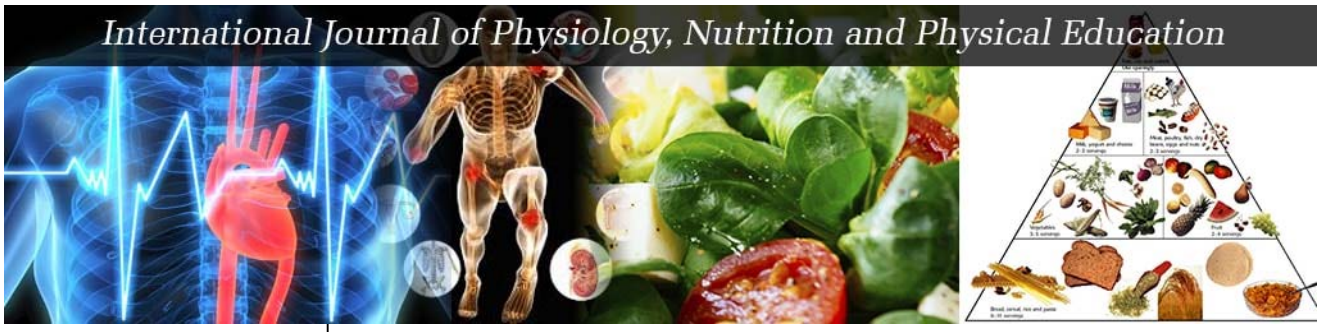

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Chewang Doma Bhutia
PhD Scholar, Department of Physical Education and Sports, Pondicherry University, Pondicherry, India

Dr. R Ram Mohan Singh
Assistant Professor, Department of Physical Education and Sports, Pondicherry University, Pondicherry, India

Correspondence
Chewang Doma Bhutia
PhD Scholar, Department of Physical Education and Sports, Pondicherry University, Pondicherry, India

Effect of different intensityaerobic dance on total cholesterol and triglyceride in overweight and obese adulthood women

Chewang Doma Bhutia and Dr. R Ram Mohan Singh

Abstract
The purpose of the study was to assess the effect of low intensity and moderate intensity aerobic dance on total cholesterol and triglyceride in overweight and obese adulthood women. A total of 45 women aged between 20- 30 years with BMI above 25 from Pondicherry University, Puducherry, India voluntarily participated in this study. The participants were randomly divided into three groups namely Low Intensity n=15 (LI), Moderate Intensity n= 15 (MI) and the third was the control group n= 15 (CG). The two experimental groups underwent the specified aerobic dance routine for a period of 12 weeks: three times a week. Total cholesterol and triglyceride were tested in a standard laboratory. The Blood samples drawn from the subjects were tested at the beginning, mid (6 weeks) and after completion of the 12 weeks training programme. Descriptive statistics, ANCOVA and Turkey Post Hoc tests were used for the analysis of the collected data and level of significance (P) was fixed at 0.05 levels. Twelve weeks of low intensity and moderate intensity aerobic dance lead to a decrease in total cholesterol as significant difference was seen in the adjusted post test means of the experimental groups while no changes in the triglyceride was seen in any of the experimental groups after the training programme. In control group no significant difference was seen during any testing during the experimental period. Hence, it was concluded that low intensity and moderate intensity aerobic dance have a positive effect and contributes to good health in overweight and obese adulthood women.

Keywords: total cholesterol, triglycerides, aerobic dance, obesity, BMI

1. Introduction
Physical activity is a key component of the energy balance equation in adults and activity has a significant influence on body weight regulation. "Obesity is the complex condition which has serious social and psychological impact. It affects virtually all ages and socioeconomic groups and threatens to overwhelm both developed and developing countries" [1]. Ironically, where one end is scaling with malnutrition the other end is surpassing the overweight and obesity in form of a global epidemic. Overall obesity is not only bound to industrialized societies but in developing countries as well. In Developing countries, problems related to obesity is estimated about 115 million with overweight seen to be higher in men and obesity prominent in women [1]. Individuals between the age of 18 to 29 years are at the increased rates of obesity **[2]**. Overweight in the early 20s are recommended for the obesity prevention emphasizing more on young women **[3]**.Obesity comes with all the diet related non communicable diseases like stroke, hypertension, type2 diabetes and cancers etc. Participation in physical activity and exercises help in the prevention of non communicable diseases, maintain weight and strengthen bones and muscles [4, 5]. Obesity is mainly associated with metabolic risk factors which alter the chances of coronary heart diseases [6]. The elevation of total cholesterol, triglyceride, and blood pressure are also due to the major consequences of deposition of fat around the abdomen, waist and hip, thus increasing the risk of CVD [7].
Regular exercise protects from many lifelong chronic and lifestyle diseases. Aerobic dance over the past decade has become one of the most popular forms of activity especially for the women. The activity is done through health clubs and community centers**.** Typically, aerobic dance in 20th Century was developed as aerobic exercise to reduce body fat and emphasized on improvement of performance and physical fitness **[8]**. Participating in aerobic dance is like

