



ISOLATED AND COMBINED EFFECT OF SUMBA DANCE AND AEROBIC TRAINING ON BLOOD SUGAR OF HIGH ALTITUDE COLLEGE WOMEN STUDENTS

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ABSTRACT The purpose of the study was to determine find out the isolated and combined effect of Sumba Dance and Aerobic Training on Blood Sugar of high altitude college women students. For this study, sixty (N=60) women students studying Mahatha Gandhi University College of Teachers Education, Kumily, Kerala were selected as subjects. The subjects were divided at random into four groups of fifteen in each (n=15). Group-I underwent Sumba Dance, Group-II underwent Aerobic Training, Group-III underwent Combined Sumba Dance and Aerobic Training and Group-IV was as the Control group. The training period was limited to three days per week for twelve weeks. The dependent variable selected for this study was Blood Sugar. All the subjects were tested prior to and immediately after the experimental period on the Blood Sugar. The data obtained from the experimental groups before and after the experimental period were statistically analyzed with and Analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, the Scheffe's Post hoc test was applied to determine the paired mean differences. The level of confidence was fixed at 0.05 level for all the variables. The experimental groups, namely Sumba Dance group, Aerobic Training and Combined Sumba Dance and Aerobic Training group have shown significant decrease in blood sugar.

KEYWORDS : Sumba Dance, Aerobic Training, Combined Sumba Dance and Aerobic Training, Blood Sugar

INTRODUCTION

Sumba has a very specific rhythm, highlighted to its best by characteristic Brazilian musical instruments: originally called tamborim, chocalho, reco-reco and cabaca. Much of Sumba music came from daily life in Rio, the first famous example being "Pelo Telefone" composed by Donga. To achieve the true character of the Sumba a dancer must give it a happy, flirtatious and exuberant interpretation. Many figures, used in the Sumba today, require a pelvic tilt (Sumba tic) action. This action is difficult to accomplish, but without it the dance loses much of its effect. Principal characteristics of the Sumba are the rapid steps taken on a quarter of a beat and the pronounced rocking motion and sway of the dancing couple (Corina, 2013).

Sumba is an old Brazilian style of dance that has many different variations. It has been performed as a street dance at carnivals for almost 100 years! Through time, Sumba, also known as the Brazilian Waltz, has been transformed into a ballroom dance that features in a lot of competitions and is one of the most popular dances around the world. In recent times, Sumba has been recognised as a beneficial exercise and is already a well-known fitness workout in a lot of gyms and fitness centers.

Aerobic fitness refers to endurance, or the ability to sustain work for prolonged periods. The term "aerobic" implies that the oxygen necessary to accomplish the work is taken up by the individual during the activity. With longer exercise time, more aerobic metabolism is involved, and exercise lasting more than 12 minutes is mostly accomplished by aerobic metabolism. In aerobic work, oxygen is obtained from the air and is transferred from the lungs to the blood and then to the muscles via the circulatory system. Maximal oxygen uptake or maximal aerobic power (VO₂ max) is the indicator of aerobic fitness. As VO₂ max increases, the level of aerobic fitness also increases (Delextat 2016).

Aerobic fitness is dependent upon age and sex and it can be improved by training. It is highest at ages 18, 19 years in males and at 15 to 20 years for females, and it decreases with age in adulthood. In general, males have higher Vo₂ max than females. The main reason for this is that aerobic fitness is directly related to fat-free body weight, which consists mainly of the weight of muscles in the body, and on the average, males have a higher muscle mass than females. As with other

physiological functions, there are large individual differences in VO₂ max of people of the same sex and age. Some people show high VO₂ max without exercising because of genetic and other factors, while other people who exercise regularly do not show high VO₂ max (Montes et al., 2017).

According to Mitchell et al., (1980) 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 exercises that improves the cardio-vascular 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.

METHODOLOGY

For this purpose, sixty (N=60) women students studying Mahatha Gandhi University College of Teachers Education, Kumily, Kerala were selected as subjects. The subjects were divided at random into four groups of fifteen in each (n=15). Group-I underwent Sumba Dance, Group-II underwent Aerobic Training, Group-III underwent Combined Sumba Dance and Aerobic Training and Group-IV was as the Control group. The training period was limited to three days per week for twelve weeks. The dependent variable selected for this study was Blood Sugar. All the subjects were tested prior to and immediately after the experimental period on the Blood Sugar and it was measured through Blood sample Test.

RESULTS AND DISCUSSION

The data collected from the experimental groups and control group prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. The level of significance was fixed at .05 level of confidence to test the 'f' ratio obtained by analysis of covariance on selected criterion variables.

The analysis of covariance on Blood Sugar of the pre, post, and adjusted test scores of Sumba Dance, Aerobic Training, Combined Sumba Dance and Aerobic Training Group and Control group have been analyzed and presented in Table-1.

