

EFFECT OF EIGHT WEEK AEROBICS DANCE TRAINING ON BODY COMPOSITION AND SELECTED PHYSIOLOGICAL VARIABLES AMONG OBESE SCHOOL GIRLS

Remesh R^{1*}, Dr. M. Saroja²

¹Research Scholar, Dept. of Physical Education & Health Sciences, Alagappa University Karaikudi, Tamilnadu, India.

²Associate Professor, Dept. of Physical Education & Health Sciences, Alagappa University Karaikudi, Tamilnadu, India.

*Corresponding Author email: remeshnational@gmail.com

Abstract

The purpose of this study was to determine the effect of eight week aerobics dance training on Body mass index (BMI) and selected physiological variables, namely Blood Pressure and Resting Pulse Rate. Thirty students in the age group of 14 to 15 years were selected and the subjects were divided in to two equal groups: experimental group (EG; n = 15) and control group (CG; n = 15). The percentile values formulated exclusively for school going children in India by Indian Academy of Pediatrics was used as standard to identify the child obesity.

The experimental group underwent aerobics dance training for duration of one hour per day for five days in a week for eight weeks. The control group did not participate any special training apart from their regular activities as per the curriculum. The selected criterion variables were measured before and after the training period. The collected data were statistically analysed by using Analysis of Covariance (ANCOVA). From the results it was found that there were significant reductions in Body mass index, Systolic blood pressure, Diastolic pressure and Resting pulse rate. The study reveals that eight week aerobic training is an enhanced activity to sustain good health.

Key words: Aerobics, Body composition, Obesity, Body mass index, Systolic blood pressure, Diastolic blood pressure, Resting pulse rate.

Introduction

Over weight and obese problems are a sickness that has emerged as a world epidemic. World enterprise information for 2016 listing more than 340 million children global elderly 5 to 19 years are obese or overweight. Obesity, found in human populations over the ages, has been both renowned and reviled. Obese and weight problems are defined as “unusual or immoderate fat accumulation that offers a risk to fitness”. Childhood obesity is one of the important critical public health demanding situations of the twenty first century. Obese and obese kids are probably to live overweight into adulthood, and more likely to develop non communicable diseases like diabetes and cardiovascular diseases at a younger age. Overweight and weight problems, as well as their related illnesses, are in large part preventable. Prevention of youth weight problems therefore desires high priority.

The quantity of obese or overweight babies and young youngsters extended from 32 million globally in 1990 to 41 million in 2016. The large majority of overweight or overweight kids live in growing countries, where the price of increase has been more than 30% better than that of advanced nations. Without intervention, overweight toddlers and young kids will likely stay overweight at some point of formative years, adolescence and adulthood.

In Indian situation someplace between 5.74 percent and 8.82 percentage of school children in India are overweight or obese. In urban South India, 21.4 percent boys and 18.5 percent girls elderly 13-18 are either obese or overweight.

Increased consumption of high calorie fast food, sugary drinks and snack foods have been linked with obesity in recent years. The types of food available at home and the food preference of other family members also influence the dietary pattern on children.

Viewing television, mobile phone, computer, playing online games, sedentary lifestyle etc. have reduced the opportunities for physical activities. Travelling facilities such as school bus, two wheeler vehicles also contributed to the increase in childhood obesity.

Aerobics

Aerobics, also referred to as the cardio dance, is a common craze among most people today. Aerobics is a shape of physical exercise that mixes rhythmic motion with feet tapping and stretching the muscles. It is one of the first-rate methods to reveal in a health application and additionally a manner to attain better health. Cardio dancing additionally induces fast respiration for a long time frame with the aid of pumping more oxygen into the bloodstream. Additionally referred to as “aerobics”, the aerobic dance can be accomplished with hip hop or country folk music. Aerobic dance exercises have been particularly popular all through the previous couple of years of the 20th century, normally among women. Dr. Kenneth cooper, founder of cooper aerobics in Texas, coined the term “aerobics” in 1968. His first book, "aerobics," has sold more than 30 million copies worldwide. The aerobics dance is a form of pastime that offers a possibility to broaden fitness.

