

# Effect of Low Intensity Aerobic Dance on Cardio Respiratory Endurance and Functional Mobility among Obese School Boys

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## Abstract

The purpose of the study was to find out the effect of low intensity aerobic dance on cardio respiratory endurance and functional mobility among obese school boys. Forty class-II (BMI Score: 35.0 – 39.9) obese school boys from Chennai city were selected as subjects their age ranged from 13-16 years, and were divided in to experimental group (20) and control group (20), randomly taken for the study. The experimental group participated in low intensity of aerobic dance training[50%-60% of Max Heart Rate (HR Max)]involves maintaining a lower heart rate for a longer period of time. The experimental training was adopted for eight weeks training on three days a week, the control group was not exposed to experimental treatment. The selected variables were cardio respiratory endurance and functional mobility. The above selected variables were tested through 1.5 mile run/walk in meters and Timed Up and Go test in seconds. The collected data were statistically analyzed using dependent 't' test. The level of confidence was fixed at 0.05 level for all the cases. The result of the study proved that the low intensity aerobic dance significantly improved the cardio respiratory endurance and functional mobility among obese school boys.

**Keywords:** Low Intensity Aerobic Dance, Cardio Respiratory Endurance, Functional Mobility, Obese school boys.

## Introduction

As many as 268 Million children aged 5 to 17 years may be overweight, including 91 Million obese by 2025, according to a global estimate done by world obesity federation in UK. Timed to coincide with this year's World Obesity Day, which was observed on October 11, researchers from World Obesity Federation in the UK have also released data anticipating that obesity-related conditions will rise among children. In 2025, up to 12 Million children will have impaired glucose tolerance, 4 Million will have type 2 diabetes, 27 Million will have hypertension and 38 Million will have hepatic steatosis or build up of fat in the liver.

In a sense, we hope these forecast s are wrong: they assume current trends continue, but we are urging governments to take strong measures to reduce childhood obesity (**The New Indian Express, Edex, October 17, 2016**).

## **Aerobic Dance**

Aerobic dance is combination of workout and dance activities into practice that are executed with music. The key of aerobics was the change of the cardio vascular system. Aerobic training is a physical activity that can be done for prolonged period of time and is helpful in maintaining the balance between supply and consumption of oxygen if done that manner. Oxygen is our body's need for energy production **(Cooper, Kenneth, 1969)**.

## **Low Intensity Aerobic Dance**

Aerobic exercise causes you to repeatedly move the largest muscles in your legs, hips and arms. Your heart and respirator rates increase and your body benefits in many ways -- you burn calories, lower your risk of heart disease, and boost your mood, immunity and stamina. The Centres for Disease Control and Prevention recommend 150 minutes per week of moderate-intensity aerobic exercise. Aerobic dance is a choreographed, repetitive movement routine set to music. A typical aerobics program begins with 5 to 10 minutes of warm-ups and stretching, peaks with 20 to 30 minutes of target heart range dance, can include 20 minutes of a muscle stretching floor program known as body sculpting, and ends with 5 to 10 minutes of cool down and more stretching. **(American Academy of Podiatric Sports Medicine, 2014)**.

## **Low-Impact Aerobics**

1. Aerobic movements (those movements involving large muscle groups used in continuous rhythmic activity) in which at least one foot contacts the ground at all times
2. Evolved to decrease the lower leg overuse injuries associated with high-impact classes
3. Ideal for special populations, such as seniors, pregnant women and overweight individuals

There are three primary ranges; depending on your fitness goals. They are

1. Low Intensity [50%-60% of Max Heart Rate (HR Max)]
2. Medium Intensity (60%-70% of HR Max)
3. High Intensity (70% of HR Max and Above)

Lower intensity exercise can be performed for a longer period of time, whereas higher intensity exercise duration is much shorter.

## Cardio Respiratory Endurance

The ability of the lungs, heart rate and blood vessels to deliver adequate amounts of oxygen to the cells to meet the demands of prolonged physical activity **(Wener & Sharon, 2009)**.

## Functional Mobility

Functional mobility is a person's ability to interact with their environment effectively. This includes being able to walk around the house, do daily tasks, bath/shower, eat/feed, drive or any other functional task. The functional mobility required by an individual is dependent on the functional that he needs to perform **(Pendersen, 2003)**.

