

Effects of aerobics dance on body composition and flexibility in sedentary women

¹ Rinsa Raj, ² Dr. D Sultana

¹ Research Scholar, Department of Physical Education and Sports, Pondicherry University, Tamil Nadu, India

² Professor, Department of Physical Education and Sports, Pondicherry University, Tamil Nadu, India

Abstract

Background: The study was to examine the effects of aerobics dance on body composition and flexibility in sedentary women.

Methodology: To attain these purpose 45 sedentary women were selected randomly, from Thamarassery Taluk Kozhikode, Kerala, India. The participant age ranged between 36 and 44 years. They were simplified into three groups SAG (n=15), FAG (n=15) and control (n=15). The tool used for the purpose was skin fold caliper utilized to measure body composition and used sit and reach test for flexibility. The test was conducted Pre and post training programme on all the three groups. The SAG and FAG group underwent a structured training programme three times a week for twelve weeks. Analysis of Variance (ANOVA) was used for analysis of the results.

Result: Following the twelve weeks of structured training programme for SAG and FAG group's significant difference was found in body composition whereas, no significant difference was found in the control group. Twelve weeks of structured training programme for SAG and FAG and control group's there is no significant difference was found in flexibility.

Conclusion: According to the obtained results, it can be concluded that both SAG and FAG programme leads to significant improvement in Body composition but SAG have relatively more effective to improve Body composition as compared to FAG group. Whereas no significant difference was found in flexibility for any three group.

Keywords: SAG, FAG, body composition, flexibility

1. Introduction

Everyday life, daily life or routine life comprises the ways in which people typically act, think, and feel on a daily basis. Everyday life may be described as mundane, routine, natural, habitual, or normal. Human behavior means most people sleep at last part of the night and are active in daytime. Most eat two or three meals in a day. Working time (apart from shift work) mostly involves a daily schedule, beginning in the morning. Busy in work and everyone avoid there health and welcomes sedentary life style. Any extended sitting – such as behind a desk at work or behind a wheel – can be harmful, sitting as the disease of our time. Now I'm sure it's no surprise that sitting behind a desk, commuting or relaxing on the couch for too many hours a day can be harmful to your health, but what you may find surprising is the extent of havoc it is causing on your body [1]. Lack of physical activity and an uncontrolled diet cause excessive weight gain, which leads to obesity and other metabolic disorders [2]. Increased time spent on sedentary activities and decreased time spent on physical activities of moderate-to-vigorous intensity have been reported to be independently associated with the risk of developing metabolic syndrome and its components [3]. A sedentary lifestyle poses a threat to individuals' health because it can lead to an increase or progression in the risk of hypertension, obesity, muscle weakness, postural defects, diabetes and coronary heart disease (CHD) in middle-aged people [4]. Sedentary lifestyle is an issue of great concern because of its deleterious health implications in developed and developing countries. It is associated with limited physical activity,

prolonged sitting at work, in cars, communities, work sites, schools, homes and public places have been restricted in ways that minimize human movement and muscular activities [5]. Regular physical activity, fitness, and exercise are critically important for the health and wellbeing of people of all, whether they participate in vigorous exercise or some type of moderate health-enhancing physical activity. Regular aerobic exercise will produce beneficial effects for any age group providing the exercise is specific and appropriate to the level of fitness of the individual. Progressive exercise correctly performed will increase the level of fitness and improve health [6]. The health of people with a sedentary lifestyle is usually affected by a decrease in the function of the locomotors, cardiovascular and respiratory systems. The modern way of life, which limits physical movements, leads to, especially in the case of people living in the city, an increase in cardiovascular diseases (myocardial heart attacks, hypertension, and the like), diseases of the intestines, an increase in body weight, an increase in the BMI, an increase in body fat (Hass *et al.*, 2001) and the high rate of obesity is one of the most serious health risk factors (Saris *et al.*, 2003) [7]. Step aerobic exercise is aerobic training methods which have a great role in improvement of aerobic fitness, physical health, cardiovascular fitness and body composition profiles. Aerobic step exercise includes a series of dance movements in step by step form which are repeated frequently by music. Aerobic step exercise trainings would cause decrease in body mass index and waist circumference [8]. Obesity is a threat to the health of modern urban citizens, especially women. Aerobic is

an effect of exercise which rapidly is developing among sedentary women [9].

