Effect of Dance Aerobic Training on Selected Physiological Parameters of Sedentary Women

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Abstract- The purpose of this study was to examine the effect of dance aerobic training on selected physiological parameters such as resting pulse rate and vital capacity. To achieve this purpose 30 untrained college male students were selected as participants and their age ranged from 18 to 22 years. Participants were randomly assigned to either dance aerobic training group (n=15) or control group (n=15) of fifteen participants each. The training regimen lasted for twelve weeks. The selected criterion variables were assessed using standard tests and procedures, before and after the training regimen. Analysis of covariance was used to determine the significant difference existing between pretest and posttest on selected dependent variables. The analysis of data revealed that twelve weeks of dance aerobic training had significant impact on selected physiological parameters.

Key words: Dance aerobic training, Physiological parameters

I. INTRODUCTION

Aerobic exercise refers to exercise that involves or improves oxygen consumption by the body. Aerobic means "with oxygen" and refers to the use of oxygen in the body's metabolic or energy-generating process. Many types of exercise are aerobic, and by definition are performed at moderate levels of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise involving large muscle groups, and a cooling down period at the end. Aerobic refers to a variety of activities like walking, jogging and running for a measured time. These produce beneficial changes in the body, especially the action of the lungs, heart and blood circulation. Aerobic training is a type of exercise that improves the cardiovascular system, strengthens the heart, and improves the body's ability to deliver oxygen to the muscles. The activities suitable for aerobic training include rapid walking, running, swimming, bicycling, rowing and skiing. Aerobic exercise is any physical activity that requires the heart rate to reach at least 60% of the maximal heart rate for an extended period of time. It is the activity that can be sustained for an extended period of time without developing an oxygen deficit. Aerobic exercises are basically physical exercises that intend to improve the oxygen system.

In recent years, apart from everyday traditional forms of physical exercises, there have emerged some other forms of physical exercise which are more appealing and more interesting compared to the previous forms of recreation. Dance as one of these types of exercise can take many forms and can be run in different conditions and without expensive equipment, which makes it acceptable to a wide range of people and ages. Dance techniques in some dances like Disco Dance for example include slides, jumps, hops, turns, pirouettes and kicks, and therefore can contribute to the changes in coordination, strength, speed and ability to perform rhythmic structures since the dance structures must be performed on music of certain speed.

Those dance elements also must be performed quickly and with specific degree of intensity, in

accordance with the rules of competition and with the nature of the dance, which lead in changes in strength, i.e., explosive strength of the legs, arms and shoulders. Some dances are also acceptable for the elderly because of its favourable effects on arthritis, osteoporosis and neurological conditions, and promote fun, healthy living, social interaction and so on. Dance aerobic, as one of such forms of exercising, has attracted much attention for the reasons of its positive effects on the functional abilities of a man and at the same time it is an easy and fun form of exercise that can be practiced by everyone. By performing simple dance elements combined with various types of jumps, spins and some other elements with the appropriate music tempo, engaging the muscles of the entire body and depending on the intensity and the duration, it affects the cardiovascular, respiratory system and body composition.

II. METHODOLOGY

Subjects and Variables

For the purpose of this study, thirty Sedentary Women, in the age group of 18 to 23 years were recruited, with their consent. All of them were healthy, nonsmoking and with a negative medical history. The selected subjects were randomly assigned to both the circuit training with resistance and control groups of 15 each. The selected dependent variables were assessed using standard tests and procedures, before and after the training regimen. The instruments used for testing the dependent variables were standard and reliable as they were purchased from the reputed companies. The variables and tests used are presented in table 1.

Table 1: Dependent Variables and Tests

SL. No.	Variables	Tests / Instruments	Unit of Measurement
1.	Resting Pulse Rate	Blood Pressure Monitor	Counts
2.	Vital capacity	Spirometer	Kg/m

Training Protocol

The experimental group performed dance aerobics six days in a week for twelve weeks. To fix the training load for the dance aerobics groups the subjects were examined for their exercise heart rate in response to different work bouts, by performing dance aerobics for proposed repetitions and sets, alternating with active recovery based on work-rest ratio. The subject's training zone was computed using Karvonen formula and it was fixed at 60% HRmax to 85%HRmax. The work rest ratio of 1:1 between repetition and 1:3 between sets was given.

Experimental Design and Statistical Procedure

The experimental design used for the present investigation was random group design involving thirty subjects for training effect. Analysis of covariance (ANCOVA) was used as a statistical technique to determine the significant difference, if any, existing between pretest and posttest data on selected dependent variables. The level of significance was accepted at $P < 0.05$.

