± S.D	Mean Difference	Standard Error	't'	Significance.
Weight	Kg	54.60 (±8.77)	54.00 (±8.63)	.60	.12	4.77	.000 p< 0.01
Height	C.M.	151.36 (±6.30)	152.68 (±5.62)	-1.32	.45	-2.91	.008 p< 0.05
BMI	Kgm <sup>2</sup>	23.74 (±2.83)	23.17 (±2.86)	.56	.09	6.35	.000 p< 0.01
Chest circumference	C.M.	34.84 (±3.10)	34.22 (±2.95)	.62	.15	4.11	.000 p< 0.01
Abdominal circumference	C.M.	33.04 (±3.69)	32.04 (±3.82)	1.00	.17	5.69	.000 p< 0.01
Thigh circumference	C.M.	23.50 (±2.86)	21.72 (±3.06)	1.78	.57	8.63	.000 p< 0.01
Triceps Skin fold	M.M.	23.68 (±3.88)	23.08 (±3.57)	.60	.17	3.46	.002 p< 0.05
Sub Scapular Skin fold	M.M.	26.96 (±5.20)	26.00 (±5.21)	.96	.16	6.08	.000 p< 0.01
Thigh Skin fold	M.M.	39.28 (±7.68)	38.40 (±7.64)	.88	.18	4.74	.000 p< 0.01

It is seen from Table-2, that in case of **weight** measured in body weight the mean scores of pre and post tests of the experimental group are 54.60 (±8.77) and 54.00 (±8.63) respectively, whereas, the mean difference is .60 and 't' value is 4.77 which is significant at 0.0 level (p<0.01). It is seen from Table-2, that in case of

**Height** measured in standing height test the Mean scores of pre and post test of the experimental group are 151.36 ( $\pm 6.30$ ) and 152.68 ( $\pm 5.62$ ) respectively, whereas, the mean difference is -1.32 and 't' value is -2.91 which is significant at 0.05 level ( $p < 0.05$ ). It is seen from Table-2 that in case of **BMI** measured in Weight (in kg) / Height (in mts)<sup>2</sup> formula of the experimental group are 23.74 ( $\pm 2.83$ ) and 23.17 ( $\pm 2.87$ ) respectively, whereas, the mean difference is .56 and 't' value is 6.35 which is significant at 0.01 ( $p < 0.05$ ). It is seen from Table-2, that in case of **Chest circumference** as measured in chest circumference test the mean scores of pre and post tests of the experimental group are 34.84 ( $\pm 3.10$ ) and 34.22 ( $\pm 2.95$ ) respectively, whereas, the mean difference is .62 and 't' value is 4.11 which is significant at 0.01 level ( $p < 0.01$ ). It is seen from Table-2 that in case of **abdominal circumferences** as measured in abdominal circumferences test the mean scores of pre and post test of the experimental group are 33.04 ( $\pm 3.69$ ) and 32.04 ( $\pm 3.82$ ) respectively, whereas, the mean difference is .17 and 't' value is 5.69 which is significant at 0.01 level ( $p < 0.01$ ). It is seen from Table-2 that in case of **Thigh circumferences** as measured in Thigh Circumferences test the mean scores of pre and post test of the experimental group are 23.50 ( $\pm 2.86$ ) and 21.72 ( $\pm 3.06$ ) respectively, whereas, the mean difference is 1.78 and 't' value is 8.63 which is significant at 0.01 level ( $p < 0.01$ ). It is seen from Table-2 that in case of **Triceps skin fold** as measured in Triceps skin Fold test the mean scores of pre and post test of the experimental group are 23.68 ( $\pm 3.88$ ) and 23.08 ( $\pm 3.57$ ) respectively, whereas, the mean difference is .60 and 't' value is 3.46 which is significant at 0.05 level ( $p < 0.05$ ). It is seen from Table-2 that in case of **Sub scapular skin fold** as measured in Sub Scapular skin fold test the mean scores of pre and post test of the experimental group are 26.96 ( $\pm 5.20$ ) and 26.00 ( $\pm 5.21$ ) respectively, whereas, the mean difference is .96 and 't' value is 6.08 which is significant at 0.01 level ( $p < 0.01$ ). It is seen from Table-2 that in case of **Thigh skin fold** as measured in Thigh skin Fold test the mean scores of pre and post test of the experimental group are 39.28 ( $\pm 7.68$ ) and 38.40 ( $\pm 7.64$ ss) respectively, whereas, the mean difference is .88 and 't' value is 4.74 which is significant at 0.01 level ( $p < 0.01$ )

