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Effects of varied weight reduction training programme on psychological variables among college obese women

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Abstract

The study was designed to know about the importance of the effects of varied weight reduction training programme on psychological variables among college obese women. To achieve the purpose of the study 120 students were chosen from affiliated colleges of Bharathiar University viz., Navarasam Arts and Science College for Women and Vellalar College for Women, Erode, Tamilnadu using purposive sampling method. Those selected 120 students were fallen in over weight and obese category according to the body mass index metric score and its chart. Among 120 subjects, only 80 interested subjects and those who could attend the training program for the research were selected as subjects for the study. The age group of the subjects ranged from 18-25 years. The subjects were free to withdraw their consent in case of feeling any discomfort during the period of their participation but there was no dropout during the study. The control group was not given any treatment and the experimental group I was given aerobic dance training program, experimental group I was given aerobic dance training program, for three days per week, for a period of twelve weeks. Stress was assessed by Everly and Giordano's Stress scale (1979) and the unit of measurement was in Questionnaire and Anxiety was assessed by Marten's Sports Competition Anxiety Test (1977) and the unit of measurement was in Questionnaire. The collected data on physical fitness parameters was analyzed by using 't' test, analysis of variance (ANOVA) for testing the significance of the difference between the post-test means of the experimental and control groups, and ANCOVA tests the significance of 'adjusted post-test mean' differences between the experimental and control groups for each variable. Whenever the 'F' ratio for adjusted post-test was found to be significant the scheffe's post hoc test was applied to find out difference between the paired adjusted mean at 0.05 level of confidence. The result of the present study explored that the Stress and Anxiety significantly improved due to the effect of weight reduction training programme on physiological variables among college obese women.

Keywords: weight reduction training, stress and anxiety.

Introduction

Dance is a popular activity of people of all ages and is both a physical activity and a performing art that gives participants an opportunity for aesthetic expression through movement. Dance is a form of communication, where ideas and feelings are expressed through a creative art. As with all of the arts, dance should be an integral part of the educational experience. As a form of recreation, dance provides opportunities for enjoyment, self-expression, and relaxation. Dance also can be used as a form of therapy, providing opportunities for individuals to express their thoughts and feelings. It provides a means to cope with the various stresses placed on individuals. Dance is increasingly used as a means to develop fitness. There are many forms of dance that are enjoyed by individuals-including balled, ballroom, folk, clog, modern, square, and tap. Cultural heritage is reflected in and passed on through dance activities. Within the past four decades, aerobic dance, and its many variations, has grown in popularity. Aerobic dance provides participants with an opportunity to develop fitness and experience the fun and enjoyment of working out to music. Health, recreation, and dance are allied field of physical education, exercise science, and sport.

Work ignore exercise in intensity = $220 - \text{Age} \times 70\%$. A 40-years old person has a maximum heart beat of 180. Seventy percentage of this is, 126, of the working heart rate. One should not go beyond 144 beats or 80% of the maximum heart rate; otherwise she is going beyond her safe limits. At this rate conversation is easy for performing an aerobic activity.

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Safe weight reduction takes time and effort, but by making lifestyle changes that incorporate proper nutrition and physical activity one can lose and maintain weight for the long-term. Weight reduction is basically based on how much calories one must burn. Basic body functions (e.g. breathing, manufacturing cells and maintaining body temperature) use 50-70% of your calories. The rate at which body uses calories for basic body functions is called the Resting Energy Expenditure (REE). It is determined by the age, gender and body composition. It is also determined by the amount of energy you burn each day also depends in part on how much exercise a human being is carrying out.

Methodology

To achieve the purpose of the study 120 students were chosen from affiliated colleges of Bharathiar University viz., Navarasam Arts and Science College for Women and Vellalar College for Women, Erode, Tamilnadu using purposive sampling method. Those selected 120 students were fallen in over weight and obese category according to the body mass index metric score and its chart. Among 120 subjects, only 80 interested subjects and those who could attend the training program for the research were selected as subjects for the study. The age group of the subjects ranged from 18-25 years. The subjects were free to withdraw their consent in case of feeling any discomfort during the period of their participation but there was no dropout during the study the experimental group I was given aerobic dance training program, experimental group II was given aerobic dance training program, and experimental group III Underwent three days per week with Indoor Physical Activity training program for three days per week, for a period of twelve weeks. The control group was not given any treatment.