performing exercise to music which enhances and realizes certain movements with rhythm and tempo, thus at same time activating different muscle group and involve the whole body [9]. Aerobic dance requires lots of coordination between rhythm and movement which also helps in memory improvement [10]. Aerobic dance is particular can be alter based in the intensity either by increase or decrease by tempo, rhythm and kinetic chains of exercises [11]. Thus, involving in aerobic dance may encourage them to stay active as the music may distract the burden of the exercise load and help them to participate more willingly. As, aerobic exercises have always had positive effects on overall health, controlling weight and improving muscles and joints [10].

Therefore, the motive behind is to find out whether practicing different intensity of aerobic dance have different effect and its contribute in overweight and obese women.

2. Methodology

To achieve the purpose thirty female participants were selected from Pondicherry University, Pondicherry between the aged 20-30 years. All the participants were not on any medication and written informed consent was taken from them before permitting them to participate. They were randomly assigned to one control and two experimental groups of fifteen each for the period of twelve weeks. All participants were administered with total cholesterol and triglyceride testing before the start of the experimental training session and finally after the completion of twelve weeks training for the experimental groups (moderate and low intensity). It was assessed in a standard laboratory. The experimental group underwent the moderate intensity and low intensity aerobic dance routine thrice a week for a period of twelve weeks with the duration lasting 30- 45 minutes.The data was statistically analyzed using descriptive statistics, ANCOVA and Turkey Post Hoc test to identify the significant difference if any. The level of significance fixed at P<0.05.

3. Results

Table 3.1 shows participants', the mean (SD) cholesterol for control group were pretest 169.93±17.13, mid test 173±13.23, posttest 173.47±12.80 which shows a gradual increase in the cholesterol level, for moderate intensity group the cholesterol level at the beginning of the programme was 160.27±20.56, while mid test conducted in the 6 weeks of the programme, showed a gradual decrease in the TC to 142.3±21.80, and finally after twelve weeks the TC was 147.07±20.27 which may be at the phase of maintenance phase in the TC while in low intensity group pretest obtained was 156.27±30.66 and saw a gradual decrease in the mid test 142.33±27.15 but there was further decrease in posttest 139.80±26.89. Similarly, for Triglyceride in control group there was not much difference in pre, mid and post testing 114.73±54.79, 107±38, 104.60±43.20, while in moderate intensity group and low intensity group there was a decrease in the TG in pre, mid and posttests 86.67±25.59, 70.27±13.44, 68.27±10.76 69.93±18.64, 58.93±16.04, 61.60±15.86 respectively.

Table 3.1: Data summary of pretest, mid test and post test of Cholesterol and Triglyceride among control, moderate and low intensity aerobic dance group

Variables	Group	MEAN			SD		
		PRE	MID	POST	PRE	MID	POST
cholesterol	Control	169.93	173.00	173.47	17.13	13.23	12.80
	Moderate	160.27	142.3	147.07	20.56	21.80	20.27
	Low	156.27	142.33	139.80	30.66	27.15	26.89
Trigylecride	Control	114.73	107	104.60	54.79	38.00	43.20
	Moderate	86.67	70.27	68.27	25.59	13.44	10.76
	Low	69.93	58.93	61.60	18.64	16.04	15.86

Table 3.2: ANCOVA results of the posttest corrected in pre and mid tests according to moderate intensity group, low intensity group and control group.

Adjusted posttest	Source of Variance	Sum of Squares	df	Mean Square	F Ratio	P value
Cholesterol	Between groups	944.58	2	472.29	4.99*	0.012
	Within groups	3784.01	40	94.60		
	Total	4528.59	42			
Triglyceride	Between groups	93.50	2	46.753	.393	.678
	Within groups	4764.06	40	119.102		
	Total	4857.56	42			

* Significant at 0.05 level.

In table 3.2 the table value is fixed at (P<0.05) at 0.05 level with degrees of freedom (df) 2/ 40 is 3.23 (2 df is lost because of the covariate). As, the calculated F ratio in the cholesterol adjusted posttest is 4.99 so it shows significant difference. This significant F ratio for the adjusted post test means show shows that the post three mean scores, viz. the post mean scores among the control, moderate intensity and low intensity groups do differ significantly after they have been adjusted for differences in pretest and mid tests scores while in the case of triglyceride there was no significant difference as the P valve is greater than table value.

