

Effect of Aerobic Dance and Circuit Training on Body Fat Percentage of Migrated Tribal Overweight School Girls

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Abstract— *The rehabilitation effect of Aerobic Dance and circuit training on body fat percentage of migrated tribal overweight school girls remains unclear. Therefore, the researchers intend to investigate to know the weather there was any significant effect of Aerobic Dance and Circuit Training on body fat percentage of migrated tribal overweight school girls. 45 girls' students of Kalitala Girls School for Aerobic dance Group and another 45 girls' students of Mission Girls School for Circuit Training Group mean age ranged from (13+1) years were selected for this study. Result showed that after 12 weeks 3.94% decreased in Aerobic Dance Group, 3.18% decreased in Circuit Training Group where as 0.37% increase in Biceps Skinfold of Control Group. 4.78% decreased in Aerobic Dance Group, 3.85% decreased in Circuit Training Group where as 0.28% increase in Triceps Skinfold of Control Group. 6.37% decreased in Aerobic Dance Group, 3.61% decreased in Circuit Training Group where as 1.79% increase in Subscapular Skinfold of Control Group and 5.32% decreased in Aerobic Dance Group, 3.82% decreased in Circuit Training Group where as 1.19% increase in Suprailia Skinfold of Control Group. This may be due to effective improving the metabolic rate of trained muscle and the strength of skeletal muscle and also decrease in fat.*

Index Terms- *Aerobic – Dance – Circuit – Training – Fat– Tribal.*

I. INTRODUCTION

A body fat percentage higher than recommended can put you at risk for the following health issues such as type 2 diabetes, coronary artery disease, high blood pressure, stroke, hormone imbalances, pregnancy complications, kidney disease, liver disease and

cancer etc. Circuit training is a workout that involves rotating through various exercises targeting different parts of the body. Focusing on different muscle groups in a short amount of time is an effective exercise that can be incorporated into a healthy lifestyle. Circuit training is a workout method that involves rotating through several different exercises for a certain amount of time or number of repetitions, with little to no rest. Because circuit training is time-efficient and targets our whole body, it can help build strength, improve heart health, and help you lose weight. Circuit training is customizable, with many combinations of exercises. Incorporate exercises that target our upper and lower body, or use sport-specific drills. Aerobics dance is an exercise that combines the rhythmic steps of aerobics with graceful dance movements. It can be broadly divided into four types - high-impact exercises, low-impact exercises, step aerobics and water aerobics. High impact exercises involve intense jumping actions that are synchronized with the rhythmic beats of the music being played. Dance aerobic workout strengthens the body including the weight bearing bones and cardiovascular muscles. It helps your lose weight as well as builds your body muscles. It is also suitable for those who want to tone their muscles. It is one of the easiest aerobic exercises, which can be enjoyed by people of all age groups, both men and women. However, elderly people should perform the exercise either for short duration or with precautions. It is not recommended for very small children and pregnant women. The exercise increases blood circulation and lowers blood sugar and cholesterol levels. Aerobic dance workout increases

the circulation of oxygen to heart, lungs and blood vessels for smooth functioning of the body. The workout enhances the efficiency of heart and lungs. It is a great stress buster. It is an interesting activity that deviate us from the drudgery of everyday life. It is an effective remedy for depression, anxiety and tension. Thus, it is helpful for the rejuvenation of the mind. It gives you the freedom to personalize your dance steps. You can choose music and the dance steps of your choice, say, jazz, disco, hip hop. Dance aerobics is a good workout to boost up your immune system. But no study was found on the migrated tribal school girls was found. Most of the study was clinical trial and on sedentary obese women. Therefore, the researcher intended to take an opportunity to investigate whether there was any significant effect on body fat percentage of migrated tribal school girls or not. Method: 45 girls' students of Kalitala Girls School for Aerobic dance Group and another 45 girls' students of Mission Girls School for Circuit Training Group mean age ranged from (13+1) years were selected for this study ad also another 45 girls from Kalitala Girls School were selected for control group.

Table no. 1A: Aerobic Dance Training Schedule

We ek	Durati on of warmi ng up	Freque ncy (no. of sets)	Durati on of Aerob ic Dance	Densi ty	Total volu me
1-2	6 minut es.	1	8 minut es.	0 minut es.	14 minut es.
3-4	6 minut es.	2	16 minut es.	6 minut es.	28 minut es.
5-6	6 minut es.	3	24 minut es.	12 minut es.	42 minut es.
7-8	6 minut es.	4	32 minut es.	18 minut es.	56 minut es.
9-10	6 minut es.	5	40 minut es.	24 minut es.	70 minut es.

11-12	6 minut es.	6	48 minut es.	30 minut es.	84 minut es.
Tot al =	36 minut es.	21	168 minut es.	90 minut es.	294 minut es.