Design

Stress was assessed by Everly and Giordano's Stress scale

Table 1: Computation of 't' ratio on stress of Aerobic Dance Training Group, Yoga Training Group, Indoor Physical Activity Group and Control Group (Scores in centimeters)

Groups	Pre – test mean	Post – test mean	Mean Difference	Standard Error of the Mean	't' ratio
Aerobic Dance Group (AG)	27.80	26.70	1.10	0.06	15.98
Yoga Training Group (YG)	27.85	24.75	3.10	0.06	45.04
Indoor Physical Activity Group (PG)	27.95	25.90	2.05	0.05	41.00
Control Group(CG)	27.45	27.70	0.25	0.14	1.75

* Significant at 0.05 level for the degrees of freedom 1 and 19, 2.09

Table 1 shows that the 't' ratio's on stress of AG, YG, PG were 15.98, 45.04 and 41.00 respectively. Since these values were higher than the required table value of 2.09, it was found to be statistically significant at 0.05 level of confidence for degrees of freedom 1 and 19. The obtained 't' ratio between pre and post test of control group 1.75 was lesser than the required table value of 2.09, found to be not statistically significant.

From the results it was inferred that, the AG, YG, PG

(1979) and the unit of measurement was in Questionnaire and Anxiety was assessed by Marten's Sports Competition Anxiety Test (1977) and the unit of measurement was in Questionnaire. The variables were measured at baseline and after 12 weeks of various weight reducing practice were examined.

Training Program

The selected training program was planned, fixed based on the pilot study conducted and with the help of the experts in the aerobic dance, yoga and fitness trainers for the period of twelve weeks fallen on three alternative days per week. Three different training such as Aerobics, Yoga and Indoor Physical Activity Training program was planned for the study to find out its effect on the selected obese college women.

Experimental group I: Underwent three days per week with aerobic dance training program.

Experimental group II: Underwent three days per week with Yoga training program.

Experimental group III: Underwent three days per week with Indoor Physical Activity training program.

In each training session, the training was imparted for a period of 60 minutes which included warm up to start the program and warm down at the end of the training program for three days per week for a period of twelve weeks. The training session were held between 6.30am to 8.00am during the weekdays such as Monday, Wednesday and Friday. The length of training intervention for this study was based on the fact that twelve weeks has shown to be sufficient to prove significant changes of college students investigated by Khattak, I.U *et al.* (2020). The experimental group underwent their respective training programs under the supervision of the investigator. The number of sets was gradually increased once in four weeks along with the intensity.

produced a significant improvement in **stress** of obese women.

From the results it was inferred that the AG, YG, PG had significantly improved performance of the Stress whereas the control group did not improve significantly as they were not subjected to any specific training. Taking into consideration of the pre and post- test means on Stress, the adjusted post-test means were determined and analysis of covariance was computed for the selected groups and presented in Table 1.

Table 2: Analysis of Covariance on Pre, Post and Adjusted Post test means on stress of Aerobic Dance Training Group, Yoga Training Group, Indoor Physical Activity Group and Control Group (Scores in points)

Test	Aerobic Dance Group (AG)	Yoga Training Group (YG)	Indoor Physical Activity Group (PG)	Control Group (CG)	Source of variance	df	Sum of Square	Mean Square	F-ratio
Pre-test Mean	27.80	27.85	27.95	27.45	B / S	3	2.83	0.94	0.25
					W / S	76	283.65	3.73	
Post-test Mean	26.70	24.75	25.90	27.70	B / S	3	93.53	31.17	7.27
					W / S	76	325.95	4.28	
Adjusted Post-test Mean	26.66	24.65	25.70	28.02	B / S	3	122.49	40.83	266.13
					W / S	75	11.50	0.15	

* Significant at 0.05 level for the degrees of freedom (3, 76) and (3, 75), 2.72 ~ 252 ~

Table 4.5 reveals the computation of 'F' ratios on pre test, post test and adjusted post-test means of AG, YG, PG and CG on stress.

The obtained 'F' ratio for the pre test means of AG, YG, PG and CG on stress was 0.25. Since the 'F' value was less than the required table value of 2.72 for the degrees of freedom 3 and 76, it was found to be not significant at 0.05 level of confidence.

Further, the post test 'F' ratio 7.27 after AG, YG, PG and CG on stress was higher than the required table value of 2.72 for the degrees of freedom 3 and 76, hence it was found to be statistically significant at 0.05 level of confidence.

The obtained 'F' ratio for the adjusted post test means of AG,

YG, PG and CG on flexibility was 266.13. Since the 'F' value was higher than the required table value of 2.72 for the degrees of freedom 3 and 75, it was found to be statistically significant at 0.05 level of confidence.

Hence, it is clear that the varied weight reduction training program significantly improved the stress performance of the experimental groups. Since significant improvements were recorded among the adjusted post-test means, the results were further subjected to post-hoc analysis using Scheffe's confidence interval test to find out which of the three paired means had a significant difference. The results were presented in Table 2.

