



ISSN: 2456-0057

IJPNPE 2022; 7(1): 146-148

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Received: 12-11-2021

Accepted: 15-12-2021

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## Effect of aerobic exercises on physical efficiency index among the adolescents

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**DOI:** <https://doi.org/10.22271/journalofsport.2022.v7.i1c.2446>

### Abstract

Aerobic exercise is an activity in which every human being engages to one degree or another, during the course of his or her life. It is the at most importance to know the physiological mechanisms that sustain and act as the basis of everyone response to exercise. So, this was an attempt to investigate the Effect of Aerobic Exercises on Physical Efficiency Index among the Adolescents. Sixty male students were selected randomly from U.G. level of Vivekananda Mission Mahavidyalaya and divided equally in two groups and designed as Experimental group of thirty students and Control group of thirty students. The Experimental group underwent different aerobic exercises for eight weeks by maintaining a schedule. There was no any training programme for Control group. Physical Efficiency Index was measured by Harvard Step Test. In results, it was found that there was significant difference between pre-test and post-test in experimental group but no significant difference in control group. So, it was evident that aerobic exercises impact significantly on physical efficiency index among the adolescents.

**Keywords:** Aerobics, adolescents, physical, exercise, efficiency etc.

### Introduction

Aerobic exercise can best be defined as continuous movement exercise, locomotor movement and dance steps performed to music. Aerobic exercise is physical exercise of low to high intensity that depends primarily on the aerobic energy-generating process (Plowman *et al*, 2007). Aerobic dance provides an opportunity for people of widely different levels of physical ability to participate together with musical accompaniment engaging in exercise and skills which have been choreographed according to the needs of the individual. These activities vary from simple movements like free hand exercise to slightly and coordinated movements like twisting, jumping, dancing etc. Aerobics affords each participant the benefits of all components of fitness, including development of circulatory, respiratory, cardiovascular and fat metabolism. A regular aerobic dance programme can lay the foundation for an invigorated, enriched and healthy life.

Aerobic dance work out can be divided into different phases like warming up and stretching exercises, skill review, aerobic exercises and cooling down. Each phase has its own purpose without which the work out is incomplete. Each phase of programme is necessary if aerobic dance is to provide the desired benefit.

Physical Efficiency Index (PFI) is one of the important criteria to assess the cardio-pulmonary efficiency of a subject. The American Alliance for Health, Physical, Education Recreation and Dance (AAHPERD) recommended this test to study health related physical fitness programme in youth.

### Statement of the problem

The problem of the study was to investigate the effect of Aerobic exercises on Physical Efficiency Index among the adolescents.

### Hypothesis

It was hypothesized that aerobic exercises have the positive effect physical efficiency index among the adolescents.

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**Delimitations**

1. Only male students were selected.
2. Total no. of students was sixty (Experimental group of thirty students and Control group of thirty students).

**Limitations**

Subjects are not from the same cultural group, economical status, educational and family background, food habits, nutrition, mental growth and mental set up. Thus any influence of those factors on personality, will be beyond the control of the investigator.

**Procedure**

**Selection of Subjects**

For the present study, sixty male students were selected randomly from U.G. level of Vivekananda Mission Mahavidyalaya and divided equally in two groups and designed as Experimental group and Control group. The Experimental group of thirty students underwent different aerobic exercises for eight weeks by maintaining a schedule. The Control group of thirty students was not allowed to participate in any training Programme.