Methodology

30 girl students in the age group of 12 to 15 years with the BMI of 30 or above were selected as subjects. They were divided in to two equal groups of 15 subjects each. Group I underwent eight week aerobics dance training and group II control group did not participate in any special training programme rather than their curriculum routine during the period of study. The selected criterion variables were measured before and after the training period.

Height was measured using anthropometric rod while the students were standing with arms at side and the buttocks and heel touching the stand with the head held erect. The weighing machine was checked for zero error before the weight was measured. The BMI was calculated using the formula: $BMI = \text{mass (kg)} / \text{height}^2(\text{m})$ and the percentile values formulated exclusively for school going children in India by Indian Academy of Pediatrics was used as standard to identify the child obesity. Physiological variables are measured with the help of medical experts.

Statistical analysis

The analysis of covariance (ANCOVA) was used to find the significant difference if any, between experimental group and control group on selected criterion variables.

Results

Table I. Analysis of covariance for the pre and post test means values of Control and Experimental group on Body Mass Index (kg/m²).

Test		CG	EG	MD	F ratio
Pre test	Mean	31.18	31.87	0.69	0.196
	SD	4.26	4.33		
Post test	Mean	31.21	29.38	1.83	9.25*
	SD	4.45	3.86		
Adjusted Post Test	Mean	31.25	29.45		11.40*

*significant at 0.05 level of confidence

Table I shows that the pretest mean values on Body Mass Index of control group and experimental group were 31.18 and 31.87 respectively. The obtained ‘F’ ratio of pre test mean was less than the table value. The post test mean values of control group and experimental group were 31.21 and 29.38 and the obtained ‘F’ ratio 9.25 is greater than the table value hence it was found significance at 0.05 level of confidence. The adjusted post test means of BMI of control group and experimental group were 31.25 and 29.45 respectively. The obtained ‘F’ ratio 11.40 is significant at 0.05 levels.

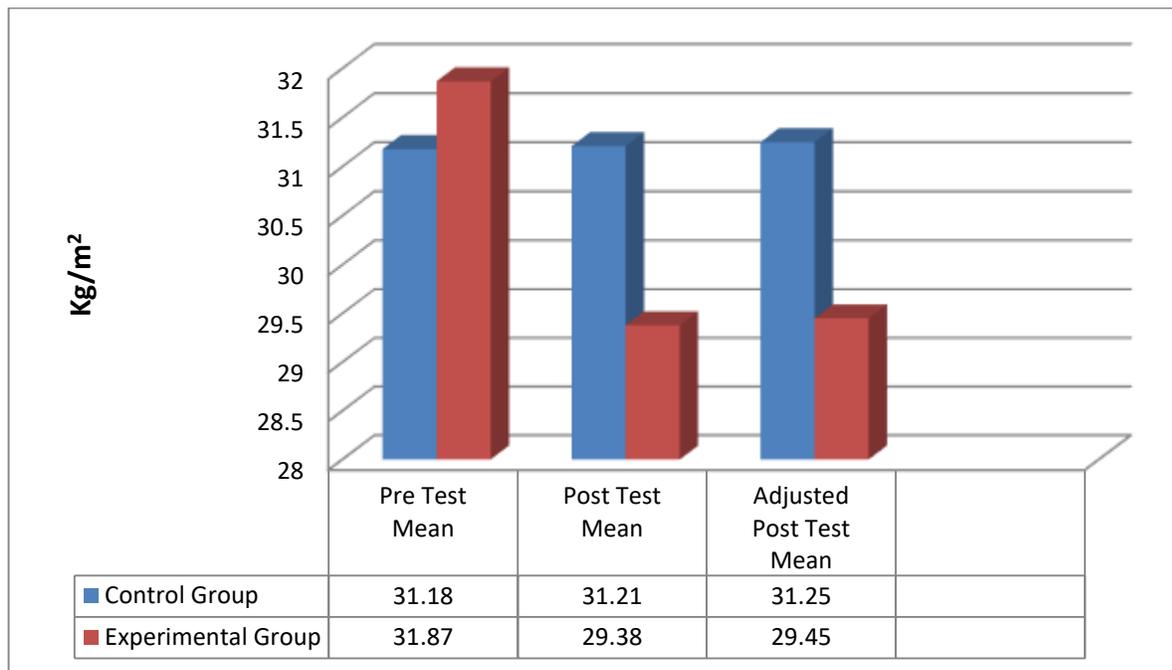


Figure1. Bar diagram showing the pre test, post test and adjusted post test mean values of Control and Experimental group on Body mass index.