2. Methodology

2.1 Subjects

To attain these purpose 45 sedentary women were selected randomly, from Thamarassery Taluk Kozhikode, Kerala, India. The participant age ranged between 36 and 44 years. They were simplified into three groups. Each group consists of 15 participants, which were assumed to be appropriate for the purpose of the study. The experimental treatment assigned as step aerobics training and floor aerobics training to the two experimental groups.

2.2 Study Design

The experimental design used for this study was formulated as random group design involving forty five subjects, who were divided randomly into three groups of fifteen each. They were be simplified into three group's namely experimental group I, experimental group II and control group. Each group consist of 15 students each, which are guaranteed to be large enough for the purpose of the study. The experimental treatment step aerobics training and floor aerobics training were assigned as experimental group I and experimental group II respectively, which were stipulated for 12 weeks (3 alternate days per week) they participated in the research voluntarily and cheerfully without any compulsion. Control group did not follow any structure training. All the subjects were tested prior and after the experimental treatment periods on body composition and flexibility.

2.3 Training Program

Subjects performed three training sessions per week over a 12 week period (36 sessions). The duration of the initial training session was 30 min. All subjects performed a gradual 10 minute warm up and 10 minute cool-down prior to and following the step aerobics training and floor aerobics training.

2.4 Measurements

The skin fold caliper is utilized to measure body composition and used sit and reach test for flexibility. The methods to assess body composition are skin fold thickness method, it is easy to apply, provides validity and reliability [10]. Skin fold calipers are used in the measurement of skin fold thickness and the estimation of total body fat. The sit and reach (SR) test is a field test used to measure hamstring and lower back flexibility. The sit and reach is common measures of flexibility and specifically measures the flexibility of the lower back and hamstring muscles. The traditional sit and reach procedure also measures the combined flexibility of the legs. This assessment requires a sturdy box approximately 12 inches high. A measuring scale is placed on top of the box with the 9-inch mark parallel to the face of the box against which the subjects foot will rest. The "zero" end of the ruler is nearest the subject. However, a wooden box and yardstick will suffice. Tape the yardstick to the top of the box with the 9-inch mark at the nearest edge of the box. The "zero" end of the yardstick is nearest the subject.

2.5 Data analysis

The analysis of variance (ANOVA) was used to analyze the significant difference if any, between the groups on each selected variables separately. The confidence interval was fixed at $P < 0.05$ in all cases.

3. Results

Table 1: Discriptive statistics of step aerobics, floor aerobics and control group

Variables		Step		Floor		Control	
		Mean	SD	Mean	SD	Mean	SD
Flexibility	Pre	9.48	2.54	9.00	2.36	8.92	2.20
	Post	10.06	2.37	9.40	2.29	8.85	2.21
Body Composition	Pre	31.99	5.59	32.48	4.04	32.01	4.45
	Post	27.26	5.01	30.04	4.17	31.78	3.72

Table 2: The analysis of variance ANOVA of step aerobics, floor aerobics and control group

Variables	Test	Sum of Squares	df	Mean Square	F	Sig	
Flexibility	Pre	B	2.68	2	1.34	0.238	0.789
		W	236.62	42	5.63		
	Post	B	11.07	2	5.53	1.052	0.358
		W	221.15	42	5.26		
Body Composition	Pre	B	2.27	2	1.13	0.051	0.951
		W	945.53	42	22.51		
	Post	B	155.93	2	77.96	4.14*	0.023
		W	790.18	42	18.81		

