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An analyses of aerobic exercise and its effects on physical fitness of adults from Anantnag District

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Abstract

The researcher used to check the effect of aerobic exercise on physical fitness of adults. All these created interest in the researcher. Under taken the problem title on "*Effect of Aerobic Exercises on Physical Fitness of Adults*". The objective of the study are some findings of the study would assist the adults to provide proper aerobic exercises in terms of duration and intensity of work. The study would be of immense help to the adults, teachers of physical education and coaches involving to determine the effectiveness of aerobic exercise. So that adults are able to put up their physical fitness better. The study would be significant in the result of this study may help the adults to know the aerobic effect on physical fitness. To devise specific aerobic training programme for adults. Researcher hypothesized that, there would be significant difference as a result of aerobic exercise on selected adults. The present study was delimited to the 30 adults of Anantnag District. The age of subjects was ranging between 18 to 25 years. The study was further delimited to physical fitness variables i.e. cardio-vascular endurance, flexibility, vital capacity, Body Mass Index (Height & Weight). The limitations of the study are daily routine life of the subjects was not considered. Other physical activities, Control on diet, Medical treatment was not taken under the control of scholar.

Research scholar of this present study have gather the related literature from books, periodicals, research journals, magazines, published and unpublished dissertations and abstract from the library of Apex University, Jaipur. It would provide the other background material to evaluate the significance of the study. 30 adults were selected by using simple random sampling method as subjects from Anantnag District and their age was ranging between 18 to 25 years. The researcher divided the 30 adults into two equal groups on the basis of the mean performance of pre-test score. The groups were equated and distributed into two homogeneous groups namely 1) Experimental Group and 2) Control Group. Criterion measures was selected for testing the hypothesis on present study are Cardio-vascular Endurance, Flexibility, Vital Capacity and Body Mass Index.

Keywords: Aerobic Exercise, Physical Fitness, Cardiovascular system etc

1. Introduction

Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health and wellness. It is performed for various reasons including strengthening muscles and the cardiovascular system, honing athletic skills, weight loss or maintenance, as well as for the purpose of enjoyment. Frequent and regular physical exercise boosts the immune system, and helps prevent the "diseases of affluence" such as heart disease, cardiovascular disease, Type 2 diabetes and obesity. It also improves mental health, helps prevent depression, helps to promote or maintain positive self-esteem, and can even augment an individual's sex appeal or body image, which is also found to be linked with higher levels of self-esteem. Childhood obesity is a growing global concern and physical exercise may help decrease some of the effects of childhood and adult obesity. Health care providers often call exercise the "miracle" or "wonder" drug—alluding to the wide variety of proven benefits that it provides [3].

Aerobic Exercise

Aerobic exercise is any physical activity that makes you sweat, causes you to breathe harder, and gets your heart beating faster than at rest. It strengthens your heart and lungs and trains your cardiovascular system to manage and deliver oxygen more quickly and efficiently throughout your body.

Aerobic exercise uses your large muscle groups, is rhythmic in nature, and can be maintained continuously for at least 10 minutes.

Before going into the benefits of aerobic exercise, let's break down some key terms we just mentioned. Cardiovascular system is made up of your heart and blood vessels e.g., arteries, veins, and capillaries that transports blood throughout the body. Aerobic refers to how your body uses oxygen to sufficiently meet energy demands during exercise.

In other words, Aerobic exercise is physical exercise of relatively low intensity and long duration, which depends primarily on the aerobic energy system. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. Many types of exercise are aerobic, and by definition are performed at moderate levels of intensity for extended periods of time.

Aerobic exercise and fitness can be contrasted with anaerobic exercise, of which strength training and short-distance running are the most salient examples. The two types of exercise differ by the duration and intensity of muscular contractions involved, as well as by how energy is generated within the muscle.

In most conditions, anaerobic exercise occurs simultaneously with aerobic exercises because the less efficient anaerobic metabolism must supplement the aerobic system due to energy demands that exceed the aerobic system's capacity. What is generally called aerobic exercise might be better termed "solely aerobic", because it is designed to be low-intensity enough not to generate lactate via pyruvate fermentation, so that all carbohydrate is aerobically turned into energy.