Table – 1 Computation of Analysis of Covariance of Experimental Groups and Control Group on Blood Sugar

Test	Sumba Dance Group (I)	Aerobic Training Group (II)	Combined Sumba Dance and Aerobic Training Group (III)	Control Group (IV)	Source of Variance	Sum of Squares	df	Mean Squares	F ratio
Pre Assessment Mean	97.80	86.40	96.53	95.53	Between	39.27	3	13.09	1.42
					Within	515.47	56	9.20	

Post Assessment Mean	88.00	84.67	82.73	95.60	Between	1445.38	3	481.79	23.26*
					Within	1159.87	56	20.71	
Adjusted Post Assessment Mean	86.67	84.85	82.77	96.71	Between	1681.06	3	560.35	85.88*
					Within	561.5	55	10.21	

*Significant at 0.05 level of confidence (Blood Sugar Scores in mg/dL)
 Table value for $df(3, 56)$ at 0.05 level = 2.76 Table value for $df(3, 55)$ at 0.05 level = 2.78

The above table shows that the pre assessment mean values on Blood Sugar of Sumba Dance group, Aerobic Training group, Combined Sumba Dance and Aerobic Training group and Control group are 97.80, 86.40, 96.53 and 95.53 respectively. The obtained 'F' ratio of 1.42 for pre assessment scores was lesser than the table value of 2.76 for degrees of freedom 3 and 56 required for significance at 0.05 level of confidence on Blood Sugar.

The post assessment mean values on Blood Sugar of Sumba Dance group, Aerobic Training group, Combined Sumba Dance and Aerobic Training group and Control group are 88.00, 84.67, 82.73 and 95.60 respectively. The obtained 'F' ratio of 23.26 for post-assessment scores was higher than the table value of 2.76 for degrees of freedom 3 and 56 required for significance at 0.05 level of confidence on Blood Sugar.

The adjusted post-assessment means on Blood Sugar of Sumba Dance group, Aerobic Training group, Combined Sumba Dance and Aerobic Training group and Control group are 86.67, 84.85, 82.77 and 96.71 respectively. The obtained 'F' ratio of 85.88 for adjusted post-assessment scores was higher than the table value of 2.78 for degrees of freedom 3 and 55 required for significance at 0.05 level of confidence on Blood Sugar.

The results of the study indicate that there are significant differences among the adjusted post assessment means of Sumba Dance group, Aerobic Training group, Combined Sumba Dance and Aerobic Training group and Control group in Blood Sugar performance.

To determine which of the paired means have a significant difference, the Scheffe's test is applied as Post hoc test and the results are presented in Table – 2.

Table – 2 The Scheffe's test for the differences between the adjusted post test paired means on Blood Sugar

Adjusted Post-test Means				Mean Difference	Confidence Interval
Sumba Dance Group (I)	Aerobic Training Group (II)	Combined Sumba Dance and Aerobic Training Group (III)	Control Group (IV)		
86.67	84.85			1.83	3.36
86.67		82.77		3.90*	3.36
86.67			96.71	10.04*	3.36
	84.85	82.77		2.08	3.36
	84.85		96.71	11.87*	3.36
		82.77	96.71	13.94*	3.36

*Significant at 0.05 level of confidence

The above shows that the adjusted post assessment mean differences on Blood Sugar between Sumba Dance group and Combined Sumba Dance and Aerobic Training group, Sumba Dance group and Control group, Aerobic Training group and Control group, Combined Sumba Dance and Aerobic Training group and Control group are 3.90, 10.04, 11.87 and 13.94 respectively, which are greater than the confidence interval value of 3.36 at 0.05 level of confidence.

Further the above shows that the adjusted post assessment means differences on Blood Sugar between Sumba Dance group and Aerobic Training group, Aerobic Training group and Combined Sumba Dance and Aerobic Training group 1.83 and 2.08 respectively, which are less than the confidence interval value of 3.36 at 0.05 level of confidence.

The results of the study showed that there was a significant difference between Sumba Dance group and Combined Sumba Dance and Aerobic Training group, Sumba Dance group and Control group, Aerobic Training group and Control group, Combined Sumba Dance and Aerobic Training group and Control group on Blood Sugar.

Further the results of the study showed that there was a significant

difference between Sumba Dance group and Aerobic Training group, Aerobic Training group and Combined Sumba Dance and Aerobic Training group on Blood Sugar.

The above data also reveal that Combined Sumba Dance and Aerobic Training group had shown better performance than Sumba Dance group, Aerobic Training group and Control group in Blood Sugar.

The adjusted post assessment mean values of Sumba Dance group, Aerobic Training group, Combined Sumba Dance and Aerobic Training group and Control group on Blood Sugar are graphically represented in the Figure – 1.

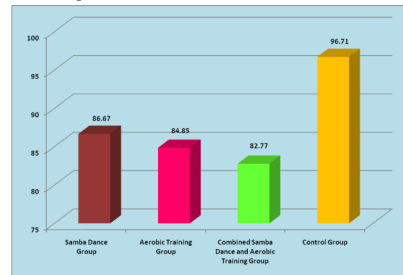


Figure: 1 Adjusted Assessment on Blood Sugar among Different Groups (In mg/dL)

CONCLUSION

From the analysis of the data, Sumba Dance group, Aerobic Training and Combined Sumba Dance and Aerobic Training group have shown significant decrease in blood sugar. Combined Sumba Dance and Aerobic Training group Group showed significantly decrease in the blood sugar, when compared to the Sumba Dance group, Aerobic Training and control group.

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