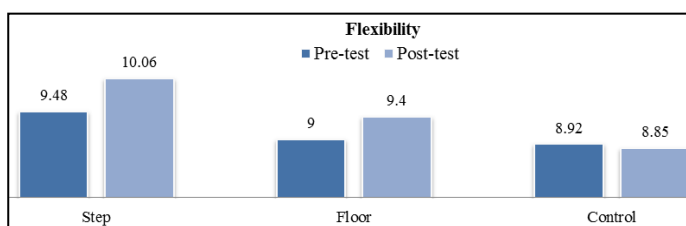


Fig 1: Flexibility

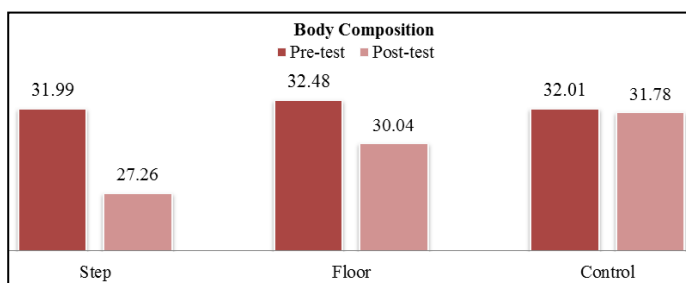


Fig 2: Body Composition

4. Discussion

Sedentary lifestyle brings with a number of serious health problems. Especially in middle age and later periods, depending on the physical decline, immobility (Babayigit, *et al.*, 2002) [13]. In their study, Karacan and Çolakoğlu, determined that 12-week aerobic exercise resulted in similar positive changes in body composition of middle-aged women who were applied run-walk exercise program for three days a week for 30 minutes during 12 weeks (Karacan, Filiz, 2003) [14]. In addition, there were no significant differences between

the means of the pre- and post-tests body composition and flexibility of the control group ($p > 0.05$). Many studies showed that in a long-term and moderate intensity aerobic exercise program done by sedentary women, body composition was dramatically changed. Moderate intensity, long-term and regular aerobic exercises are effective in burning fat. Hence, it can be thought that this kind of exercise caused a decrease in body weight, the percentage of body fat and body mass index ^[15]. Aerobic-dance group was a significant decrease in body weight, body mass index, body fat percentage, waist circumference and basal metabolic rate after the exercise program ($p < 0.05$). Besides aerobic dance group had better weight loss, decrease in body mass index and body fat percentage when compared to control group. Circumference measurements also showed that reductions in aerobic-dance group were more significant than control group ($p < 0.05$). (Mc Cord *et al.*, Carol *et al.* & Nindi *et al.*) ^[16, 17, 18] reported that they found a decrease in body weight and fat composition after the 8 to 12 week step aerobic exercise and dance program. These results were similar to with results of our study. The previous studies show that joint warming leads to 10 to 20% increase in the Range of Motion while when it is not no longer warm, the degree of flexibility decreases to 10 – 20%. Participants of the study undertook stretching exercises in warm up and cool down (Gaieni *et al.*, 2005). Therefore, the increase in the degree of flexibility is meaningful. Subjects in the experimental group were exposed to a series of flexibility exercises, three times per week, for 20-30 minutes in duration, for a total of 10 weeks. At the conclusion of the 10 week period, all subjects were retested for spinal mobility, using back flexion and extension measures. Results indicated a significant improvement in spinal mobility in the experimental group, and virtually no measurable change in the control group. This study suggests that specialized training in back flexibility for older adults is warranted, and that significant gains in spinal mobility can be obtained, regardless of age ^[19]. An additional benefit of the yoga intervention was improvement in flexibility, which can determine the efficiency of muscles. Our findings demonstrated significant favorable effects of the yoga program on lower back and hamstring flexibility in both genders and age groups. These results are in accordance with previous research that found yoga significantly improved ankle flexibility, shoulder elevation, trunk extension, and trunk flexion in healthy untrained adults and spinal flexibility in people with chronic low back pain. The findings of the increased flexibility are not unexpected, given the static stretching nature of yoga postures (involving holding the stretched position using the strength of the agonist muscle), which exert their beneficial effects on flexibility by increasing the length of both connective and muscle tissue, thus engendering a range of joint ^[20]. At the end of the 12-week period, a 1-way analysis of covariance showed a significant level of improvement ($p < \text{or} = 0.05$) in body composition except flexibility.

5. Conclusions

The results of the present study indicate that both Step aerobics training and Floor aerobics training improved body composition in sedentary women. Research findings support the application of aerobics for sedentary women. Initially,

they can start with light programs and proceed to more intense programs. In addition, Step aerobics training proved more effective in development of body composition, both training methods seem to promote health. But were not significant effect on flexibility for any group. If the training concentrate on flexibility based activity there might be significant changes on flexibility.