Table II. Analysis of covariance for the pre and post test means values of Control and Experimental group on Systolic blood pressure.

Test		CG	EG	MD	F ratio
Pre test	Mean	124.79	126.23	2.56	0.988
	SD	10.74	11.58		
Post test	Mean	125.64	118.86	6.78	5.39*
	SD	11.6	9.45		
Adjusted Post Test	Mean	126.1	118.9		8.48*

*significant at 0.05 level of confidence

Table II shows the pretest mean values on Systolic blood pressure of control group and experimental group were 124.79 and 126.23 respectively. The obtained ‘F’ ratio of pre test mean was less than the table value. The post test mean values of control group and experimental group were 125.64 and 118.86 and the obtained ‘F’ ratio 5.39 is greater than the table value hence it was found significance at 0.05 level of confidence. The adjusted post test means of control group and experimental group were 126.1 and 118.5 respectively. The obtained ‘F’ ratio 8.48 is significant at 0.05 levels.

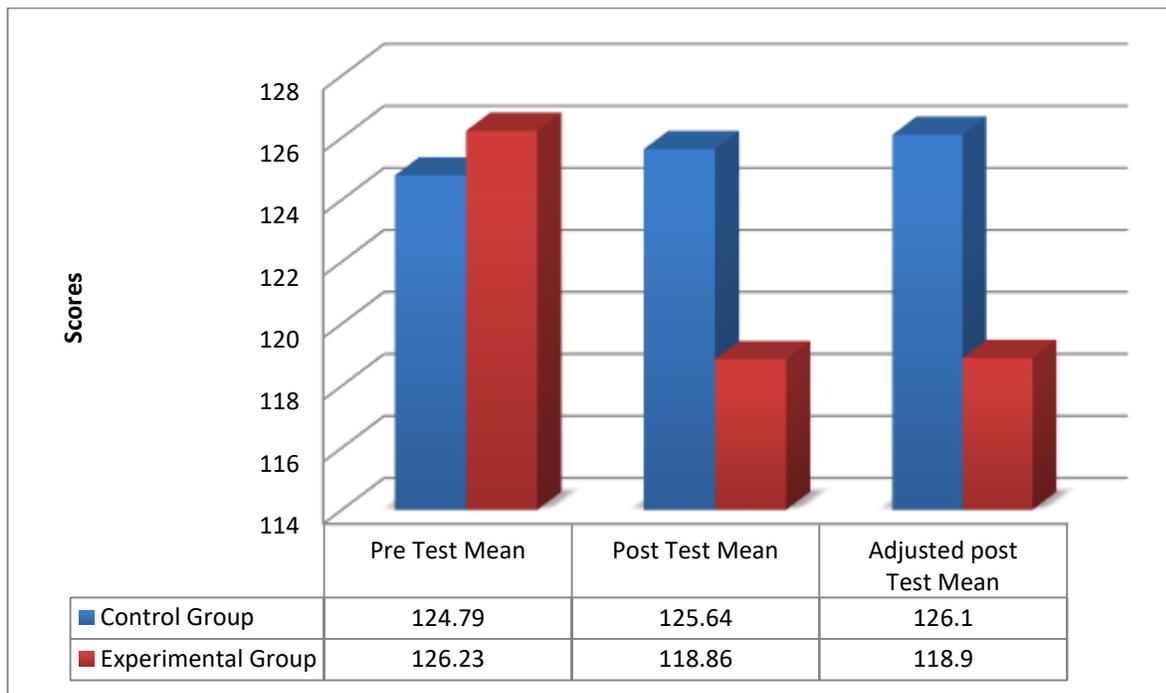


Figure2. Bar diagram showing the pre and post test mean values of Control and Experimental group on Systolic blood pressure.

