

# EFFECT OF AEROBIC DANCE EXERCISES ON BMI AND MUSCULAR STRENGTH ENDURANCE OF OBESE COLLEGE GIRLS

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## **Abstract**

The objective of this study was to explore the effects of 8-weeks aerobic dance exercises on body mass and muscular strength endurance on college obese girls total of 30 obese college women to participate in this study. Treatment group I underwent aerobic dance training, group II acted as control group. All thirty subjects were inducted for pre and posttest on BMI and muscular strength endurance. The aerobic dance training was given to the experimental group for 5 days per week (Monday to Friday) for the period of eight weeks. The control group was not given any sort of training except their routine work. The body mass index (Standard calibrated weighing machine, Stadiometer in kg/M<sup>2</sup>) muscular strength endurance (modified sit-ups in counts) were assessed before and after training period. The result from 't' test and inferred that 8 weeks aerobic dance training treatment produced identical changes over BMI and muscular strength endurance of college girls. Further, the findings confirmed the silambam training is suitable protocol to bring out the desirable changes over BMI and muscular strength endurance of college girls.

**Keywords:** Aerobic Dance Exercise, BMI, Muscular Strength Endurance and Obese College Girls.

## **INTRODUCTION**

Aerobics, meaning "with oxygen," refers to physical exercise to improve cardio respiratory endurance. Aerobic movement is rhythmic and repetitive, engaging the large muscle groups in the arms and legs for at least twenty minutes at each session. The ensuing demand for a continuous supply of oxygen creates the aerobic training effect, physiological changes that enhance the ability of the lungs, heart, and blood vessels to transport oxygen throughout the body. The most beneficial aerobic exercises include cross-country, swimming, running, cycling, walking, and aerobic dance. Activities that rely on brief or discontinuous bursts of energy, such as weight lifting, are anaerobic "without oxygen" (Timothy, 1993) Dancing is moving rhythmically to any musical accompaniment. Aerobic dancing is an easy, natural, pleasurable and satisfying form of exercise good for cardiovascular benefits. It helps relieve tensions and provides the opportunity for self-expression. It makes one feel better and look better.

It certainly develops grace and poise and gives one a feeling of self-confidence. Aerobic dancing is a very good activity for people who want to be physically fit and stay fit the enjoyable way. If done properly, it contributes to some degree in the maintenance of youthful fitness, thus helps slow down aging. Aerobics refers to a variety of activities and exercise that stimulate heart and lung function for a time period long enough to produce and maintain cardiovascular endurance and efficiency. Running, swimming, cycling, jogging, rope skipping and dancing belong to the heart stimulators. These activities make one work hard so that the heart and blood vessels together with the proper taking in of fresh air will increase their ability to transport oxygen to meet the needs of the different parts of the body. The workouts helps keep the heart is shape. The stronger the heart becomes, the more efficient it works.

## **HYPOTHESIS**

The hypothesis argued in this paper is that college women can significantly changes the body mass index and muscular strength endurance by combining technical and tactical sessions with aerobic dance training over a consecutive 8 weeks period.

## **MATERIALS AND METHODS**

To achieve the purpose of the study 100 college women at the age group of 21-25 years were selected from Coimbatore district. All the subjects were subjected for Body mass index assessment and evaluated the impact of silambam training on them. out of 100 college women 40 are obese, 20 are overweight, only 25 are normal and 15 are under weight. The selected subject was randomly assigned into two equal groups, consist of fifteen each, namely silambam training group (n=15) and Control group (n=15). The respective training was given to the experimental group the 5 days per weeks (Monday to Friday) for the training period of eight weeks. The control group was not given any sort of training except their routine. The evaluated body mass index (standard calibrated weighing machine, stadiometer) the unit of measurement was in kg/m<sup>2</sup> percentage, muscular strength endurance were measured by modified sit-ups test the unit of measurement was in counts. The parameters were measured at baseline and after 8 weeks of aerobic dance training were examined. The intensity was increased once in two weeks based on the variation of the exercises.

## **TRAINING PROGRAMME**

The training programme was lasted for 45 minutes for session in a day, 6 days in a week for a period of 8 weeks duration. These 45 minutes included warm up for 10 minutes, 25 minutes aerobic dance training and warm down for 10 minutes. The equivalent in aerobic dance training is the length of the time each action in total 5 day per weeks. (Monday to Saturday)

## STATISTICAL ANALYSIS

The collected data on BMI and muscular strength endurance due to the effect of aerobic dance training was statically analyzed with “t” test to find out the significant improvement between pre& posttest if any. In all case the criterion for spastically significance was set at 0.05level of confidence ( $P < 0.05$ ).

