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## “COMPARATIVE STUDY OF AEROBIC EXERCISE ON ATHLETE AND NON- ATHLETE WITH SPECIAL REFERENCE TO THEIR BODY COMPOSITION”

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### ABSTRACT

**H**uman beings are probably designed for physical activity. Health vitality and long life are desirable goals for everyone but they cannot be achieved without building on oxygen debt in the muscles. It is a type of exercise that overloads the heart and lungs and causes them to work harder than they do when a person is at rest. Aerobic exercises have a number of advantages over other ways of keeping fit, not the least but it is a great fun for everyone. It is simple and not expensive. We need a little space and some music we even do it without music, although it will not give much fun. Some of the benefits of aerobic exercises include the ability to utilize more oxygen



during strenuous exercise, a lower heart at rest the production of less lactic acid and greater endurance.

**KEYWORDS-** Aerobic Exercise , Body Commposition , physical activity.

### INTRODUCTION :

Aerobic exercises are considered to be more effective than aerobic exercises in developing fitness, especially cardio-respiratory endurance. Aerobic exercises may also have more lasting effects on blood composition. Aerobic exercises can be performed for longer period and they should live the exercises refreshed rather than exhausted. Aerobic activities include jogging or slow running, swimming, cycling, rope skipping, aerobic dance, brisk walking and the other that significantly increase the heart and respiratory rates and which can be done continuously for longer period.

Aerobic exercise is essential to healthy cardio- vascular system. Aerobic exercise is an activity that can Sustained for an extended period of time without building on oxygen debt in muscles. It is a type of exercise that overloads the heart and lungs and causes them to work harder than they do when a person is at rest.

People, all over the world have realized the importance of physically fit body for a vigorous and purposeful life. Unless we have the sustaining physical fitness, the joy of living and the satisfaction of a complete life can not enjoy.

There are many benefits which can be achieved by an Aerobic program me which are explained as under.

- 1) INCREASE RESISTANCE TO FATIGUE AND GIVE MORE ENERGY. Aerobic exercise can extend life by few years.
- 2) IMPROVE MOOD AND REDUCE DEPRESSION AND ANXIETY:- Positive mood changes have been noted after as

short as two To three weeks after starting aerobic exercise.

3) IMPROVE THE QUALITY OF YOUR SLEEP. Student show people who exercise regularly fast sleep quicker one to two hours before bedtime.

4) INCREASE GOOD (HDL) CHOLESTEROL. This type of Cholesterol: - is known to reduce the risk of heart disease.

5) Help control and reduce body fat. Aerobic Exercise combined with a healthy diet can lower body fat.

**TERMS RELATED TO THE STUDY :-**Aerobic exercise was defined as a series of choreographed routine of movement of various types of dance (dazzi, ball room, modern, ballet, musical comedy & rock ) combined such as hopping, skipping, jumping, & stretching continuously performed to music."

Aerobic exercise is an activity that raises the body demand for oxygen, resulting in temporary, increase in rate of respiration and heart rate. Your becomes stronger & works more efficiently with regular Aerobic exercise.

**BODY MASS INDEX (BMI) :-** A key index for relating a person's body weight to their height. The BMI is a person's weight in kilogram (Kg) divided by their height in meters (m) squared. BMI is a relationship between weight and height that is associated with body fat health risk.

**BODY COMPOSITION :-**Body composition refers to the proportion of fat and fat free mass in the body. Those with a higher proportion of fat free mass to a lower proportion of body fat have a healthy composition.

**SKIN FOLD:-**A fold of skin formed by pinching or compressing the skin & subcutaneous layers especially in order to estimate the amount of body fat.

**BODY WEIGHT:-**Body weight is the total mass of the body. Weight if the nude human body with empty bowels, is known as body weight.

**ATHLETE:-**A person who is trained or skilled in exercises, sports, or games requiring physical strength, agility or endurance.

A person possessing the natural or acquired traits, such as strength, agility and endurance, that are necessary for physical exercise or sports, especially those performed in competitive sports.

**NON ATHLETE:-**An individual who is not involved in any physical activity sports or games.

#### **DELIMITATION:**

1) The study is delimited to the short distance female athlete.

2) The present study is delimited to only female students from 8th to 10th

3) This is delimited to 20 female athlete and 20 non-athlete female students

4) For the present study comparison of the effect of the aerobic exercise on Athlete and non athlete with special reference to their body.