Aerobic exercise comprises innumerable forms. In general, it is performed at a moderate level of intensity over a relatively long period of time. For example, running a long distance at a moderate pace is an aerobic exercise, but sprinting is not. Playing singles tennis, with near-continuous motion, is generally considered aerobic activity, while golf or two person team tennis, with brief bursts of activity punctuated by more frequent breaks, may not be predominantly aerobic. Some sports are thus inherently "aerobic", while other aerobic exercises, such as fartlek training or aerobic dance classes, are designed specifically to improve aerobic capacity and fitness.

Ever increasing industrialization and more sedentary lifestyles along with many of the customs of our consumer society have brought about an increase in recent decades of so-called, diseases of civilization (i.e. diabetes, hypertension, arteriosclerosis, obesity, high cholesterol, etc). In spite of many information programs about the benefits of exercise during midlife, statistics reveal that few people in this age group take part in exercise programs during their leisure time.

Generally, aerobic training promotes a combination of rather well known. Adaptations in the skeletal muscles, the cardiovascular system, the autonomic nervous system, and the hormonal responses. In the skeletal muscle, there are two important adaptations with aerobic training. First, there is an increase in concentration of enzymes for the citric acid cycle, for fatty acid oxidation, and for the electron transport system. The net result is an augmentation of the metabolic capacities that are associated with the mitochondria (and the respiratory capacity) and an increase in the use of fat as a source of energy. Second, there is an increase in CA pillarization of the trained muscles, with both a greater number of capillaries per muscle fiber and a decrease of the area supplied by a single capillary.

The Cardiovascular adaptations include a greater stroke

volume and maximum cardiac output, and an enhance ability to lower peripheral resistance during strenuous exercise. The autonomic nervous system and hormonal adaptations to aerobic exercise training include increased muscle-tone at rest and a blunted catecholamine response to sub maximal exercise.

One of the most important consequences of the adaptation is the shift to greater reliance on fat as a fuel for muscular exercise. This occurs with glycogen-sparing effect that contributes to greater endurance capacity and with a reduction in plasma triglyceride concentration and an increase in high-density lipoprotein (HDL) mass, due especially to increases in HDL2 cholesterol and lipoprotein A-I.

Another important aspect is the psychological benefit of aerobic activity, it reduces anxiety and depression. Exercise improves functioning in a host of other life areas, including sleeping patterns and occupational satisfaction and efficiency.

Physical fitness

The concept of physical fitness has become a point of attention in our country. The Govt. as well as the people are becoming aware of its importance in present day living because fitness is essential to increase productivity power of labour in every respect of development. Various schemes have been launched by the Govt. of India to improve physical fitness of its citizen and to create interest among the people towards such activities which may ultimately improve their fitness. Man's personality is the total picture of his organised behaviour. For the development of personality, the individual should be physically fit, mentally alert, emotionally matured and socially adjusted. Physical fitness is one's riches possession, it cannot be purchased it has to be earned through daily routine of physical exercise. Physical fitness for any sports consists of a number of inter-related qualities of factors such as speed, strength, co-ordination, agility and endurance.

According to AAHPER, Physical Fitness represents the capacity to live most vigorously and effectively with one's own resources. In other words state that which characterize the degree of which the person is able to function.

According to Larson, it is the highest level of the most fit individual the one who has the largest physical resources and the ability to utilize these resources with a minimum expenditure of energy for each movement.

Physical Fitness is the Capacity of the heart, blood vessels, lungs and muscles of function at optimal efficiency means the most favorable health needed for the enthusiastic and pleasurable participation in daily tasks and recreation activities.

Physical fitness really implies more than ability to do work without much efforts, physical fitness affects to some degree. All of his life activities not only his physical well being, but also mental effectiveness and personal social adjustment as well.

2. Objectives

- i. To study the Physical Fitness of Adults from Anantnag Dist.
- ii. To study the effects of aerobic exercises on Physical fitness on Adults from Anantnag Dist.

3. Methodology

This chapter includes the information regarding selection of subjects, sources of data, sampling procedures, selection of test, criterion measures, collection of data and administration of test have been described.

3.1 Selection of subjects

30 adults were selected as subjects from Anantnag District and their age was ranging between 18 to 25 years.