Table III. Analysis of covariance for the pre and post test means values of Control and Experimental group on Diastolic blood pressure.

Test		CG	EG	MD	F ratio
Pre test	Mean	87.26	86.4	1.86	.89
	SD	6.24	6.73		
Post test	Mean	89.47	80.73	8.77	7.30*
	SD	9.95	6.28		
Adjusted post Test	Mean	89.8	80.65		11.54*

*significant at 0.05 level of confidence

Table III shows the pretest mean values on Diastolic pressure of control group and experimental group were 87.26 and 86.4 respectively. The obtained 'F' ratio of pre test mean was less than the table value. The post test mean values of control group and experimental group were 89.8 and 80.73 and the obtained 'F' ratio 7.30 is greater than the table value hence it was found significance at 0.05 level of confidence. The adjusted post test means of of control group and experimental group were 89.8 and 80.65 respectively. The obtained 'F' ratio 11.54 is significant at 0.05 levels.

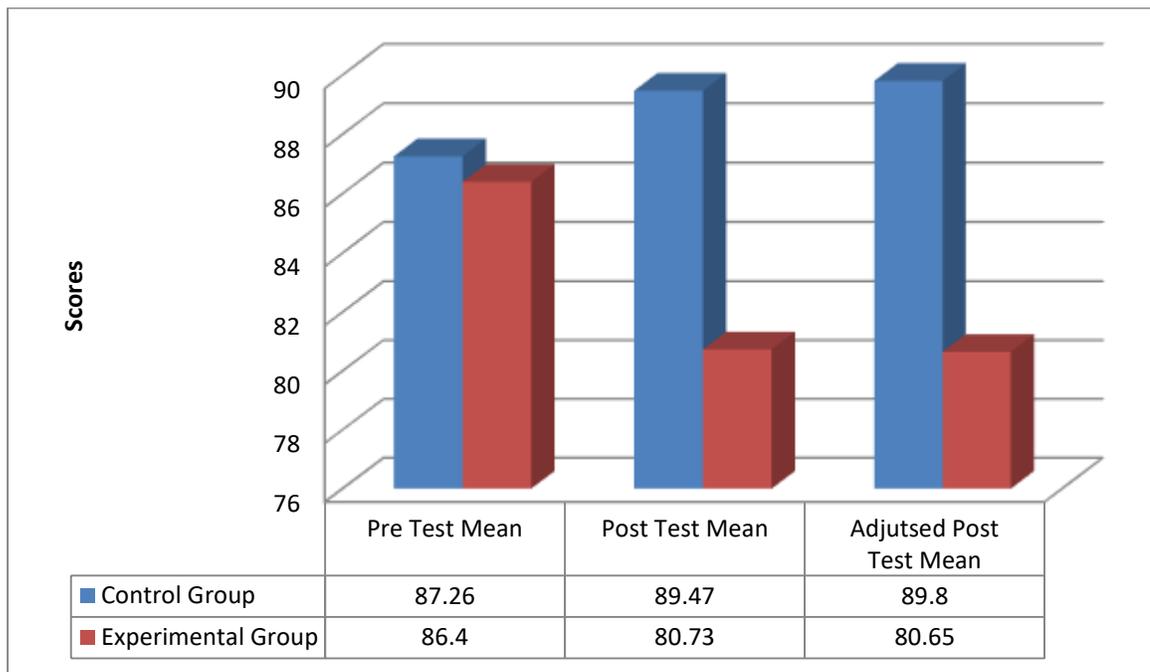


Figure3. Bar diagram showing the pre and post test mean values of Control and Experimental group on Diastolic blood pressure.

Table IV. Analysis of covariance for the pre and post test means values of Control and Experimental group on Resting pulse rate.