5) The age of the subject range between 13 to 16 years.

6) The study is delimited for high school of Nagpur only.

#### **MTHODOLOGY:**

In this chapter procedure adopted for the selection of subjects, selection of variables, criterion measures, Administration of Tests, collection of data ad statistical technique to be used have been described.

**SELECTION OF SUBJECTS:-**Twenty (20) female athletes & twenty female non athletes' students of St. Xavier School were Nagpur as selected as subjects for the purpose of the study. The age of the subject was ranged between 13 to 16 years.

**SELECTION OF VARIABLES :-** The researcher had gone through both critical as well as allied literature related to the problem and listed a number of physiological variables which are likely to be influenced by the type of treatment variables chosen by the investigator. Keeping in mind the feasibility criteria, the facility and equipment available in the institutions. The following variables were chosen and they were Body Mass Index, skin fold ad Body weight.

**CRITERION MEASURES :-**The criterion measures chosen for testing the hypothesis were:

1) Body mass index was measured with the help of the formula.

Weight (in Kg)  
Height2 ( in Meters)

2) Skin fold was recorded In millimeter (mm) with the help of skin fold caliper.

3) Body weight was measured in kilogram (kg) with the help of Weighing Machine.

**ADMINISTRATION OF TEST :-** Before administration of test a meeting of all the subjects and testers was taken. The requirement of testing procedure was explained to them in detail so that there was no doubt left in their mind, regarding the effort and strain, they has to endure in addition to their participation in the daily school activities. No motivational technique was used in this study.

**BODY MASS INDEX:**

**Purpose :-**The purpose of the test was to measure the body mass index (BMI) of the subject.

**Equipment :-**Weighing machine, Anthropometer rod or stadiometer and score sheet.

**Procedure:-** To calculate BMI, the researcher first has to record the weight in kg and height in meter by respective equipment through the right procedure.

**BODY WEIGHT :-**The subject was asked to stand erect barefooted with heel together on the platform of the weighting machine with equal weight on both feet. The zero error (alignment) of the machine was checked before asking the subjects to stand on machine platform. The weight was recorded when the plate showing the weight become still. The score was recorded accurately in kilogram (kg).

**HEIGHT:-**The subject was asked to stand erect, bare-footed on a plane horizontal surface against a wall with his heels, back of the shoulders and head touching the wall. He was asked to stretch the body upwards as much as possible without his heels leaving the ground. The head and face is checked for its being in F.H. plane. The anthropometer rod is kept in front of the subject and the cross bar of the anthropometer was adjusted so that its lower edge touches the highest point of the subject’s head.

**Scoring:-**The weight is recorded in kilogram(kg) and height in meter (m). To calculate the body mass index (BMI) the following formula was applied.

$$\text{BMI} = \frac{\text{Weight(in Kg)}}{\text{Height2 ( in Meters)}}$$

**SKINFOLD :-**To measure skin fold, the Biceps skin fold width. Triceps skin fold width, Sub-scapular skin fold width and Supra-iliac skin fold width was taken.

**BICEPS SKINFOLD WIDTH**

**Purpose:-**To measure the biceps skin fold width of the subject.

**Equipment:-**Skin fold caliper and score sheet.

**Procedure:-**The subject with a naked arm is asked to stand at ease with hanging arms. The midpoint of the upper arm marked for measuring the biceps skin folds. The skin and subcutaneous fat fold is picked at about 1 cm above the marked level o the anterior side of the biceps muscle. The jaws of the caliper are applied on the fold so that the marked horizontal lone is approximately at a level of the midpoint of the jaws and that the jaws hold a double layer of skin plus subcutaneous fat. The lighter arm of the caliper is slowly released so as to put full pressure of the jaws on the vertical skin fold. The reading was noted from the dial of the caliper about to seconds after leaving the smaller arm of the caliper when the reading is quite stable.

**TRICEPS SKINFOLD WIDTH**

**Purpose :-**To measure the triceps skin fold width of the subject.

**Equipment :-**Skin fold caliper and score sheet.

**Procedure:-**The subject with a naked arm was asked to stand at ease with hanging arms. Usually, the midpoint of the upper arm marked previously for measuring upper arm circumference helps to provide a land mark for

measuring triceps skin fold. The skin and subcutaneous fat fold is picked at about 1 cm above the marked level on the posterior side of the upper arm over the triceps muscle.

