

# A Study on the Effect of Aerobic Exercises on Selected Physical Fitness Variables among Handball Players

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**ABSTRACT:-** *The purpose of the present study was to find out the effect of Aerobic Exercises on Selected Physical Fitness Variables among Handball players. To achieve the purpose of the present study, Thirty Handball players from Alappuzha districts at school level were selected as subjects at random and their ages ranged from 15 to 18 years. The study was formulated as a true random group design. The subjects (N=30) were randomly assigned to two equal groups of fifteen Handball players each. Pre test was conducted for all the subjects on selected physical fitness variables. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group and Control Group in an equivalent manner. Experimental Group was exposed to Aerobic Exercises and Control Group was not exposed to any Experimental training other than their regular daily activities. The duration of Experimental period was 12 weeks. After the Experimental treatment, all the thirty Handball players were tested on their selected Physical Fitness variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to Statistical Analysis using dependent 't' test. In all cases 0.05 level of significance was fixed to test Hypotheses. The Aerobic Exercises group had shown significant improvement in all the selected Physical Fitness variables among Handball players after undergoing Aerobic Exercises group for a period of twelve weeks.*

**KEYWORDS:-** Aerobics Exercises, Experimental Group, Flexibility, Explosive Power, Control Group, Handball.

## INTRODUCTION

Aerobic exercise is any type of cardiovascular conditioning. It can include activities like brisk walking, swimming, running, or cycling. You probably know it as “cardio.”

By definition, aerobic exercise means “with oxygen.” Your breathing and heart rate will increase during aerobic activities. Aerobic exercise helps keep your heart, lungs, and circulatory system healthy.

Aerobic exercise differs from anaerobic exercise. Anaerobic exercises, such as weightlifting or sprinting, involve quick bursts of energy. They're performed at maximum effort for a short time. This is unlike aerobic exercises. You perform aerobic exercises for a sustained period of time.

Read on to learn more about aerobic exercises you can try at home and at the gym. And remember; always talk to your doctor before beginning a new aerobic exercise routine.

Aerobic exercise and fitness can be contrasted with anaerobic exercise, of which strength training and weight training 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. Initially during aerobic exercise, glycogen is broken down to produce glucose, but in its absence, fat metabolism is initiated instead. The latter is a slow process, and is accompanied by a decline in performance level. The switch to fat as fuel is a major cause of what marathon runner's call "hitting the wall". Anaerobic exercise, in contrast, refers to the initial phase of exercise, or any short burst of intense exertion, in which the glycogen or sugar is consumed without oxygen, and is a far less efficient process. Operating an aerobically, an untrained 400 meter sprinter may "hit the wall" short of the full distance (Cooper, 1969).

Aerobic exercise refers to the type of repetitive, structured physical activity that requires the body's metabolic system to use oxygen to produce energy. Aerobic exercise:

- Improves the capacity of the cardiovascular system to uptake and transport oxygen.
- Can be undertaken in many different forms, with the common feature that it is achieved at a heart rate of 70–80% of a person's age-appropriate maximum.
- Considered the cornerstone of endurance training, characterized by moderate energy expenditure over a prolonged period of time.
- Is any activity that uses large muscle groups, can be maintained continuously and is rhythmic in nature?
- Depends primarily on aerobic energy- production i.e. muscle groups activated by this type of exercise rely on aerobic metabolism (using oxygen to extract energy in the form of adenosine tri phosphate (ATP) from amino acids, carbohydrates and fatty acids).
- Examples include walking, cycling, swimming, jogging, and dancing, hiking, long distance running.

Aerobic capacity describes the functional status of the cardio respiratory system, (the heart, lungs and blood vessels). Aerobic capacity is defined as the maximum volume of oxygen that can be consumed by one's muscles during exercise. It is a function both of one's cardio respiratory performance and of the ability of the muscles to extract the oxygen and fuel delivered to them. To measure maximal aerobic capacity, an exercise physiologist or physician will perform a VO<sub>2</sub> max test, in which a subject will undergo progressively more strenuous exercise on a treadmill, from an easy walk through to exhaustion. The individual is typically hooked up to a respire meter to measure oxygen, and the speed is increased incrementally over a fixed duration of time. The higher a cardio respiratory endurance level, the more oxygen transported to exercising muscles, the longer exercise can be maintained without exhaustion and accordingly the faster they are able to run. The Cooper and Multi-Stage Fitness tests can also be used to functionally assess Aerobic capacity. Aerobic capacity can be improved through a variety of means, including Fartlek training (Edvardsen, et al. 2011).

