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Effect of Aerobics and Zumba on Body Fat Percentage on Young Working Women

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Abstract – The purpose of the present study was to find out the effect of Aerobics and Zumba on Body Fat Percentage of 20 to 25 years old working women. Total 90 working women participated in the study, out of which 30 subjects were selected at random for the Aerobics group another 30 subjects were selected at random for the Zumba group and other 30 subjects were considered as the member of the control group. The subjects were selected from various non govt. and corporate sectors office of Salt Lake and Newtown area of Kolkata.

Body Fat Percentage was measure using Bioelectrical Impedance Analysis (BIA) method. Heuer HB-301 P Body fat Analyzer equipment was used. Aerobics and Zumba training introduced for three alternative days in a week and for total duration of Twelve weeks. Pre-test and Post-test data were collected. Analysis of Covariance (ANCOVA) was conducted to identify the effect of Aerobics and Zumba on Body Fat Percentage.

Results indicates that There was significant difference between both Aerobics and Zumba group with control group (p=.000), in both case p- value is less than 0.05 level of significance. But there is no significant difference between Aerobics and Zumba, because the p- value is .195 which is more than 0.05 level of significance. The study conclude Body Fat Percentage was decrease significantly after twelve weeks Aerobics and Zumba training for working women. No superiority was observed in decreasing Body Fat Percentage among Aerobics and Zumba treatment.

Key Word – Aerobics, Zumba, Body Fat Percentage.

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INTRODUCTION

Population is on continuous rise on this planet. Natural environment is on the verge of being extinct. Complexity of civilization has made man too much dependant on machine and technology. And our physique, thus affected, is a paving the way for all kinds of hypo kinetic diseases. Today the younger generation is robbed off the provision for games and physical exercise. Aerobics or Zumba can be breath in some respite in such a situation promoting sports and physical activities even indoor.

People who are engaged in some professions that are quite time consuming, cannot afford to devote time for games and sports. The maximum effort they can come up with is to join a Gym. But soon they develop boredom. Aerobics or Zumba can be an interesting workout in such situation. Commonly, people in general prefer to dance along with music. Aerobics and Zumba provides them with the scope. The strict grammars of dance lessons are not followed here. Just people are required to catch up the rhythm of the music that is played. Aerobics and Zumba is thus a fun-packed physical fitness regime. Once can dance along with some music for fun and can retain his or her physical fitness.

Nowadays, many corporate officials, both in the private sector and the govt. sector, have to sit for a long hours at their desks. This certainly aggravates their situation of being unfit. They even remain absent from gymnasium either for the reason of being lazy or simply for lack of time. If they are made to understand the importance of Aerobics and Zumba, they will be benefited. Recently, it has already been observed that they are showing interest in such fitness programs. As such fitness programs can be organized within a very small space; they are growing popular in the coming days. The fitness components of aerobics or Zumba are of immense benefit and people from different walks of the society can reap them quite easily.

Aerobics is a type of exercise which is performs in the presence of oxygen. The term AEROBIC was first introduce by Dr. Kenneth H. Copper, an Exercise Physiologist. Aerobics and Zumba both are under aerobic exercise. Aerobics is a form of

physical exercise that combines all rhythmic exercise, stretching, dancing etc. it is usually performed to music. The main objectives of this rhythmic exercise is to improve cardio-vascular endurance, flexibility, muscular strength and over all physical fitness.

Aerobics exercise shortly may be describe, the amount of oxygen get into the body is slightly more than or equal amount of oxygen utilize by the body. It is that type of activity in which body produce least lactic acid, sustained activity for extended period of time without building an oxygen debt. Aerobics increase oxygen utilization during vigorous exercise and lower heart rate during rest. (Bucher-1983)

Inactive life may leads to type 2 diabetes, obesity, coronary heart diseases as well as mental diseases like depression, insomnia, and many more. It is necessary for a child, an adult or old people to exercise daily at least half an hour for maintain their body to work daily life activity. (1995 CDC/ ACSM consensus statement and surgeon General's 1996 report.)

The responsibility of a physical educationist is not only educated the student who are engage in Physical education Classes or courses but also responsible for the people, for the nation. The researcher tried a bit whether three months Aerobic program can be helpful or not for those people who are very much busy with their daily work scheduled.

Zumba is also a rhythmic Aerobic fitness program. Zumba involves dance and all components of Aerobics. In the mid of 1990th Beto Parez , an Aerobics trainer developed this fitness program when he forgot his tape of Aerobics music for a class he was teaching. He then switched on a music available with him and introduced steps and local dance steps immediately which was not preplanned. Basically he used some local traditional dance form and music like, Cumbia, Salsa, Reggaeton, meringue etc. Very rapidly this form of exercise spread not only in Latin America but also all over the world. The dance form basically use in Zumba are Cumbia, Salsa, Reggaeton, Samba, Hip Hop, Mambo, Merangue etc. (www.google.com)

Basically Aerobics and Zumba program involves beats music and organized pre-planned movement or dance steps. Thus the pupil hardly loses their interest and attention from the activity.