Test		CG	EG	MD	F ratio
Pre test	Mean	88.62	89.76	1.14	.94
	SD	9.25	10.85		
Post test	Mean	89.78	78.62	11.16	8.78*
	SD	10.96	7.82		
Adjusted Post Test	Mean	90.10	78.70		10.2*

*significant at 0.05 level of confidence

Table IV shows that the pretest mean values on Resting pulse rate of control group and experimental group were 88.62 and 89.76 respectively. The obtained 'F' ratio of pre test mean was less than the table value. The post test mean values of control group and experimental group were 89.78 and 78.62 and the obtained 'F' ratio 8.78 is greater than the table value hence it was found significance at 0.05 level of confidence. The adjusted post test means of control group and experimental group were 90.10 and 78.70 respectively. The obtained 'F' ratio 10.2 is significant at 0.05 levels.

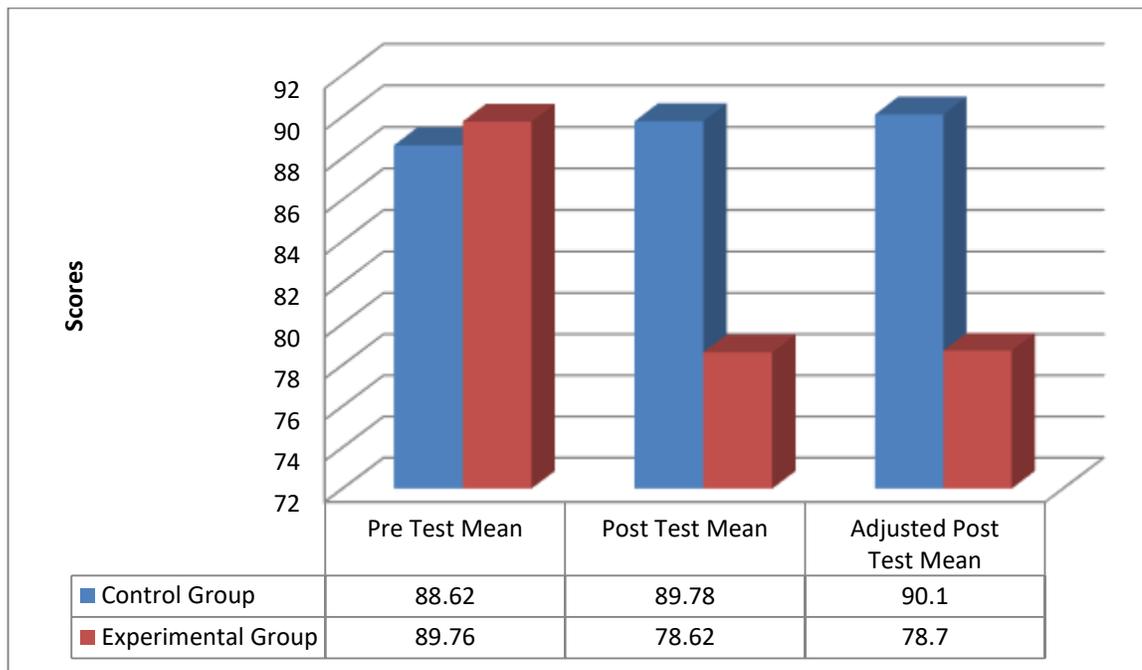


Figure4. Bar diagram showing the pre and post test mean values of control and Experimental group on Resting pulse rate.

Discussion

The post test mean difference result demonstrates that the Body mass index of experimental group was considerably lower than that of the control group. When comparing the experimental and control groups, the post test mean difference demonstrates that the experimental group had a significant decrease in Systolic blood pressure, Diastolic blood pressure and Resting pulse rate.

In this study, on influence of aerobics dance training on Body mass index and certain physiological factors among obese girls, the investigator found out that the aerobic dance training has a positive impact on the reduction of body mass index and physiological factors. The difference in blood pressure level is also worth mentioning. The aerobic dance training significantly reduced Resting pulse rate among the obese girls. A similar study conducted on the effects of intensity of Aerobics on Body Composition and Blood Lipid Profile in Obese/Overweight Female (Sayyed et al, 2013) also states that the aerobics had a positive impact on the blood lipid profile among obese females. In 2015, a study using Trial Sequential Meta-Analysis was conducted to investigate the effect of exercise on BMI among obese children and adolescents (George et al, 2015). In this study also it was stated that exercise plays an important role in reducing body mass index among children. Another study conducted by Takuya (Takuya et al, 2013) reveals that exercise has a positive impact on the obesity-included dysregulated expression of adipokines in white adipose tissue.

