



## TWELVE WEEKS OF AEROBIC DANCE IMPACT ON CARDIOVASCULAR PARAMETERS OF MALE OBESE ADULTS

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### ABSTRACT

The purpose of this study was to investigate the twelve weeks of aerobic dance impact on cardiovascular parameters of male obese adults. To achieve sixty (60) obese men were selected as samples for the experimental study. These subjects age ranged between 25 and 40 years. For this, a purposive sampling technique was used. Those who are diagnosed as obese by the consultant physician of the Pondicherry institute of medical sciences if the body mass index (BMI) was more than normal limits  $> 27.8$ . Further, the sample subjects were randomly assigned into almost two equated groups, namely Aerobic dance group (ADG) ( $n=30$ ) and Control group (CG) ( $n = 30$ ). All these subjects were residing within radius of one to three kilometers range in grater Puducherry. Blood pressure and heart rate was selected as criterion variable and measured with Omron Blood pressure and heart rate monitor. The aerobic dance training was administered 60 minutes per day for 6 days in a week for total period of 12 weeks. The data was collected before and after 12 weeks of training and analysed using ANCOVA. The result of the study showed that systolic and diastolic blood pressure between the groups was significant,  $F(1,57) = 7.69$  and  $4.488$ , indicating that after adjusting pre-test scores, there was a significant difference between the two groups on post- test scores on systolic and diastolic blood pressure. In contrast, heart rate found to be not significant,  $F(1,57) = 3.33$ . The findings of the study show that systolic and diastolic blood pressure tends to decrease as a result of aerobic dance training. It is concluded that aerobic dance is the proper physical activity form for 30-40 years old men obese subjects for developing cardiovascular system capacity. The stress on the cardiovascular system is minimised due to aerobic dance which was fun and recreative. This might improve the life status of the obese subjects.

**Keywords:** Obese, Blood pressure, Heart rate, Male, Aerobic dance

### Introduction

Good health might be defined as the presence of sufficient energy and vitality to accomplish daily tasks and active recreational pursuits without under fatigue. Good health to an individual means that they can lead a full and active life day in-and-out (working, running a household, attending classes, studying, participating in

recreational activities, and enjoying an active social life without collapsing into bed each night, exhausted), contract infectious diseases less often, and tend to fight off infectious disease better than those who are sedentary. The sedentary life style of the adults which affects not only their health, but also it affects the quality of life in later years.



Today obesity is recognized as a major global burden to health [1]. In India when the child reaches adolescence their level of physical activity declines. There is evidence [2] that children and adolescents of urban families are more overweight than rural, possibly because of decreased physical activities, sedentary lifestyle, altered eating patterns and increased fat content of the diet. Increase in sedentary activities, such as television viewing and computer games, is suspected to be responsible for the decline in physical activity levels. Obesity contributes to the progression of cardiovascular disease, such as endothelial dysfunction, hypertension, inactivity and poor exercise capacity. Moreover, a number of well-established blood markers, such as cholesterol, triacylglycerols (triglycerides), creatinine, glucose and insulin resistance, are also used to complement the risk assessment. In general, exercise, in particular endurance exercise training, decreases cardiovascular risk.

Aerobic dance is an activity which produces more complex impacts on one's ability and health. Aerobic dance constitutes a group of exercise accompanied music of a certain tempo, rhythm and dynamics. It is one of the workouts used to develop cardiovascular fitness. It consists of various dance steps, skips, jumps, turns and movements which are performed in all directions and on various plains and are used in accordance with the shape and abilities of the person exercising. Coaches often regulate

the intensity of the exercise during the workout itself by activating a number of different body parts. The intensity is always greater if several body parts are activated at the same time. Much research exists which has confirmed the positive influence of physical exercise on cardiovascular endurance, muscular strength, flexibility and body composition. The American College of Sports Medicine, issued for people who would like to maintain or allow the further development of their abilities, it is sufficient to exercise three to five days a week at an intensity of 65% to 90% of the maximal heart rate, for a period of 20 to 60 minutes of constant training or training in bouts using a rhythmic, aerobic activity which activates large muscle groups in the human body.

The research carried out by Thompson, Goodroe, Johnson and Lamberth (1991) [3] analyzed the changes of  $VO_2\text{max}$ , heart rate, systolic blood pressure, diastolic blood pressure, the accumulation of blood lactate under the influence of an aerobic dance program (one group) and an aerobic dance program accompanied by simultaneous strength exercises (the second group) for the upper body (1 pound weights). The female subjects who trained aerobic dance with weights had better results. There were no differences in the values of heart rate, arterial blood pressure and lactate between the groups. The purpose of this study was to investigate the twelve weeks of aerobic dance impact on cardiovascular parameters of male obese adults.

## Methods

### *Subjects and variable*

Sixty (60) obese men were selected as samples for the experimental study. These subjects age ranged between 25 and 40 years.

For this, a purposive sampling technique was used. Those who are diagnosed as obese by the consultant physician of the Pondicherry institute of medical sciences if the body mass



index (BMI) was more than normal limits > 27.8. Further, the sample subjects were randomly assigned into almost two equated groups, namely Aerobic dance group (ADG) (n= 30) and Control group (CG) (n = 30). All these subjects were residing within radius of one to three kilometers range in grater Puducherry. The research scholar made sure from the subjects that the entire groups were ready to go through the experimental treatment. Finally it was decided to select 60 subjects for the post test having 30 subjects in each group for data collection after 12 weeks experimental training. Blood pressure and heart rate was selected as criterion variable and measured with Omron Blood pressure and heart rate monitor.