Aerobics History- Dr. Kenneth H. Copper was an exercise physiologist and Col. Pauline Potts, he was a physiotherapist, both from United States Air force. Once they were puzzled about some people who has excellent muscular body and strength were still prone to poor performance in long distance running, swimming, bicycling. He started investigation systematically. He used bicycle ergo meter test and systematically measure human performance .He measured the person's ability to use oxygen. In 1968, he published AEROBICS, an exercise programs using swimming, running, bicycling, walking. And this book helps the population to understand and increase their fitness from weakness as well as inactivity life style. After that the Aerobics gained worldwide famous when Jane Fonda a well known aerobics trainer release her Aerobics videos in 1982. (Wikipedia.org/wiki/Aerobics)

RESEARCH METHODS

Selection of participants

Total ninety (N=90) young working women age ranged from 20 to 25 years old were selected at random from Kolkata metropolitan city, West Bengal, India, as a subjects for the study. Total subjects were divided into three equal groups, such as Aerobics group, Zumba group, and Control group. Each group was consisted 30 subjects. The age of the subjects was recorded from MP/ School final/ 10th Class board Exam Admit card. Permission was taken from subject to collecting the data and for conducting research.

Experimental design

In the present study Ninety (N==90) subjects were selected at random from 20 years to 25 years age group female. Total Number of selected subject divided into three equal groups. i) Aerobics group. ii) Zumba group and iii) Control group.

Pretest were conducted on the Criterion Measures. Twelve weeks training was employed among Aerobics and Zumba Group. No treatment was employed on Treatment group. Post test were conducted on Aerobics, Zumba and Control group after completion of Twelve weeks. Therefore, Pre test - post test randomized group design was followed in this experiment.

COLLECTION OF DATA

The data of all the subjects were collected by testing them Body Fat Percentage using Bio Electric Impedance Analysis (BIA), Heuer HB-301 P Body fat Analyzer equipment was used. Two sets of data were collected for the study. The first set of data was collected successively for three days and second set of data was recorded as a same order which was recorded in first set.

RESULTS

The mean and standard deviation of Body Fat percentage of young working women are presented in table 1

TABLE 1

DESCRIPTIVE STATISTICS OF POST-TEST OF AEROBICS, ZUMBA AND CONTROL GROUP IN BODY FAT PERCENTAGE

Groups	Mean	Std. Deviation	N
Aerobics	33.44	6.26	30
Zumba	34.00	8.28	30
Control	34.61	8.11	30
Total	34.02	7.53	90

The value of the mean (unadjusted) and standard deviation for the data on Body Fat Percentage in Aerobics, Zumba and Control Groups during post test are shown in table 1. The mean value of Body Fat Percentage for Aerobics, Zumba and Control groups are 33.44%+-2.88, 34%+-8.28, and 34.61%+-8.11 respectively.

Adjusted means for data on Body fat Percentage of different groups during post test shows in table 2.

TABLE 2

ADJUSTED POST MEANS OF AEROBICS, ZUMBA AND CONTROL GROUP IN BODY FAT PERCENTAGE

Groups	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Aerobics	33.571[a]	0.13	33.31	33.84
Zumba	33.818[a]	0.13	33.55	34.08
Control	34.668[a]	0.13	34.40	34.93

a. Covariates appearing in the model are evaluated at the following values: Body Fat % pretest = 34.5911.

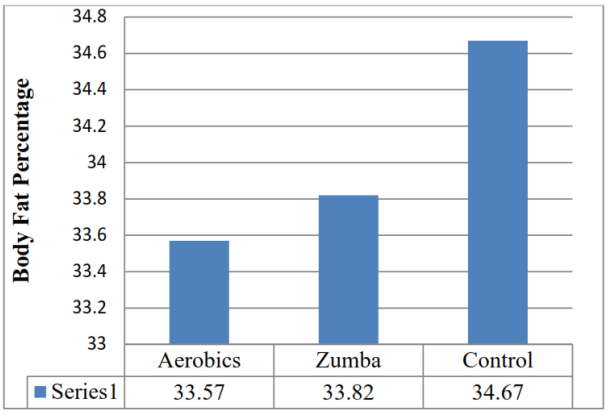

Fig. 1: Graphical representation of the adjusted mean on Body Fat percentage.