Table no. 1B: Circuit Training Schedule

We ek	Durati on of warmi ng up	Freque ncy (no. of sets)	Durati on of Circui t Traini ng	Densi ty	Total volu me
1-2	6 minut es.	1	8 minut es.	0 minut es.	14 minut es.
3-4	6 minut es.	2	16 minut es.	6 minut es.	28 minut es.
5-6	6 minut es.	3	24 minut es.	12 minut es.	42 minut es.
7-8	6 minut es.	4	32 minut es.	18 minut es.	56 minut es.
9-10	6 minut es.	5	40 minut es.	24 minut es.	70 minut es.
11-12	6 minut es.	6	48 minut es.	30 minut es.	84 minut es.
Tot al =	36 minut es.	21	168 minut es.	90 minut es.	294 minut es.

Measurement Criteria: Biceps, Triceps, Suprailia and Subscapular Skinfold were measured by using Harpenden Skinfold Calliper (Model No. SFCH80). *Result and Discussion:* It was observed that after 12 weeks 3.94% decreased in Aerobic Dance Group, 3.18% decreased in Circuit Training Group where as 0.37% increase in Biceps Skinfold of Control Group. 4.78% decreased in Aerobic Dance Group, 3.85% decreased in Circuit Training Group where as 0.28% increase in Triceps Skinfold of Control Group. 6.37% decreased in Aerobic Dance Group, 3.61% decreased

in Circuit Training Group where as 1.79% increase in Subscapular Skinfold of Control Group and 5.32% decreased in Aerobic Dance Group, 3.82% decreased in Circuit Training Group where as 1.19% increase in Suprailia Skinfold of Control Group were significant at 0.05 levels but not significant at 0.001 levels.

Table no. 2: Analysis of Covariance (ANCOVA) of Mean of Biceps Skinfold of Aerobic Dance, Circuit Training and Control Group

BMI	Mean			Sum of Squares	Df	Mean Sum of Squares	F ratio
	Aerobic Dance Group	Circuit Training Group	Control Group				
Pre Test	5.33	5.34	5.32	11.495	27	0.41	0.006
Post Test	5.12	5.17	5.34	10.151	27	0.37	3.51*
Adjusted Post Test	5.11	5.16	5.34	0.622	26	0.024	60.63*

W= Within the Group B= between the group * Level of significance at .05 level

Figure no. 1: Mean of Biceps Skinfold of Aerobic Dance, Circuit Training and Control Group

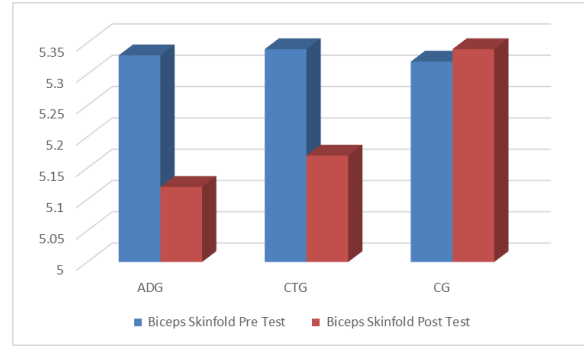


Table no. 3: Analysis of Covariance (ANCOVA) of Mean of Triceps Skinfold of Aerobic Dance, Circuit Training and Control Group

BMI	Mean			Sum of Squares	Df	Mean Sum of Squares	F ratio
	Aerobic Dance Group	Circuit Training Group	Control Group				
Pre Test	10.67	10.64	10.66	66.263	27	2.44	0.009
Post Test	10.16	10.23	10.69	58.70	27	2.17	3.66*
Adjusted Post Test	10.15	10.25	10.69	2.451	26	0.094	86.49*

Figure no. 2: Mean of Triceps Skinfold of Aerobic Dance, Circuit Training and Control Group

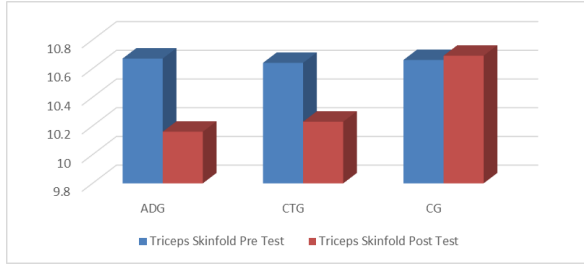


Table no. 4: Analysis of Covariance (ANCOVA) of Mean of Suprailia Skinfold of Aerobic Dance, Circuit Training and Control Group

BMI	Mean			Sum of Squares	Df	Mean Sum of Squares	F ratio
	Aerobic Dance Group	Circuit Training Group	Control Group				
Pre Test	12.71	12.73	12.79	B0.109 W16 4.015	287	B0.0 W54 1.885	0.029
Post Test	11.90	12.27	13.02	B19.64 W26 9.141	287	B9.8 W20 3.094	3.17*
Adjusted Post Test	11.94	12.28	12.97	B16.648 W83.99 9	286	B8.3 W24 0.977	8.52*