**TABLE - III**

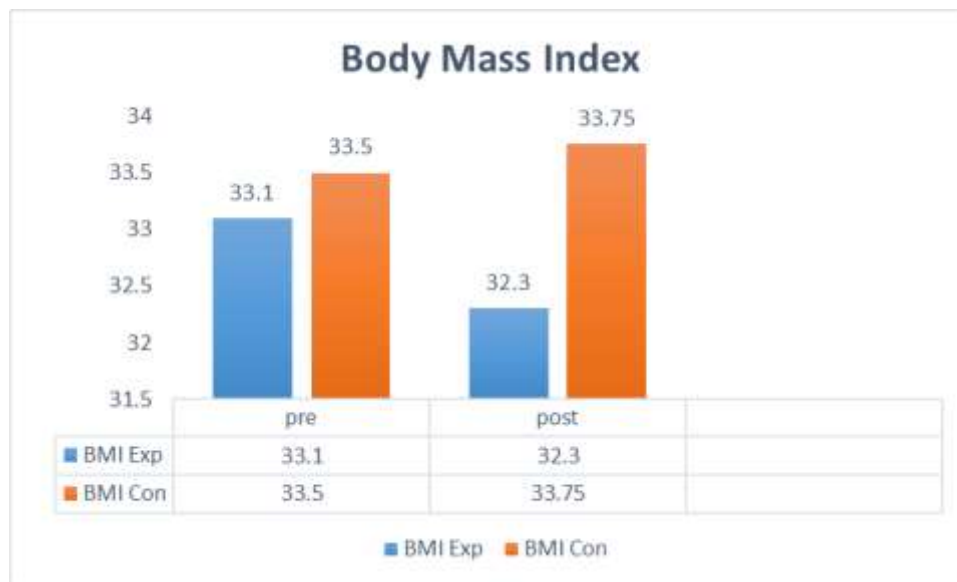
**COMPUTATION OF ‘T’ RATIO ON BODY MASS INDEX OF OBESE COLLEGE GIRLS ON EXPERIMENTAL GROUP AND CONTROL GROUP**

(Scores in Percentage)

Group	Test		Mean	Std. Deviation	T ratio
Body Mass Index	Experimental Group	Pre test	33.10	1.61	24.64*
		Post test	32.30	1.93	
	Control Group	Pre test	33.50	0.99	1.82
		Post test	33.75	0.92	

\*significant level 0.05 level (degree of freedom 2.14, 1 and 14)

Table I reveals the computation of mean, standard deviation and ‘t’ ratio on BMI of experimental and control group. The obtained ‘t’ ratio on BMI max were 24.64 and 1.82 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the experimental group ‘t’ values were greater than the table value of 2.14, it was found to be statistically significant. The control group ‘t’ value is less then table value of 2.14 it was found to be statistically insignificant.

**FIGURE- I**

**BAR DIAGRAM SHOWING THE MEAN VALUE ON BMI OF OBESE COLLEGE WOMEN ON EXPERIMENTAL GROUP AND CONTROL GROUP**

**TABLE - IV**

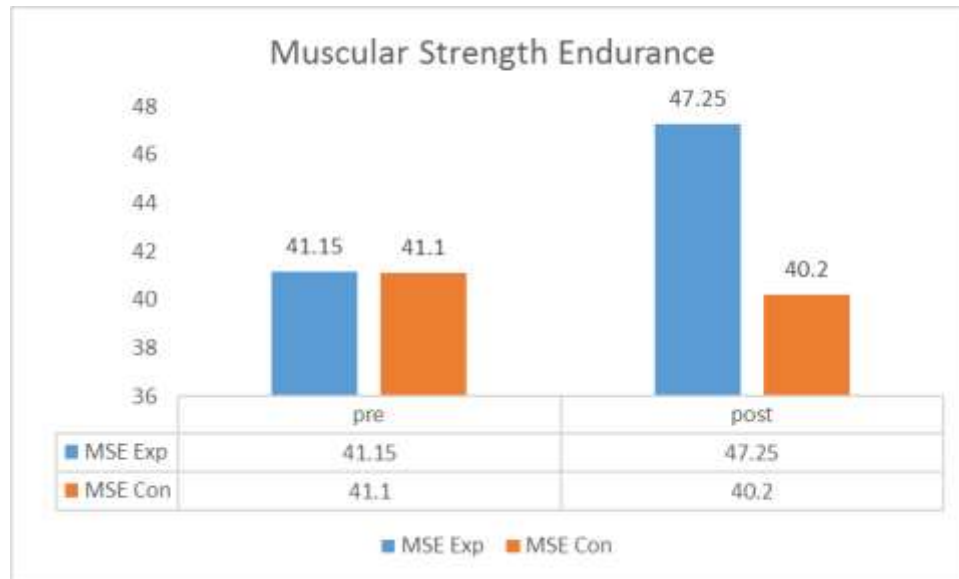
**COMPUTATION OF 'T' RATIO ON MUSCULAR STRENGTH ENDURANCE OF OBESE COLLEGE WOMEN ON EXPERIMENTAL GROUP AND CONTROL GROUP**