## Obesity

At their most basic, the words "overweight" and "obesity" are ways to describe having too much body fat. The most commonly used measure of weight status today is the body mass index, or BMI. BMI uses a simple calculation based on the ratio of someone's height and weight ( $BMI = kg/m^2$ ) **(James, WP, 2005)**.

## Classification of Obesity

**BMI Categories**

| <b>BMI</b>  | <b>CLASSIFICATION</b> |
|-------------|-----------------------|
| <18.5       | Under weight          |
| 18.5 – 24.9 | Normal weight         |
| 25.0 – 29.9 | Over weight           |
| 30.0 – 34.9 | Class I obesity       |
| 35.0 – 39.9 | Class II obesity      |
| >40.0       | Class III obesity     |

## Statement of the Problem

The purpose of the study was to find out effect of low intensity aerobic dance on selected cardio respiratory endurance and functional mobility among obese school boys.

## Hypothesis

It was hypothesized that there would be significant difference on low intensity aerobic dance on selected health related variables among obese school boys.

## **Review of Literature**

Kovacs, et al (2009) determined the effect of a school-based exercise training (ET) without dietary intervention, on body composition, fitness and cardiovascular risk in overweight/obese children. Subjects were 51 overweight/obese 6.5 to 12.5 year old children (23 boys, 28 girls; BMI 25.6+/-4.3 kg/m<sup>2</sup>), of whom 48 completed the program. Participants were enrolled in a 15-week aerobic training (three 60- minute session/week). Working heart rate was between 120-185 beats/minute. Participation rate was 87%. BMI, waist circumference; body composition (bio-impedance), aerobic capacity (treadmill), blood pressure, lipids and insulin sensitivity (HOMA) were assessed. Waist circumference, muscle mass, maximal oxygen consumption, systolic blood pressure and LDL cholesterol improved significantly. Number of children with abdominal obesity (29vs. 20), hypertension (10vs. 5) and elevated triglyceride (18vs.14) also declined significantly over time. It was concluded that as a result of high attendance and appropriate training program, cardiovascular fitness and abdominal obesity improved in overweight / obese children along with the improvement in metabolic risk factor profile.

## **Methodology**

The purpose of the study was to find out the effect of low intensity aerobic dance on cardio respiratory endurance and functional mobility among obese school boys. Forty class-II (BMI Score: 35.0 – 39.9) obese school boys from Chennai city were selected as subjects their age ranged from 13-16 years, and were divided in to experimental group (20) and control group (20), randomly taken for the study. The experimental group participated in low intensity of aerobic dance training [50%-60% of Max Heart Rate (HR Max)] involves maintaining a lower heart rate for a longer period of time. The experimental training was adopted for eight weeks training on three days a week, the control group was not exposed to experimental treatment. The selected variables namely cardio respiratory endurance and functional mobility. The above selected variables were tested through 1.5 mile run/walk in meters and Timed Up and Go test in seconds. The collected data were statistically analyzed using dependent 't' test. The level of confidence was fixed at 0.05 level for all the cases.

## **Statistical Techniques**

The collected data were statistically analyzed using dependent 't' test. The level of confidence was fixed at 0.05.

## Results and Discussion

**Table-I**  
**Mean, Mean Difference, Standard Deviation and 't' ratio for the**  
**Initial and Final Score of Cardio Respiratory Endurance**  
**and Functional Mobility for the Experimental**  
**and Control Group Among Obese**  
**School Boys**