6. References

1. Tremblay MS, Colley RC, Saunders TJ, Healy GN, Owen N. Physiological and health implications of a sedentary lifestyle. *Applied Physiology, Nutrition, and Metabolism*. 2010; 35(6):725-740.
2. Melam GR, Alhusaini AA, Buragadda S, Kaur T, Khan IA. Impact of brisk walking and aerobics in overweight women. *Journal of physical therapy science*. 2016; 28(1):293-297.
3. Healy GN, Wijndaele K, Dunstan DW, Shaw JE, Salmon J, Zimmet PZ, *et al.* Objectively measured sedentary time, physical activity, and metabolic risk. *Diabetes care*. 2008; 31(2):369-371.
4. Arslan F. The effects of an eight-week step-aerobic dance exercise programme on body composition parameters in middle-aged sedentary obese women. *International Sport Med Journal*. 2011; 12(4):160-168.
5. Dr. Mfremkemon P, Inyang, Okey-Orji Stella. Sedentary Lifestyle: Health Implications, *IOSR Journal of Nursing and Health Science*, (IOSR-JNHS) e-ISSN: 2320–1959, p-ISSN: 2320–1940 2015; 4(2):20-25.
6. Hosiso M. Effects of Aerobic Exercise on Improving Health Related Physical Fitness Components of Dilla University Sedentary Female Community (Doctoral dissertation, Haramaya University, 2013).
7. Pantelić S, Milanović Z, Sporiš G, Stojanović-Tošić J. Effects of a twelve-week aerobic dance exercises on body compositions parameters in young women. *International Journal of Morphology*. 2013; 31(4):1243-1250.
8. Ossanloo P, Najjar L, Zafari A. The effects of combined training (aerobic dance, step exercise and resistance training) on body fat percents and lipid profiles in sedentary females of AL_ZAHRA University. *European Journal of Experimental Biology*. 2012; 2(5):1598-1602.
9. Marandi SM, Abadi NGB, Esfarjani F, Mojtahedi H, Ghasemi G. Effects of intensity of aerobics on body composition and blood lipid profile in obese/overweight females. *International journal of preventive medicine*. 2013; 4(1):S118.
10. Cyrino ES, Okano AH, Glaner MF, Romanzini M, Gobbo LA, Makoski A, Tassi GN. Impact of the use of different skinfold calipers for the analysis of the body composition. *Revista Brasileira de Medicina do Esporte*. 2003; 9(3):150-153.
11. Lan C, Lai JS, Wong MK, Yu ML. Cardiorespiratory function, flexibility, and body composition among geriatric Tai Chi Chuan practitioners. *Archives of physical medicine and rehabilitation*. 1996; 77(6):612-616.
12. Lewis S, Haskell WL, Wood PD, Manoogian N, Bailey JE, Pereira MB. Effects of physical activity on weight reduction in obese middle-aged women. *The American*

- journal of clinical nutrition. 1976; 29(2):151-156.
13. Demir R, SÜEL H, Ibrahim S, Yapici H. The Effects of Eight-Week Step-Aerobic Exercise Programs on Flexibility and Body Composition of Sedentary Women. *Ovidius University Annals, Series Physical Education & Sport/Science, Movement & Health*. 2013, 13.
 14. Guzel NA, Pinar L, Colakoglu F, Karacan S, Ozer C. Long-term callisthenic exercise-related changes in blood lipids, homocysteine, nitric oxide levels and body composition in middle-aged healthy sedentary women. *Chin J Physiol*. 2012; 55(3):202-9.
 15. Carmeli E, Orbach P, Lowenthal DT, Merrick J, Coleman R. Long-term effects of activity status in the elderly on cardiorespiratory capacity, blood pressure, blood lipids, and body composition: a five-year follow-up study. *The Scientific World Journal*. 2003; 3:751-767.
 16. Kravitz L, Cisar CJ, Christensen CL, Setterlund SS. The physiological effects of step training with and without handweights. *The Journal of sports medicine and physical fitness*. 1993; 33(4):348-358.
 17. Garber CE, Mckinney JS, Carleton RA. Is aerobic dance an effective alternative to walk-jog exercise training?. *The Journal of sports medicine and physical fitness*. 1992; 32(2):136-141.
 18. Nindl BC, Harman EA, Marx JO, Gotshalk LA, Frykman PN, Lammi E, Kraemer WJ. Regional body composition changes in women after 6 months of periodized physical training. *Journal of Applied Physiology*. 2000; 88(6):2251-2259.
 19. Rider RA, Daly J. Effects of flexibility training on enhancing spinal mobility in older women. *The Journal of sports medicine and physical fitness*. 1991; 31(2):213-217.
 20. Lau C, Yu R, Woo J. Effects of a 12-week hatha yoga intervention on cardiorespiratory endurance, muscular strength and endurance, and flexibility in Hong Kong Chinese adults: a controlled clinical trial. *Evidence-Based Complementary and Alternative Medicine*, 2015.