(Scores in Centimeters)

Group	Test		Mean	Std. Deviation	T ratio
Muscular Strength Endurance	Experimental Group	Pre test	41.15	6.36	7.91*
		Post test	47.25	8.20	
	Control Group	Pre test	41.10	5.52	0.97
		Post test	40.20	4.56	

\*significant level 0.05 level (degree of freedom 2.14, 1 and 14)

Table II reveals the computation of mean, standard deviation and 't' ratio on muscular strength endurance of experimental and control group. The obtained 't' ratio on muscular strength endurance were 7.91 and 0.97 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the experimental group 't' values were greater than the table value of 2.14, it was found to be statistically significant. The control group 't' value is less than table value of 2.14 it was found to be statistically insignificant.

**FIGURE- II**

**BAR DIAGRAM SHOWING THE MEAN VALUE ON MUSCULAR STRENGTH ENDURANCE OF OBESE COLLEGE GIRLS ON EXPERIMENTAL GROUP AND CONTROL GROUP**

#### 4. DISCUSSION ON FINDINGS

People nowadays are not interested in exercising and jogging as they think that it wastes their time and had no other benefits rather than for health. However, when they practice silambam, this will become a sort of exercise and also it become a skill to defence themselves from danger. The present study experimented the influence of eight weeks silambam training on the selected variables are BMI and muscular strength endurance of the college girls. The results of this study indicated that aerobic dance training is more efficient to bring out desirable changes over the BMI and muscular strength endurance of the college girls.

Aerobic dance programme for 10 week (40 min/day and 3 days/week) was sufficient to elicit significant physiological and psycho-physiological alterations in college women (**Rockfeller et al., 1979**). Low impact and high impact aerobic dance produced significant differences in heart rate and Vo<sub>2</sub> max of skilled and well trained women (**DeAngelis et al., 1998**). **Yi-Ying (2008)** suggested that single bout of long duration aerobic dance significantly improved muscular strength, muscular endurance and cardio respiratory endurance in females, than the double bouts of short duration aerobic dance.

The result from this study are very encouraging and it demonstrates the benefits of aerobic dance training. The college girls are not only using dance exercises to improve their mobility but also to improve the performance. Besides, the results support that improvement in mobility can occur 8 weeks of aerobic dance training.



## CONCLUSIONS

From the results of the study and discussion the following conclusions were drawn. Women ended up falling in love with the traditional martial art form practiced with a bamboo staff and other weapons, techniques and formats.

1. Based on the result of the study it was concluded that the 8 weeks of silambam training have been significantly changes in Body mass index (BMI) of obese college girls.
2. It was concluded that the 8 weeks of silambam training have been significantly improved muscular strength endurance of obese college girls.

## REFERENCES

1. AkdurHülya,*et al.*, (2007) The effect of walking and step aerobic exercise on Physical fitness parameters in obese women. *Arafitirmalar research articles*, Volume 70, no 3.
2. Mosher, P.E. *et al.*, (2006) Lipid and lipoprotein changes in premenstrual women following step aerobic dance training. *International journal of sports medicine*. April: 27(4): 343.
3. Okuneye, R.O. *et al.*, (2010) The Effects of a Six-Week Aerobic Dance Programme on Selected Fitness Components and Waist-Hip-Ratio in Adult Males. *Sierra Leone Journal of Biomedical Research*, Volume 2, No-1.
4. Rockefeller, A. Kathleen and Burke, E. J. (1979) Psycho-Physiological analysis of an aerobic dance programme for women. *British Journal of Sports Medicine*, Volume 13, Issue 2, 13:77-80.
5. Seol, J.U. Dong (2001) The effect of aerobic dance program in body composition, blood lipid and fatigue in women Workers. *Journal of Korean public health association*, June; Volume 2.
6. Smolak, L. (2004) Body image in children and adolescents: Where do we go from here? *Body Image*, 1, p: 15–28.
7. Timothy, P. White (1993) The Wellness Guide to Lifelong Fitness. New York: Rebus, University of California.
8. Williams, L.D. and Morton, A.R. (1986) Changes in selected cardio respiratory responses to exercise and in body composition following a 12-week aerobic dance programme. *Journal of Sports Sciences*, 4(3):189-99.
9. Womack, H.C. (1983) The relationship between human body weight, subcutaneous fat, heart weight and epicardial fat. *Human biology*, 55:667.
10. Yi-Ying Wen. (2008) Effects of aerobic dance with different duration on fitness in females. *National Taiwan Normal University, TAIWAN*.