The results of the present study can be analyzed in the light of the result of yet another study conducted by Marjan Haghjoo (Marjan et al, 2016). In this study, the investigators have experimented the influence of Zumba training on the body composition of overweight women. The 8-week Zumba training helped the overweight women retain their body composition to the expected level. Similar was the result of the study administered on young women (Pantelic et al, 2013) with regard to the effects of aerobic dance exercises on their body compositions. A twelve-week aerobic dance exercises had a considerable positive impact on body compositions parameters in young women, according to the study.

Thus, the significance of the present study is to emphasize the fact that the aerobic dance training reduces the body mass index to the expected level and it reduces the selected physiological variables.

Conclusion

The significant reduction in the Body mass index, Systolic blood pressure, Diastolic pressure and Resting pulse rate recorded in the present study are lined up with the earlier studies. It is concluded that eight week aerobic dance was a suitable training to control body weight and refine the physiological functions of the body and helpful to overcome the difficulties of obesity in high school girls.

BLIBLIOGRAPHY

- Ambily, R. Prevalence of adolescent obesity among high school students of Kerala, South India. Archives of Pharmacy Practice; Oct-Dec 2012 Issue 4, Vol.3,pp289-292.
- Chatwal J, Verma M, Riar S. K., Obesity among pre-adolescent and adolescents of a developing country (India). Asia Pacific Journal of Clinical Nutrition; 2004 Vol.13: 231-235.
- Cherian, A.T., Cherian, S.S. & Subbiah, S. Prevalence of obesity and overweight in urban school children in Kerala, India. Indian Pediatr. 49, 475-477 (2012).
- George A. Kelley, Kristi S. Kelley, Russell R. Pate., Exercise and BMI in Overweight and Obese Children and Adolescents: A Systematic Review and Trial Sequential Meta-Analysis. Bio Med Research International, Vol. 2015, Article ID 704539, 2015.
<https://www.clinicaloncology.com/Current-Practice/Article/07-18/A-Brief-History-of-Obesity-Truths-and-Illusions/51221>.
- Marjan Haghjoo, Abdossaleh Zar, Syeed Ali Hoseini., Effect of 8 week Zumba training on overweight women's body composition Pars Journal of Medical Sciences, Vol.14, No.2, Summer 2016; 14(2): 21-29.
- Marwaha, R. K., Tandon, N., Singh, Y., Agarwal, R., Grewal, K., Mani, K., A study of growth parameters and prevalence of overweight and obesity in school children from Delhi. Indian Pediatr. 2006;43:pp943-952.
- Raj M, Sundaram K R, Paul M, Deepa A S, Kumar R K. Obesity in Indian children: Time trends and relationship with hypertension. Natl. Med. J India. 2007; 20:288-293.
- Sayyed Mohammad Marandi, Neda Ghadiri Bahram Abadi, Fahimeh Esfarjani, Hosein Mojtahedi and Gholaali Ghasemi., Effects of Intensity of Aerobics on Body Composition and Blood Lipid Profile in Obese/Overweight Females. International Journal of Preventive Medicine. 2013 Apr 4 (Suppl 1): S118-S125.
- Takuya Sakurai, Junetsu Ogasawara, Takako Kizaki, Shogo Sato, Yoshinaga Ishibashi, Motoko Takahashi, Shuji Oh-ishi, Junichi Nagasawa, Kazuto Takahashi, Hitoshi Ishida, Tetsura Izawa, Hideki Ohno. The Effects of Exercise Training on Obesity-induced Deregulated Expression of Adipokines in White Adipose Tissue. International Journal of Endocrinology, Vol.2013, Article ID 801743, 2013.