Figure no. 3: Mean of Suprailia Skinfold of Aerobic Dance, Circuit Training and Control Group

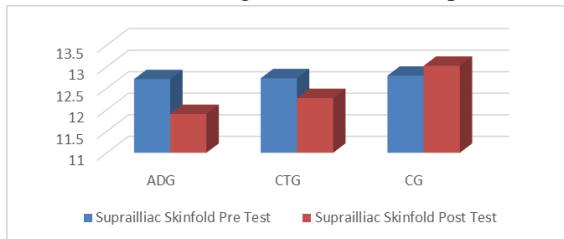
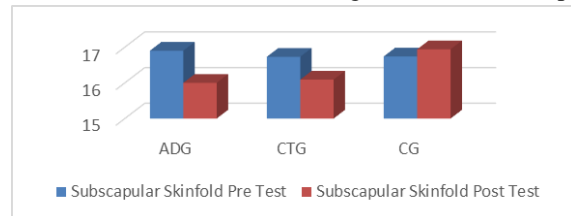


Table no. 5: Analysis of Covariance (ANCOVA) of Mean of Subscapular Skinfold of Aerobic Dance, Circuit Training and Control Group

BMI	Mean			Sum of Squares	Df	Mean Sum of Squares	F ratio
	Aerobic Dance Group	Circuit Training Group	Control Group				
Pre Test	16.90	16.73	16.74	B0.57 W12 8.162	287	B0.2 W1.4 1.473	0.194
Post Test	16.00	16.09	16.94	B16.142 W188. 82	287	B8.0 W71 2.170	3.71*
Adjusted Post Test	15.90	16.15	16.98	B19.372 W81.5 0	286	B9.6 W86 0.948	10.22*

Figure no. 4: Mean of Subscapular Skinfold of Aerobic Dance, Circuit Training and Control Group



Considering white adipose tissue as a metabolically active endocrine organ, it secretes substances, collectively called adipokines, whose expression and secretion are dysregulated in the expanded white adipose tissue during obesity. It is established that there is an inverse relationship between physical activity and pro-inflammatory adipokine secretion in obesity. One of the mechanisms through which exercise training exerts its anti-inflammatory effects is

to decrease the secretion of pro-inflammatory adipokine secretion. Resistance exercise training due to adaptation to training leads to reduced plasma pro-inflammatory adipokines at rest and as a response to exercise. Significantly reduced circulating IL-6 and TNF- α in obese individual may induce weight-loss. Our result also showed that 12 weeks of circuit resistance exercise training significantly decreased body fat percentage levels in obese men. Altogether, these findings propose that circuit has the potential to alleviate obesity-induced systemic inflammation. The study by Kolahdouzi et al. reported that 8 weeks of resistance training improved body composition by significantly decreasing body weight, body mass index and waist hip ratio in obese men. However, in the study by Franklin et al., it was reported that 8 weeks of cardio respiratory training had no effect on body weight, body mass index, waist hip ratio and body fat percentage in obese women. Miller et al. reported that 4 weeks of high-intensity resistance training improved body composition parameters via significant reductions in body fat percentage, percentage of fat tissue and increases in percentage of lean body mass in sedentary obese men. Several meta-analysis studies represent that circuit training effectively decreases body weight and body mass index as well as body fat percentage in overweight and obese individuals. The problem with those studies is that different circuit training, including circuit aerobic, interval and combined (aerobic plus resistance) training, had been analysed in overweight and obese individuals than Circuit Training or Aerobic Dance alone. Our circuit training also showed that 12 weeks of circuit training improve body composition via significantly decreasing body weight, body mass index, waist hip ratio and body fat percentage in obese girls. Due to limited literature in this context, more studies are needed to confirm these findings in obese girls. As physical training has been shown to exert positive effects on body composition (increase in muscle mass and decrease in body fat), it might affect the anti-inflammatory effects of exercise and might contribute to interpretation of the anti-inflammatory effects of circuit training. In this regard, previous studies have reported positive correlations between circulating exercise and body fat percentage. Recently, the study by Kolahdouzi et al. also underlined that resistance training could affect adipokine secretion via improvements in body composition in obese

individuals. In our study, we also found significant correlations between changes in exercise and changes in body fat percentage in obese girls. These data may suggest that the exercise training-induced inflammation improvement in obese individuals might be interpreted by exercise training-induced body composition improvements. Conclusion: It may be concluded that the Aerobic Dance training and Circuit training for 12 weeks was beneficial for decreasing body fat percentage in migrated tribal girls' students and Aerobic Dance was more effective than Circuit Training.

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