III. RESULTS AND DISCUSSIONS

The age, height and weight of the selected subjects averaged 20.04 ± 1.12 years, 171.2 ± 4.13 cm, and 63.8 ± 3.47 kg respectively. The descriptive analysis of data collected on selected physiological variables before and after twelve weeks of dance aerobics is presented in table 2.

Table 2: Computation of Mean and Standard Deviation on Selected Physical and Physiological Variables

Variables	Groups	Pretest		Posttest	
		$\bar{x}$	σ	$\bar{x}$	σ
Resting Pulse Rate	Experimental	67.33	4.20	63.53	4.09
	Control	69.67	4.45	67.80	4.00
Vital capacity	Experimental	2562.00	61.89	2899.33	83.62
	Control	2564.00	62.08	2573.33	49.23

Analysis of covariance (ANCOVA) was used to determine the significant impact of circuit training with resistance on selected physical and physiological variables and it is presented in table 3.

Table 2: Computation of Mean and Standard Deviation on Selected Physical and Physiological Variables

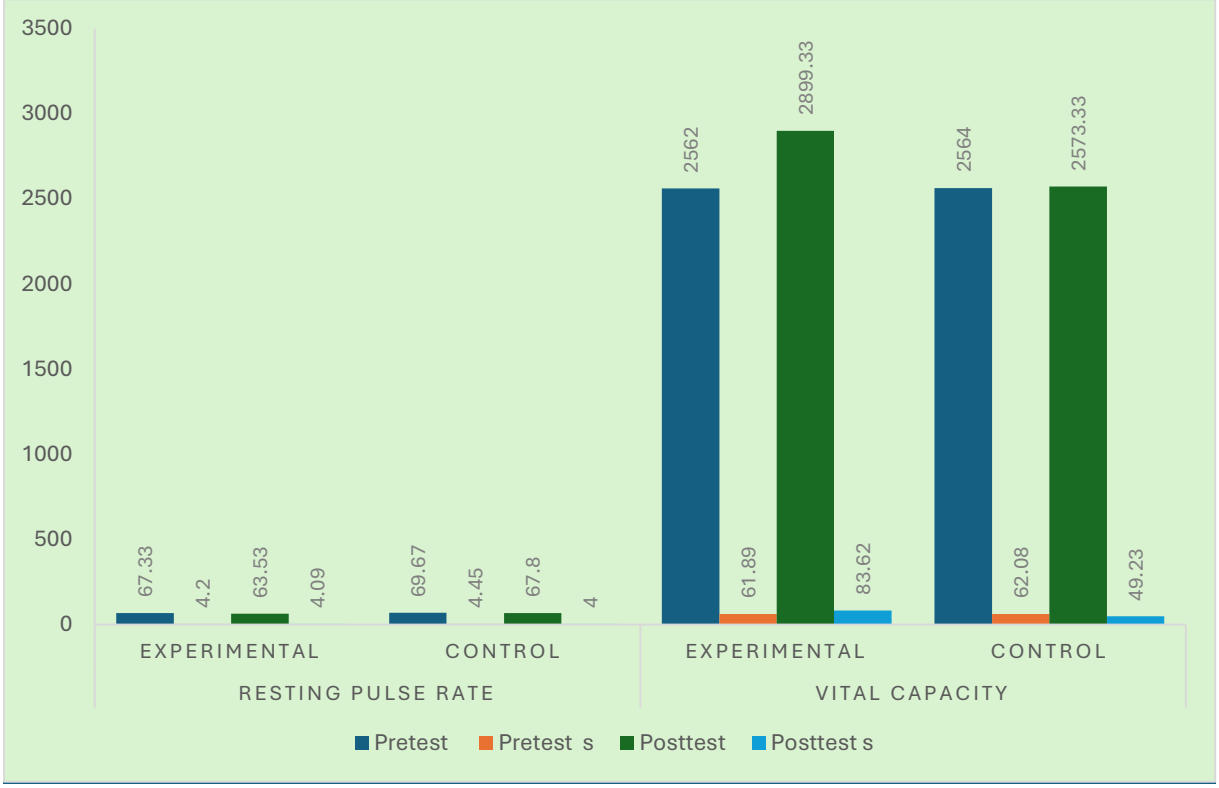


Table 3: Analysis of Covariance on Selected Physical and Physiological Variables of Resistance Circuit Training and Control Groups