In table 4 (test between subject) shows that the F-value for the groups during post test. Since p- value of groups is less than 0.05 level of significance, which indicate that there is significant difference in adjusted means of Body Fat Percentage between 3 groups.

TABLE 3

ANALYSIS OF CO-VARIANCE OF COMPARISON OF ADJUSTED POST TEST MEANS OF AEROBICS, ZUMBA AND CONTROL GROUP IN BODY FAT PERCENTAGE

Source	Type I Sum of Squares	df	Mean Square	F	p value
Corrected Model	5004.532[a]	3	1668.18	3112.92	0
Intercept	104155.63	1	104155.63	194360.82	0
Pre_Fat_Perc	4984.66	1	4984.66	9301.68	0
Groups	19.87	2	9.94	18.54	0
Error	46.09	86	0.54		
Total	109206.25	90			
Corrected Total	5050.62	89			

a. R Squared = .991 (Adjusted R Squared = .991)

Since, the analysis of covariance for Body Fat Percentage score was found significant difference among the groups. Therefore post hoc comparison LSD test was applied and is presented in table number 4.

TABLE 4

POST HOC COMPARISION (LSD) OF ADJUSTED POST TEST MEANS OF AEROBICS, ZUMBA AND CONTROL GROUP IN BODY FAT PERCENTAGE

(I) Groups	(J) Groups	a			95% Confidence Interval for Difference[a]	
		Mean Difference (I-J)	Std. Error	p value.[a]	Lower Bound	Upper Bound
Aerobics	Zumba	-.247	0.19	0.20	-0.62	0.13
	Control	-1.097*	0.19	0.00	-1.47	-0.72
Zumba	Aerobics	.247	0.19	0.20	-0.13	0.62
	Control	-.850*	0.19	0.00	-1.23	-0.47
Zumba	Aerobics	.247	0.19	0.20	-0.13	0.62
	Control	-.850*	0.19	0.00	-1.23	-0.47
Control	Aerobics	1.097*	0.19	0.00	0.72	1.47
	Zumba	.850*	0.19	0.00	0.47	1.23

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

*. The mean difference is significant at the .05 level.

Table 4 indicates that there is no significant difference between Aerobics and Zumba, because the p- value is .195 which is more than 0.05 level of significance. There is significant difference between both Aerobics and Zumba group with

control group (p=.000), in both case p- value is less than 0.05 level of significance.

Considering the adjusted mean values of Aerobics and Zumba group it shows that Aerobics groups (33.82%) was a little better to zumba group (33.82%) following after twelve week treatment.

DISCUSSION OF FINDINGS

Body Fat Percentage can be calculated, Total mass of Fat / Total body mass multiples by 100. Fat includes storage Fat and Essential Fat. In average women essential body fat (10-13%) is higher than that of men (2-5%). It is important to maintain for physiological needs and organs to functions. Body fat is important for an individual's health, but too much and too less body fat can be unhealthy.

Body Fat percentage gives an accurate measure of fitness than weight alone. Loosening storage fat is good for health but not muscle mass. Sometimes it is found a high percentage of fat even when a scale indicates at a normal weight.

Table 6

Body Fat Percentage (women)

Rating	20-29	30-39	40-49	50-59	60 plus
Low	Less than 19	Less than 20	Less than 21	Less than 22	Less than 23
Normal	20-28	21-29	22-30	23-31	24-31
Mod. High	26-31	30-32	31-33	32-33	33-35
High	31 plus	32 plus	33 plus	34 plus	35 plus

University of Illinois department of food science and nutrition, Body fat percentage calculator.

Angappan, Ranjan (2000) conducted a study on Body Fat Percentage of Sri Sarada Niketan College of Science, Karur. Total 105 (N=105) female students were randomly selected for this study. Total subjects were divided into three equal groups, Physical exercise group (N=35), Yogic practice group (N=35) and Control group (N=35). 10 weeks treatment was given to the experimental group. ANOCOVA and Scheffe's post hoc were used. Study concluded that 10 weeks treatment of physical exercise group and Yogic practice group can significantly decreases the Body Fat Percentage of college women students.

In this study, Aerobics and Zumba groups decreased significantly in Body fat Percentage following twelve weeks treatment. The adjusted pre training Body Fat percentage was 34.5911%. After twelve weeks Aerobics and Zumba training, the adjusted post mean of Body Fat Percentage were 33.571%+-0.13 and 33.818%+-0.13 for Aerobics and Zumba group respectively. This shows an average decrease of 2.949% and 2.234% for Aerobics and Zumba group respectively.

CONCLUSION

Body Fat Percentage was decrease significantly after twelve weeks Aerobics and Zumba training for working women. No superiority was observed in decreasing Body Fat Percentage among Aerobics and Zumba treatment.

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