3.2 Sampling procedure

Simple random sampling method was employed for the selection of subjects for the study.

3.3 Formation of groups

The researcher divided the 30 adults into two equal groups on the basis of the mean performance of pre-test score. The groups were equated and distributed into two homogeneous groups namely.

- 1) Experimental Group
- 2) Control Group

3.4 Criterion measures

Following criterion measures was selected for testing the hypothesis on present study.

1. Cardio-vascular Endurance
2. Flexibility
3. Vital Capacity
4. Body Mass Index

3.5 Collection of data

For data collection two test was conducted 1) Pre-test: A Pre-test was conducted for knowing the equal distribution of both the group ie. Two Experimental groups and Control group. 2) Post-test: After six weeks training programmed final test was conducted for the final result collected pre-test and post test data was further put for analysis.

3.6 Statistical techniques

The raw data collected from pre-test and post-test of both experimental & control group will be analyzed using t-test with level of significance at 0.5

$$1. \text{Mean} = \frac{\sum X}{N}$$

$$2. \text{S.D} = \sqrt{\frac{\sum X^2 - (\sum X)^2}{N(N-1)}}$$

Where SD = standard deviation

't' = test was calculated by following formula.

3. Where M1 and M2 are means.

$$t = \frac{M1 - M2}{\sqrt{\frac{(SD1)^2}{N1} + \frac{(SD2)^2}{N2}}}$$

4. Analysis and interpretation of data

The researcher conducted a study on effect of Aerobic exercises on Physical Fitness of Adults. For the purpose of this study the researcher collected data on 30 adults of Anantnag District.

4.1 Analysis of data

To determine the significant difference in the means of Physical Fitness adults between the two groups as well as between the pre-test and post test means of experimental and control group t-test was employed.

4.2 Level of significance

To find out the significance difference, level of significance was set at 0.05 level of confidence.

Findings of the statistical analysis have been shown in the following tables.

Table 1: Summary of mean, standard deviation and t-ratio for the data on cardio-vascular endurance (600 yard run & walk) between

Test	Mean	Standard Deviation	Mean Difference	Standard Error	t-ratio
Pre-test	3.439	0.191	0.068	0.070	0.983@
Post-test	3.371	0.191			

The above Table 1 show that, Cardio-vascular Endurance mean difference between the pre-test and post-test of control group is not significant, because the calculated t-value of

0.983 is less than the tabulated t-value of 2.144 at 0.05 level of confidence of 14 degree of freedom.

Table 2: Summary of mean, standard deviation and t-ratio for the data on sit & reach test between the means of pre and post-tests of control group

Test	Mean	Standard Deviation	Mean Difference	Standard Error	t-ratio
Pre-test	8.633	1.965	0.046	0.701	0.067@
Post-test	8.587	1.873			

The above Table 2 show that, Sit & Reach Test mean difference between the pre-test and post-test of control group is not significant, because the calculated t-value of 0.067 is

less than the tabulated t-value of 2.144 at 0.05 level of confidence of 14 degree of freedom.

Table 3: Summary of mean, standard deviation and t-ratio for the data on vital capacity between the means of pre and post-tests of control group

Test	Mean	Standard Deviation	Mean Difference	Standard Error	t-ratio
Pre-test	968.133	28.693	8.934	10.153	0.880@
Post-test	977.067	26.890			

The above Table 3 show that, Vital Capacity mean difference between the pre-test and post-test of control group is not significant, because the calculated t-value of 0.880 is less than

the tabulated t-value of 2.144 at 0.05 level of confidence of 14 degree of freedom.

Table 4: Summary of mean, standard deviation and t-ratio for the data on body mass index between the means of pre and post-tests of control group

Test	Mean	Standard Deviation	Mean Difference	Standard Error	t-ratio
Pre-test	20.689	1.158	0.069	0.410	0.167@
Post-test	20.620	1.085			

The above Table 3 show that, Body Mass Index mean difference between the pre-test and post-test of control group is not significant, because the calculated t-value of 0.167 is

less than the tabulated t-value of 2.144 at 0.05 level of confidence of 14 degree of freedom.