### III. Comparison of Results of Selected Variables, Between Control and Experimental Group.

- In case of **body weight** the mean gain of the controlled and experimental group is .02 and -.60 respectively, whereas the difference in mean gain of both group is -.62 which is in favors of Experimental group however the 't' value of the same is -4.02 which is significant at 0.01 level. This indicates that the Aerobic training programme helps to lose the body weight significantly. *Thus, the null hypothesis- $H_0$ , formulated in this study, "There is no significant difference in the mean score of body Weight of control and experimental group" has been rejected.*
- In case of **Height** the mean gain of the controlled and experimental group is 1.00 and 1.32 respectively, whereas the difference in mean gain of both group is .32 which is in favors of control group however the 't' value of the same

is 1.24 which is not significant at 0.05 level. This indicates that the Aerobic training programme not improves the Height significantly.

*Thus, the null hypothesis-H<sub>02</sub>, formulated in this study, “There is no significant difference in the mean score of standing Height of control and experimental group” has been retained.*

- In case of **B.M.I** the mean gain of the controlled and experimental group is .16 and .56 respectively, whereas the difference in mean gain of both group is .40 which is in favor of experimental group however the ‘t’ value of the same is 2.94 which is significant at 0.05 level. This indicates that the Aerobic training programme not improves the B.M.I significantly.

*Thus, the null hypothesis-H<sub>03</sub>, formulated in this study, “There is significant difference in the mean score of B.M.I of control and experimental group” has been rejected*

- In case of **Chest circumference** the mean gain of the controlled and experimental group is .16 and -.62 respectively, whereas the difference in mean gain of both group is .78 which is in favor of experimental group however the ‘t’ value of the same is -4.38 which is significant at 0.01 level. This indicates that the Aerobic training programme not improves the Chest circumferences significantly.

*Thus, the null hypothesis-H<sub>04</sub>, formulated in this study, “There is no significant difference in the mean score of Chest circumference of control and experimental group” has been rejected.*

- In case of **Abdominal circumference** the mean gain of the controlled and experimental group is -.02 and -1.00 respectively, whereas the difference in mean gain of both group is .98 which is in favor of experimental group however the ‘t’ value of the same is -4.16 which is significant at 0.01 level. This indicates that the Aerobic training programme improves the abdominal circumferences significantly.

*Thus, the null hypothesis-H<sub>05</sub>, formulated in this study, “There is no significant difference in the mean score of abdominal circumference of control and experimental group” has been rejected.*

- In case of **Thigh circumference** the mean gain of the controlled and experimental group is .36 and -1.78 respectively, whereas the difference in mean gain of both group is 2.14 which is in favor of control group however the ‘t’ value of the same is -8.70 which is significant at 0.01 level. This indicates that the Aerobic training programme not improves the Thigh circumferences significantly.