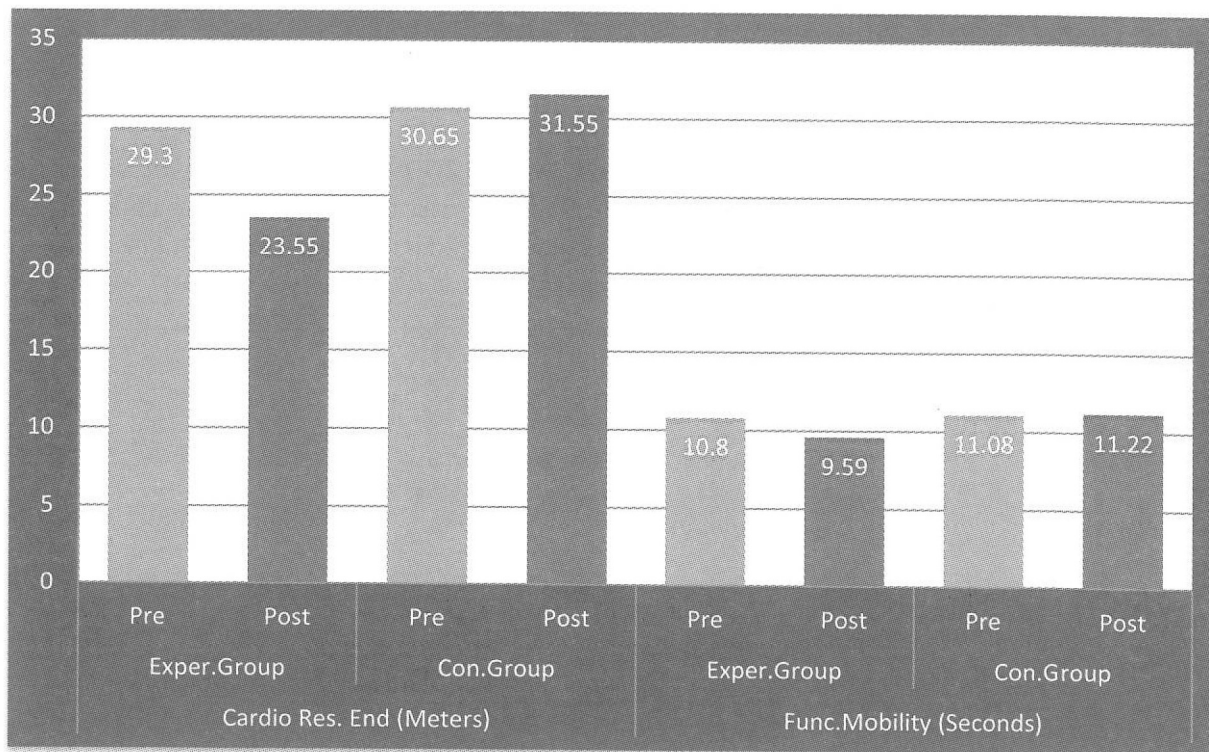
| Variables                              | Groups             | Test | Mean  | S. D | M. D | 't' ratio |
|--|--------------------|------|-------|------|------|-----------|
| Cardio Respiratory Endurance (Minutes) | Experimental Group | Pre  | 29.30 | 1.45 | 5.75 | 10.60*    |
|  |                    | Post | 23.55 | 2.16 |      |           |
|  | Control Group      | Pre  | 30.65 | 1.63 | 0.90 | 1.98      |
|  |                    | Post | 31.55 | 1.50 |      |           |
| Functional Mobility (Seconds)          | Experimental Group | Pre  | 10.80 | 1.19 | 1.21 | 6.19*     |
|  |                    | Post | 9.59  | 1.12 |      |           |
|  | Control Group      | Pre  | 11.08 | 0.71 | 0.13 | 1.44      |
|  |                    | Post | 11.22 | 0.85 |      |           |

\*Significant 0.05 level of confidence. Required table 't' value =2.093.

The result presented in table-I indicate that the pre test mean values of cardio respiratory endurance for experimental group were 29.30 and control group were 30.65 and Post test mean values of cardio respiratory endurance for experimental group 23.55 and control group were 31.55. As obtained table 't' value of experimental group was 10.60 greater than the table value of 2.093. Hence, it was proved that there was a significant improved in the cardio respiratory endurance of experimental group due to the low intensity aerobic dance. Since the obtained 't' value of control group was 1.98 lesser than the table value of 2.093. It was proved that there was no significant improvement in control group on cardio respiratory endurance.

The result presented in table-I also indicate that the pre test mean values of functional mobility for experimental group were 10.80 and control group were 11.08. Post test mean values of functional mobility for experimental group 9.59 and control group were 11.22. As obtained table 't' value of experimental group was 6.19 greater than the table value of 2.093. Hence, it was proved that there was a significant improved in the functional mobility of experimental group due to the low intensity aerobic dance. Since the obtained 't' value of control group was 1.44 lesser than the table value of 2.093. It was proved that there was no significant improvement in control group on functional mobility.

**Figure- 1**  
**The Bar Diagram showing the Mean Values of Cardio Respiratory Endurance and Functional Mobility among Obese School Boys**



**Conclusions**

1. The result of the study showed that there was a significant improvement in cardio respiratory endurance among obese school boys due to the low intensity aerobics dance.
2. The result of the study showed that there was a significant improvement in functional mobility among obese school boys due to the low intensity aerobics dance.

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