Table 5: Summary of mean, standard deviation and t-ratio for the data on cardio-vascular endurance (600 yard run & walk) between the means of pre and post-tests of experimental group

Test	Mean	Standard Deviation	Mean Difference	Standard Error	t-ratio
Pre-test	3.460	0.198	0.290	0.094	3.081*
Post-test	3.170	0.306			

The above Table 5 show that, Cardio-vascular Endurance mean difference between the pre-test and post-test of Experimental group is significant, because the calculated t-

value of 3.081 is greater than the tabulated t-value of 2.144 at 0.05 level of confidence of 14 degree of freedom.

Table 6: Summary of mean, standard deviation and t-ratio for the data on sit & reach test between the means of pre and post-tests of experimental group

Test	Mean	Standard Deviation	Mean Difference	Standard Error	t-ratio
Pre-test	8.600	1.757	1.607	0.716	2.243*
Post-test	10.207	2.147			

The above Table 6 show that, Sit & Reach Test mean difference between the pre-test and post-test of Experimental group is significant, because the calculated t-value of 2.243 is

greater than the tabulated t-value of 2.144 at 0.05 level of confidence of 14 degree of freedom.

Table 7: Summary of Mean, Standard Deviation and t-ratio for the data on vital capacity between the means of pre and post-tests of experimental group

Test	Mean	Standard deviation	Mean difference	Standard error	t-ratio
Pre-test	968.867	22.013	27.333	8.114	3.369*
Post-test	996.200	22.425			

The above Table 7 show that, Vital Capacity mean difference between the pre-test and post-test of Experimental group is significant, because the calculated t-value of 3.369 is greater

than the tabulated t-value of 2.144 at 0.05 level of confidence of 14 degree of freedom.

Table 8: Summary of mean, standard deviation and t-ratio for the data on body mass index between the means of pre and post-tests of experimental group

Test	Mean	Standard deviation	Mean difference	Standard error	t-ratio
Pre-test	20.446	1.565	0.136	0.547	0.248@
Post-test	20.310	1.428			

The above Table 8 show that, Body Mass Index mean difference between the pre-test and post-test of Experimental group is not significant, because the calculated t-value of 0.248 is less than the tabulated t-value of 2.144 at 0.05 level of confidence of 14 degree of freedom.

than the tabulated t-value 2.048 at 0.05 level of confidence of 38 degree of freedom. But Insignificant difference observed in Body Mass Index (tab t 0.05 (38) = 2.048 > t = 0.670).

5. Discussion on findings

From the above tables the findings of the study are:

1. Insignificant difference found between pre test and post test of Control group in Cardio-vascular Endurance (t = 0.983), Sit & Reach Test (t = 0.067), Vital Capacity (t = 0.880) and Body Mass Index (t = 0.167) because all t values are less than the tabulated t-value 2.144 at 0.05 level of confidence of 14 degree of freedom.
2. Significant difference found between pre test and post test of Experimental group in Cardio-vascular Endurance (t = 3.081), Sit & Reach Test (t = 2.243) and Vital Capacity (t = 3.369) because all t values are less than the tabulated t-value 2.144 at 0.05 level of confidence of 14 degree of freedom. But Insignificant difference observed in Body Mass Index (tab t 0.05 (14) = 2.144 > t = 0.248).
3. Significant difference examined between post test of Control and Experimental group in Cardio-vascular Endurance (t = 2.153), Sit & Reach Test (t = 2.202) and Vital Capacity (t = 2.116) because all t values are less

6. Conclusion

On the basis of findings the researcher concluded that

1. Insignificant difference found between pre test and post test of Control group in Cardio-vascular Endurance, Sit & Reach Test, Vital Capacity and Body Mass Index.
2. Significant difference found between pre test and post test of Experimental group in Cardio-vascular Endurance, Sit & Reach Test and Vital Capacity, but insignificant difference observed in Body Mass Index.
3. Significant difference examined between post test of Control and Experimental group in Cardio-vascular Endurance, Sit & Reach Test and Vital Capacity, but insignificant difference observed in Body Mass Index.

7. Recommendation

According to conclusion and findings the researcher gives some recommendations as-

- Training of aerobic exercise is effective on the Cardio-vascular Endurance, Sit & Reach Test, Vital Capacity.
- If we increase the duration of training programme may

gives significant difference in Body Mass Index.

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