*Thus, the null hypothesis-H<sub>06</sub>, formulated in this study, “There is no significant difference in the mean score of Thigh circumference of control and experimental group has been rejected.*



- In case of **Triceps Skin fold** the mean gain of the controlled and experimental group is .20 and -.60 respectively, whereas the difference in mean gain of both group is .80 which is in favors of experimental group however the ‘t’ value of the same is -3.26 which is significant at 0.05 level. This indicates that the Aerobic training programme improves the Triceps Skin fold significantly.  
*Thus, the null hypothesis-H<sub>07</sub>, formulated in this study, “There is no significant difference in the mean score of Triceps skin fold of control and experimental group” has been rejected.*
  
- In case of **Sub scapula Skin fold** the mean gain of the controlled and experimental group is .16 and -.96 respectively, whereas the difference in mean gain of both group is 1.12 which is in favors of experimental group however the ‘t’ value of the same is -4.98 which is significant at 0.01 level. This indicates that the Aerobic training programme improves the Sub scapula Skin fold significantly.  
*Thus, the null hypothesis-H<sub>08</sub>, formulated in this study, “There is no significant difference in the mean score of Sub scapula skin fold of control and experimental group” has been rejected.*
  
- In case of **Thigh Skin fold** the mean gain of the controlled and experimental group is .32 and -.88 respectively, whereas the difference in mean gain of both group is 1.20 which is in favors of experimental group however the ‘t’ value of the same is -4.64 which is significant at 0.01 level. This indicates that the Aerobic training programme improves the Thigh Skin fold significantly.  
*Thus, the null hypothesis-H<sub>09</sub>, formulated in this study, “There is no significant difference in the mean score of Thigh skin fold of control and experimental group” has been rejected.*

**Table 3**  
**Comparison of Mean Gain in selected variables between Control and experimental group**

Variables	Group Compared	Mean Gain	Mean Difference	Standard Error Mean Gain	‘t’	Significance.
Weight	Control Vs Experimental	.02 -.60	-.62	.15	-4.02	.000 p<.000
Height	Control Vs Experimental	1.00 1.32	.32	1.24	.26	.797 p>0.05
B.M.I.	Control Vs Experimental	.16 .56	.40	.14	2.94	.005 P<0.05
Chest Circumfer	Control Vs	.16 -.62	.78	.17	-4.38	.000 P<.000

ence	Experimental					
Abdominal Circumference	Control Vs Experimental	-.02 -1.00	.98	.23	-4.16	.000 P<.000
Thigh Circumference	Control Vs Experimental	.36 -1.78	2.14	.25	-8.70	.000 P<.000
Triceps Skin fold	Control Vs Experimental	.20 -.60	.80	.24	-3.26	.002 P<.000
Sub scapular Skin fold	Control Vs Experimental	.16 -.96	1.12	.22	-4.98	.000 P<.000
Thigh Skin fold	Control Vs Experimental	.32 -.88	1.20	.25	-4.64	.000 P<.000

## Discussion

From the interpretation of the data the following results of Anthropometric measurements which shows significant enhancement in body weight in which 't' value is -4.02 which is statistically significant at the 0.01 level. B.M.I measurement 't' value is 2.94 which is significant at 0.05 level. Chest circumference 't' value is -4.38 is statistically significant at 0.01 level. Abdominal circumference 't' value is -4.16 which is significant at 0.01 level. Thigh circumference 't' value is -8.70 which is significant at 0.01 level. Triceps skin fold 't' value is -3.26 which is significant at 0.05 level. Sub scapula skin fold 't' value is -4.98 which is significant at 0.01 level. Whereas the analysis of the data reveals the mean gain in Height measurement 't' value is -.16 which is not significant at 0.05 level.

That means the selected Aerobic training programme did not shows significant effect on Height. The analysis of data reveals that the experimental group has improved in the body Weight, B.M.I, Chest circumference, and abdominal circumferences, Thigh circumference, Triceps skin fold, Sub scapula skin fold, Thigh skin fold. Further in case of Height the experimental group scores shows significant improvement in mean between pre and post test (Table No 2 Height 't' value -2.91). But not shows significant improvement in Table No.3 (Height 't' value .26). Therefore statistically concluded that the treatment given to Height is partially successful.

***On the basis of the above discussion, the results can be concluded as follows;***

- Eight week training of Aerobic exercise imparted in this study was effective in reducing excessive body weight.

- Effective in reducing Chest circumference, Abdominal circumference, Thigh circumference. Effective in reducing Triceps, sub scapula, and Thigh skin fold.

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