**COLLECTION OF DATA, ANALYSIS AND INTERPRETATION**

The analysis of data collected on athlete and non athlete aerobic exercise at a result on body mass index, skin fold and body weight have been describe in this chapter. The data pertaining to compare of aerobic exercise on body mass index, skin fold and body weight of athlete and non athlete was examined by ‘t’ ratio to find out the significant difference between pre test and post test.

**LEVEL OF SIGNIFICANCE :-** The level of significance to the test obtained ‘t’ ratio was fixed at 0.05 level of significance which considered to be appropriate for the purpose of these study.

**FINDINGS :-** the findings of the study related with the comparative study of aerobic exercise ( effect of six week aerobic training program) on athlete and non athlete were presented in table.

**TABLE SHOWING THE COMPARISON OF MEAN OF PRE THEST AND POST TEST SCORES OF ATHLETE AND NON ATHLETE ON BASIS OF THEIR BODY MASS INDEX, SKINFOLD IN MM AND BODY WEIGHT IN KG**

GROUP	ATHLETE		NON ATHLETE	
	M <sub>1</sub>	M <sub>2</sub>	M <sub>1</sub>	M <sub>2</sub>
BODY MASS INDEX	18.89	18.42	19.2	18.7
SKINFOLD	63.65	59.8	67.8	64.3
BODY WEIGHT	47.5	46.4	46.9	45.6

Shows the mean of body mass index of athlete for pre-test and post-test are 18.89 and 18.42. And the body mass index of non-athlete for pre-test and post –test are 19.2 and 18.7kg. Similarly an examination of table shows that there is significant difference in the mean body mass index of both athlete and non athlete as a result of aerobic exercise.

The mean of skin fold of athlete for pre-test and post-test are 63.65 and 59.8 mm. And of non-athlete for pre-test and post-test are 67.8 and 64.3mm. An examination of table shows that there is a significant difference in the mean skin fold of both athlete and non athlete as a result of aerobic exercise.

The mean of Body weight of athlete for pre-test and post –test are 47.5 and 46.4 kg. And non-athlete for pre-test and post-test are 46.9 and 45.6 kg. An examination of table shows that there is a significant difference in the mean Body Weight of both athlete and non athlete as a result of aerobic exercise.

It is shows that the mean of the pre-test and post-test of athlete and non athlete. The mean of the pre-test & post-test of athlete & non athlete. The mean of the pre-test and post-test of athlete for body mass index is 18.89 and 18.42. Where the mean of the pre-test & post-test of non athletes of body mass index is 19.2 & 18.7.

The pre-test mean is more than the post-test mean in both athlete and non-athlete. It shows that there is a difference in the pre-test & post-test mean of athlete and non-athlete.

Similarly the mean of the pre-test and post-test of athlete for skin fold is 63.65mm and 59.8 mm. Where as the mean of the pre-test and post-test of non athletes for skin fold is 67.8mm and 64.3 mm.

As result, pre-test more than the post-test mean in athlete and non-athlete. It shows that there is a difference in pre-test and post-test mean of a difference in the pre-test and post-test mean of athlete and non-athlete.

The mean of the pre-test and post-test of athlete for body weight is 47.5 and 46.4 kg. Whereas the mean of the pre-test and post-test of non athletes for body weight is 46.9 and 45.6 kg.

As a result, the pre test is more than the post test mean in athlete & non athlete. It shows that there is a difference in pre-test & post-test mean of athlete & non athlete.

**CONCLUSIONS:**

With the limitations of the present study and on the basis of findings the following conclusions are drawn:

- 1) In body mass index, athlete has shown significant change in their mean but the obtained value of ‘t’ ratio is less than the required value. Where as, the non athlete has shown significant decrease as a result of aerobic exercise

program of 6 weeks.

2) The skin fold of athlete and non athlete has shown significant change at the skin fold of athlete and non athlete has shown significant decrease as a result of aerobic exercise Program of 6 weeks.

3) The body weight of athlete has shown significant change as the body weight of athlete has shown significant decrease. Where the on athlete has shown difference in the mean scores but the obtained 't' ratio value is less than the required value.

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