**Criterion Measures**

Harvard Step Test was used to determine Physical Efficiency Index and calculated by the following formula:

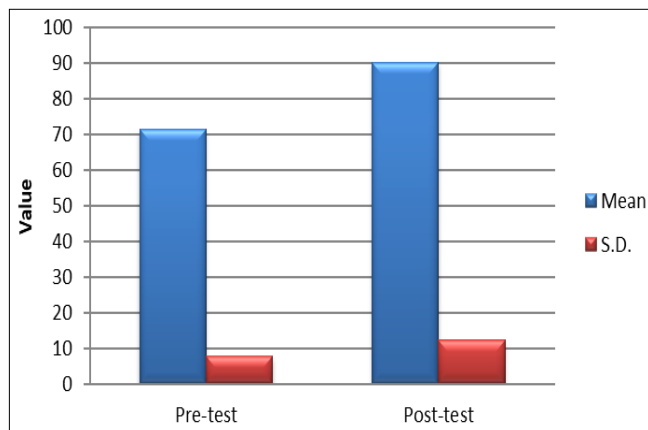
$$PEI = \frac{\text{Duration of exercise in seconds}}{2 \times \text{Sum of Pulse count in recovery}} \times 100$$

**Presentation and analysis of data**

**Table 1:** Mean and standard deviation of pre-test and post-test results of experimental group and control group of physical efficiency index among adolescents

Group	Pre-test		Post-test	
	Mean	S.D.	Mean	S.D.
Experimental group	71.35	7.745	90.35	12.216
Control group	71.08	7.242	71.13	5.485

From table -1 it was observed that post-test result was greater than pre-test result in case of Physical Efficiency Index in Experimental group. It indicated that Physical Efficiency Index became superior due to aerobic practices. On the other hand, there was minor difference in pre-test and post-test result among control group.



**Fig 1:** Mean and Standard Deviation of pre-test and post-test results of experimental group among adolescents.

**Exercise Programme**

Exercises	Duration
Warming up	5 min
Stretching exercise	5 min
<b>Aerobic exercises</b>	
1. Jumping jacks	25 min
2. Jump and clap	
3. Run and tap	
4. Jump and kick	
5. Jump with arm punches	
6. Runs and pivot	
7. Repeat jump lunge	
8. Turning walk and clap	
9. Bodyweight squat	
10. Donkey kick	
11. High knees	
12. Lung Skip	
13. Forgger	
14. Lateral bunny hop etc.	
Cooling down	5 min

**Programme Schedule**

Frequency	03 days in a week
Duration	40 minutes
Time	2:10 pm – 2:50 pm

**Statistical Analysis**

Pre-test and Post-test results were taken and compared by employing ‘t’ test at 0.05 level of confidence.



**Fig 2:** Mean and Standard Deviation of pre-test and post-test results control group among adolescents.

**Table 2:** Mean difference of pre-test and post-test results of experimental group and control group among the adolescents

Group	Tests	Mean	S. D.	‘t’ value
Experimental group	Pre-test	71.35	7.745	9.286 *
	Post-test	90.35	12.216	
Control group	Pre-test	71.08	7.242	0.037
	Post-test	71.13	5.485	

\* Significant at 0.05 level of Confidence  
t.05 (59) = 2.021

From Table – 2 it was observed that there was significant difference between pre-test and post-test result in relation to experimental group. In case of control group, no significant difference between pre-test and post-test results.

### Discussion of the findings

The obtained data on the subjects through application of statistical technique revealed that there was significant difference between pre-test and post-test result in experimental group but in case of control group, no significant difference was found between pre-test and post-test results.

Reddy *et al.* (2012) [9] clearly indicated that, after the six weeks of yogic and aerobic training, the level of resting pulse rate is decreased by combined (yogic and aerobic) practice group than the yogic, aerobic and control group. Aerobic is a continuous physical exercise activity with sufficient intake of oxygen by working group of muscles which balances usage of energy during the workout. It also strengthens and enlarges the heart muscle to improve its pumping efficiency.

It evident significantly greater improvements of physical efficiency index; practice of aerobic exercises helps the subjects to improve cardiorespiratory endurance and physiology of breathing process. Thus, aerobic exercises help the subjects to develop their physiological characters which help them for developing better in cardiorespiratory endurance a successful manner.

### Conclusion

From the above findings, it can be concluded that aerobic exercises helps to improve physical efficiency through practice of aerobic exercises. During teaching as well as coaching, teacher and coaches should keep in mind about such physiological facts which help the students and athletes for better educational achievement as well as sports performances.

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