#### *Pilot Study*

To ensure the consistency in the intensity and repetition in the experimental treatment a pilot study was conducted. The pilot study was conducted on twenty randomly selected subjects from ADG. The average time and repetition time were calculated for aerobic dance separately. Further it was also worked out for the maximum training load for aerobic dance exercises.

#### *Daily Administration of training interventions*

Training programmes on aerobic dance were scheduled separately. Although attendances of the subjects were taken regularly, the percentage of attendance of majority of the participants after completion of training was found more than 95%. In fact, some of the subjects were dropped out

because of their inability to continue training. Any questions asked by the subjects had been clarified. They were also motivated properly to undergo the training schedule.

#### *Aerobic dance exercises*

Formal aerobic exercises will be divided into different levels of intensity and complexity. This allowed participants to select their level of intensity according to their fitness level. Many gyms offer a wide variety of aerobic exercise for participants. Each pattern is designed for a certain level of experience. Following Dance- Group were included in one hour programme of aerobic exercise for these obese persons for 3 to 5 minutes each with the help of western music. The exercises are basic Warm up stepping, basic V step, basic L step, basic A step, straddle step Jump and turn Jump and bend forward Climbing action with a right leg and raising hands above head Climbing action with a left leg and raising hands above head climbing action with right leg and clap Climbing action with left leg and clap. Duration of training intervention was 60 minutes per day for 6 days in a week for total period of 12 weeks.

#### *Statistical Analysis*

Descriptive statistics was applied to process the data before employing the inferential statistics. Blood pressure and heart rate was tested before and after twelve weeks of aerobic dance training. ANCOVA was applied to assess the difference between the groups and impacts of training interventions are assessed.



## Results

Levene's test was not significant for systolic blood pressure  $F(1,58) = 0.312$ , ( $p = 0.578$ ), diastolic blood pressure  $F(1,58) = 0.020$ , ( $p = 0.889$ ) and heart rate  $F(1,58) = 1.21$ , ( $p = 0.080$ ) indicating that the assumption of homogeneity of variance has not been violated.

**Table 1**

**ANCOVA on Cardiovascular parameters using pre-test as a covariate on ADG and CG**

Variables	Source	SS	df	MS	<i>F</i>	<i>p</i>
Systolic blood Pressure	Covariate	966.509	1	966.509	63.08*	0.000
	Groups	117.919	1	117.919	7.69*	0.007
	Error	873.224	57	15.32		
Diastolic blood Pressure	Covariate	505.510	1	505.510	102.15*	0.000
	Groups	22.210	1	22.210	4.488*	0.035
	Error	282.090	57	4.949		
Heart rate	Covariate	237.959	1	237.959	18.37*	0.000
	Groups	43.155	1	43.155	3.33	0.073
	Error	738.075	57	12.949		

Table 1 clearly shows that systolic and diastolic blood pressure between the groups was significant,  $F(1,57) = 7.69$  and  $4.488$ , indicating that after adjusting pre-test scores, there was a significant difference between the two groups on post-test scores on systolic and diastolic blood pressure. In contrast, heart rate found to be not significant,  $F(1,57) = 3.33$ . The findings of the study show that systolic and diastolic blood pressure tends to decrease as a result of aerobic dance training. It is obvious from

table 1 that covariate pre testing significantly determines the difference between ADG and CG on systolic, diastolic pressure and heart rate as obtained  $F(1,21) = 63.08$ ,  $102.15$  and  $18.37$ . This finding implies that the post testing data is influenced significantly by pre testing data on the difference between groups. From table 2 it is inferred that systolic blood pressure decreased 2.36% and diastolic blood pressure 1.98% in ADG was implemented as compared with their pre test data.

**Table 2**

**Descriptive statistics of ADG and CG on Cardiovascular parameters before and after training**

Variables	Testing periods	ADG (30)	CG (30)
Systolic Blood pressure	Pre-test	131.03 ± 4.642	134.93 ± 5.877
	Post-test	127.93 ± 4.89	133.93 ± 6.28
	Mean Difference	3.1	1
	<u>Percentage of changes</u>	2.36%	0.74%
Diastolic Blood	Pre-test	84.00 ± 4.02	80.20 ± 3.79
	Post-test	82.33 ± 3.88	80.21 ± 3.57



pressure	Mean Difference	1.67	0.01
	Percentage of changes	1.98%	0.01%
Heart rate	Pre-test	81.53 $\pm$ 2.90	79.56 $\pm$ 6.10
	Post-test	78.26 $\pm$ 4.57	79.16 $\pm$ 3.56
	Mean Difference	3.27	0.4
	Percentage of changes	4.01%	0.50%

### Discussion findings

It is evident in this study that significant decrease in systolic and diastolic blood pressure noticed in aerobic dance training group. These results were also in line with the previous literature that aerobic dance training decreases both systolic and diastolic blood pressure [4]. The effect of aerobic dance program on blood pressure was positive in the sense that there was a decrease in both systolic and diastolic blood pressure. The magnitude of changes on systolic blood pressure are numerically greater compared to those of diastolic blood pressure. This is probably the result of aerobic dance and its impact on the

increase of the elasticity of the blood vessels, which in turn leads to a decrease in the obstruction to the blood flow. However, no difference is noted in heart rate which was similar to the findings of Thompson *et al.* (1991) [3].

### Conclusion

Aerobic dance is the proper physical activity form for 30-40 years old men obese subjects for developing cardiovascular system capacity. The stress on the cardiovascular system is minimised due to aerobic dance which was fun and recreative. This might improve the life status of the obese subjects.

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