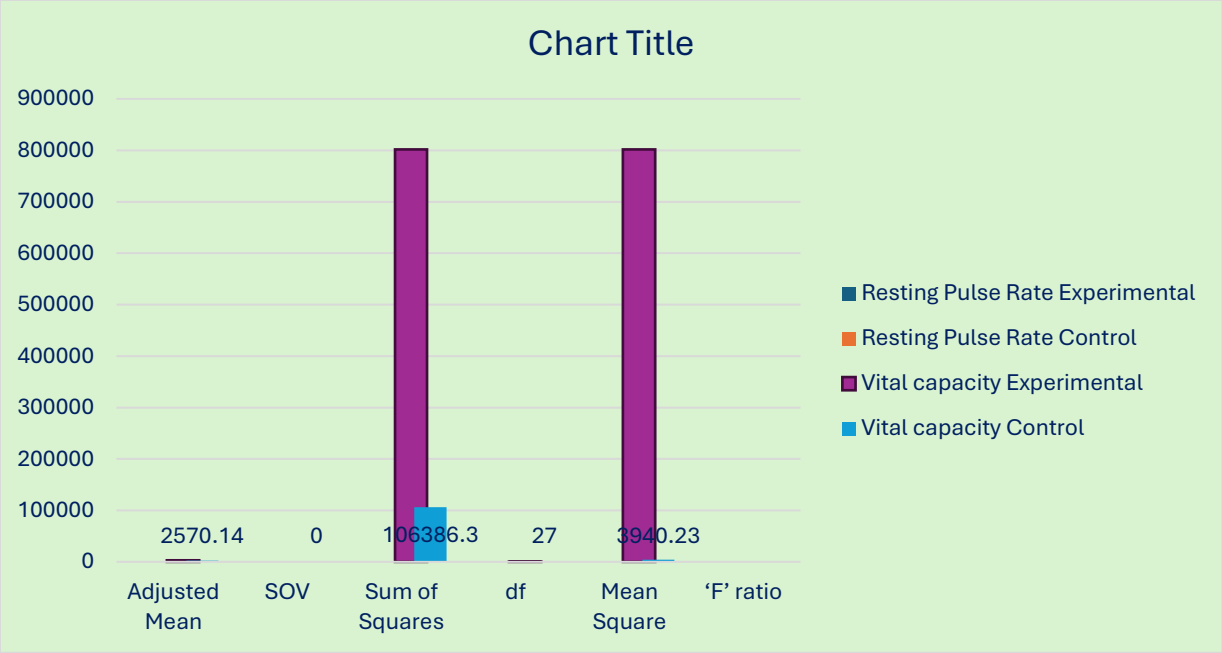
Variables	Groups	Adjusted Mean	SOV	Sum of Squares	df	Mean Square	'F' ratio
Resting Pulse Rate	Experimental	65.48	B	32.78	1	32.78	25.50*
	Control	68.63	W	34.71	27	1.29	
Vital capacity	Experimental	2826.36	B	801609.1	1	801609.1	203.44*
	Control	2570.14	W	106386.3	27	3940.23	

Required table value for significance at 0.05 level of confidence for df of 1 and 27 is 4.21

* Significant at 0.05 level.

The findings of the study shows that significant difference existing between aerobic dance training and control group on resting pulse rate and vital capacity, since the obtained 'F' ratio of 25.50 and 203.44 respectively were greater than the required table value of 4.21 for significance at 0.05 level of confidence for df of 1 and 27. Hence it was concluded that due to the effect of resistance circuit training the selected physical and physiological parameters have significantly improved.

Table 3: Analysis of Covariance on Selected Physical and Physiological Variables of Resistance Circuit Training and Control Groups



IV. DISCUSSION

The results of the present study are also in line with the observation by Alcaraz and others (2008) that heavy-resistance circuit training may be an effective training strategy for the promotion of both strength and cardiovascular adaptations. Dorgo and others (2009), was observed significant improvements in muscular strength and muscular endurance of the manual resistance training and weight resistance training groups.

Kaikkonen and others (2000) observed significant improvement on cardiovascular and muscular fitness due to the effect of a 12-week low resistance circuit weight training. Gettman and others (1978) conducted a study to determine the changes elicited by circuit weight training and running (RN) programs conducted 3 days per week for 20 weeks. It was concluded that the circuit weight training program was most specific in improving strength.

Studies have shown improvement in aerobic capacity from participation in circuit weight training (Kass & Castriotta, 1994; Peterson, Miller, Quinney, & Wenger, 1988). A reduction in heart rate from resistance training is considered favorable (Stone et al., 1991). Regular participation in aerobic exercise often results in a decrease in resting heart rate (Katona, McLean, Dighton, & Guz, 1982; Smith, Hudson, Graitzer, & Raven, 1989).

V. CONCLUSIONS

The result of this study demonstrated that twelve weeks of aerobic dance training has significant impact on resting pulse rate and vital capacity. Hence it is suggested that to improve or maintain a desired level of physical fitness, there is a need to constantly administer an adequate training intensity while exercising. Aerobic dance training is one of the effective means to improve all round physical and cardiovascular fitness.

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