Table 3.3: Pairwise Comparison between the low intensity, moderate intensity and control group for cholesterol as dependent variable

(A) Intensity Training Group	(B) Intensity Training Group	Mean Difference	Std. Error	P-Value
Moderate	Low	5.795	3.587	.342
	Control	-8.183	4.740	.276
Low	Moderate	-5.795	3.587	.342
	Control	-13.978*	4.512	.011

Control	Moderate	8.183	4.740	.276
	Low	13.978*	4.512	.011

As, significant difference is seen in the adjusted posttest of cholesterol in the ANCOVA table in table 3.2, it is followed by post hoc test as to know where the difference lie. Table 3.3 shows there is significant difference between the control group and the low intensity group.

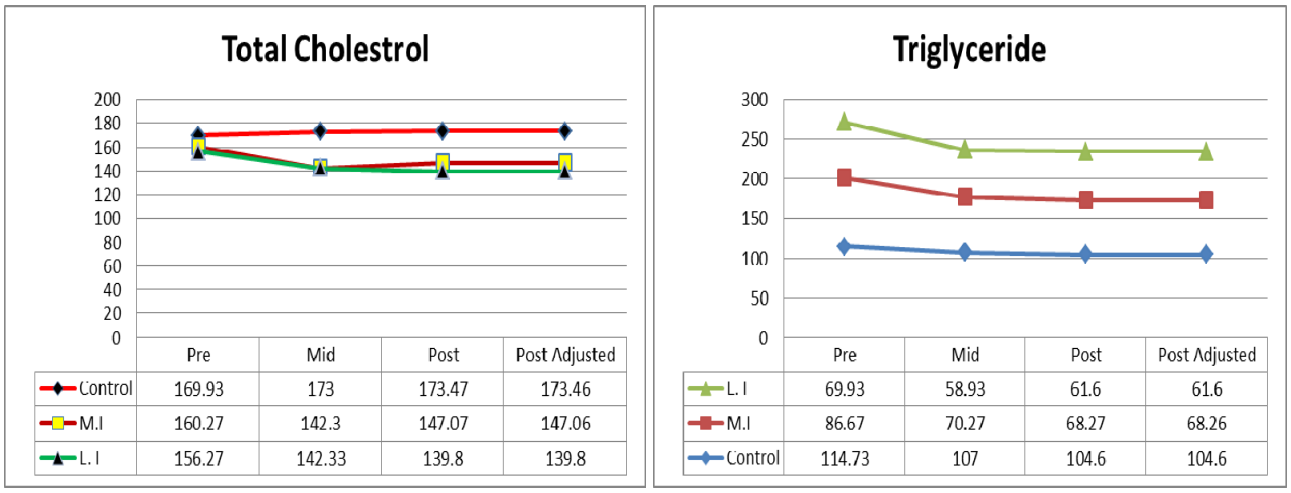

Fig 3.4: shows pre, mid, post and adjusted mean of cholesterol and triglyceride in control, moderate intensity and low intensity groups.

4. Discussion

Engaging in physical activities help lessen the risk of many diseases in women as they age and tend to gain weight. Sedentary lifestyle reduces the muscles mass and bone mineral density. Increase of fat proportion in the body is one of the major causes for obesity leading to increased risk of atherosclerosis and joints problems.

The result of the study shows positive influence in the total cholesterol level of the women participants who were involved in moderate level and low intensity aerobic dance when compared to control group. In both the experimental group the total cholesterol had decreased due to the intervention programme. Low intensity aerobic dance seems to be more effective in reducing cholesterol. Body metabolism is also accelerated by exercise and low stressed exercise (VO2 max 25%) metabolized the non esterified plasma lipid acid as the intensities of the exercise increases the pathway direct towards plasma glucose and muscular glycogens [12]. Two months regular aerobic exercise was conducted which resulted in significant reduction in the cholesterol level in obese males [13]. Six weeks aerobic exercise on obese women also found a positive influence on cholesterol [14].

In the case of triglyceride there was no significant difference found but there was slight decrease seen in both the training group. As triglycerides were in the normal value for the entire obese participants before the training programme, it may not have been influenced by the intervention programme [15]. 12 weeks combined training of aerobic dance, step exercise and resistance training was conducted on 100 sedentary women to observe the effect on serum lipid profile and result showed that there was a decrease in the total cholesterol, triglyceride and VLDL but the decrements were not significant [16].

5. Conclusion

Therefore, the major findings of the present study was to see the effect of 12 weeks low intensity and moderate intensity aerobic dance routine influence on total cholesterol and triglyceride in overweight and obese women. Both the low intensity and moderate intensity aerobics had a positive influence in decreasing the total cholesterol serum while low intensity seems to be more effective in reducing total cholesterol. While there was also decrease seen in the triglyceride in both the training groups when compared to control, but no significant effect was observed. Hence, more studies can be initiated with overweight and obese women with higher serum total cholesterol and triglycerides.

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