### **STATEMENT OF THE PROBLEM**

The purpose of the study was to find out the Effect of Aerobic Exercises on selected Physical fitness variables among Handball Players.

**SIGNIFICANCE OF THE STUDY**

The study was significant in the following ways.

1. This study would help to assess the physical performance variables among Handball Players.
2. The results of the study would help to introduce the concepts of aerobic exercises.
3. The results of the study would motivate the Handball players to practice aerobic exercises.
4. Further it may give additional information to the physical education professional's and the society.

**HYPOTHESIS**

It was hypothesized that aerobic exercises group would significantly improve the selected physical variables among Handball Players.

**DELIMITATIONS**

The study was confined to the following aspects.

1. Only thirty Handball players at school level from Alappuzha District, Kerala, India were chosen as the subjects.
2. The age of the subjects ranges from 15 to 18 years.
3. The training period was limited to 12 weeks.
4. One experimental groups and one control group were employed in this study.
5. The study was delimited to the following Physical variables.

**Physical Variables**

- Flexibility
- Explosive power

**SELECTION OF SUBJECTS**

The purpose of the study was to find out the effect of Aerobic Exercises on selected physical fitness variables among Handball players. To achieve the purpose of the present study, thirty Handball players from school level from Alappuzha District, Kerala were selected as subjects at random and their ages ranged from 15 to 18 years.

**EXPERIMENTAL DESIGN**

The study was formulated as a true random group design. The subjects (N=30) were randomly assigned to two equal groups of fifteen Handball players each. Pre test was conducted for all the subjects on selected physical variables. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group and Control Group in an equivalent manner. Experimental Group was exposed to Aerobic Exercises and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. After the experimental treatment, all the thirty Handball players were tested on their physical variables. This final test scores formed as post test scores of the subjects.

**STATISTICAL TECHNIQUES AND ITS JUSTIFICATION**

The pre test and post test scores were subjected to statistical analysis using dependent 't' test. In all cases 0.05 level of significance was fixed to test hypotheses.

**TABLE –I**  
**Variables and Test**

Sr. No	Variables	Tests	Unit of Measurement
1.	Flexibility	Trunk flexibility test	Centimeter
2.	Explosive power	Vertical jump	Centimeter

**RESULTS**

The findings pertaining to analysis of dependent ‘t’ test between experimental group and control group on selected physical variables among Handball players for pre-post test respectively have been presented in table II to III.

**TABLE –II**  
**Significance of Mean Gains & Losses between Pre and Post Test Scores of Experimental & Control Group on Flexibility**

Group	Pre- test	Post- test	Standard Deviation		Std error Mean	t- ratio
			Pre	Post		
Experimental Group	3.81	8.04	3.08	2.78	0.29	14.56*
Control Group	4.10	4.14	2.88	2.89	0.03	1.09

\* Significant at 0.05 level

To find out difference experimental and control group of Aerobic practices in flexibility Difference in two groups –ratio was employed and the level of significance was set at 0.05. Experimental group pre and post – test mean value were 3.81, 8.04, respectively. In control group pre and post- test were the mean value was 4.10, 4.14, respectively. In experimental the obtained t- ratio 14.56 was greater than the table value of 2.15 so it is found to be significant. In control group the obtained t- ratio 1.09 was lesser than the table value of 2.15 so it was found to be insignificant.

**TABLE – III**  
**Significance of Mean Gains & Losses between Pre and Post Test Scores of Experimental & Control Group on Explosive Power**

Group	Pre- Test	Post- Test	Standard Deviation		Std error Mean	t- ratio
			Pre	Post		
Experimental Group	37.16	40.75	5.84	5.37	0.29	12.37*
Control group	37.12	36.25	2.43	2.17	0.902	0.96

\* Significant at 0.05 level

To find out difference experimental and control group of Aerobic practices in explosive power Difference in two groups –ratio was employed and the level of significance was set at 0.05. Experimental group pre and post –test mean value were 37.16, 40.75, respectively. In control group pre and post- test were the mean value was, 37.12, 36.25 respectively. In experimental the obtained t- ratio 12.37 was greater than the table value of 2.15 so it is found to be significant. In control group the obtained t- ratio 0.96 was lesser than the table value of 2.15 so it was found to be insignificant.

## **CONCLUSION**

From the analysis of the data, the following conclusions were drawn:

The Aerobic Exercises Group had shown significant improvement in all the selected physical variables among Handball Players after undergoing Aerobic Exercises group or a period of twelve weeks.

## **REFERENCES**

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