Table 3: Scheffe's Post Hoc Test for the differences between the Paired Adjusted Post-test means of stress

Aerobic Dance Group (ADTG)	Yoga Training Group (YG)	Indoor Physical Activity Group (PG)	Control Group (CG)	Mean difference	Confidence Interval
26.66	24.65	-	-	2.01	0.04
26.66	-	25.70	-	0.96	
26.66	-	-	28.02	1.36	
-	24.65	25.70	-	1.05	
-	24.65	-	28.02	3.37	
-	-	25.70	28.02	2.32	

* Significant at 0.05 level

Table 3 revealed that the mean differences between the paired adjusted post test means of all groups.

The mean differences between the AD with YC, AD with PA, AD with CG, YG with PA, YG with CG, PA with CG was 2.01, 0.96, 1.36, 1.05, 3.37, and 2.32 respectively. Since the value of mean difference was higher than the critical value of 0.04. Hence, it was found to be statistically significant at 0.05 level of confidence

From the result it was inferred that 12 weeks of AD program had improved stress more significantly than the YC, PA and CG.

From these results it was inferred that PA had showed better improvement on stress when compared with YC and CG.

Mean values of pre, post and adjusted post test of AG, YG, PG and Control Group on stress was are graphically illustrated through bar diagram in figure 4.7

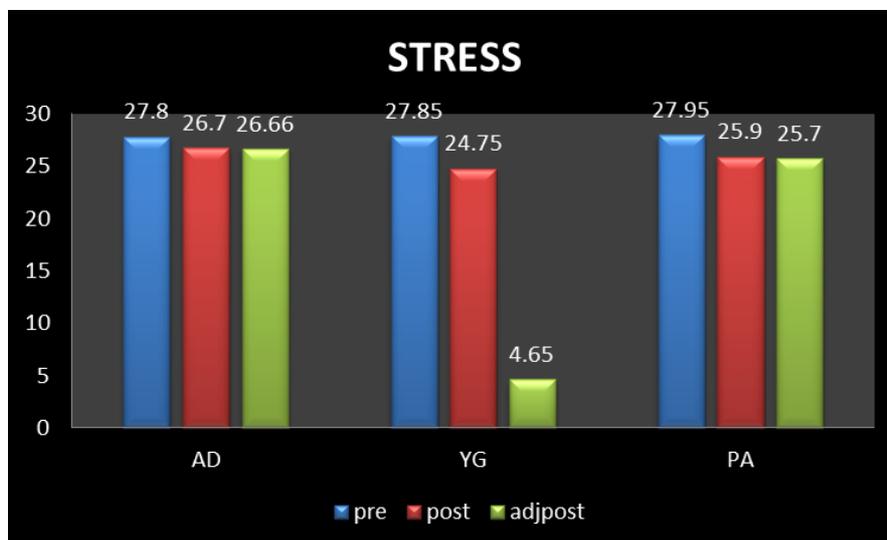


Fig 1: Bar diagram showing pre, post and adjusted post test means of Aerobic Dance Training Group, Yoga Training Group and Indoor Physical Activity Group and Control Group on stress

Results of Anxiety

Table 4: Computation of 't' ratio of Aerobic Dance Training Group, Yoga Training Group, Indoor Physical Activity Group and Control Group on anxiety (Scores in Points)

Groups	Pre - test mean	Post - test mean	Mean Difference	StandardError of the Mean	't' ratio
Aerobic Dance Group (AG)	21.15	19.75	1.40	0.13	10.46
Yoga Training Group (YG)	21.40	17.70	3.70	0.19	19.14
Indoor Physical Activity Group (PG)	21.75	18.95	2.80	0.17	16.31
Control Group(CG)	21.05	20.80	0.25	0.14	1.75

* Significant at 0.05 level for the degrees of freedom 1 and 19, 2.09

Table 4 shows that the 't' ratio's on anxiety of AG, YG, PG were 10.46, 19.14 and 16.31 respectively. Since these values were higher than the required table value of 2.09, it was found to be statistically significant at 0.05 level of confidence for degrees of freedom 1 and 19. The obtained 't' ratio between pre and post test of control group 1.75 was lesser than the required table value of 2.09, found to be not statistically significant.

From the results it was inferred that, the AG, YG, PG produced a significant improvement in anxiety of obese

women.

From the results, it was inferred that, the AG, YG, PG had significantly improved performance of the Anxiety whereas the control group did not improve significantly as they were not subjected to any specific training. Taking into consideration of the pre and post- test means on Anxiety, the adjusted post-test means were determined and analysis of covariance was computed for the selected groups and presented in Table 4.

Table 5: Analysis of Covariance on Pre, Post and Adjusted Post test means on anxiety of Aerobic Dance Training Group, Yoga Training Group, Indoor Physical Activity Group and Control Group (Scores in Points)

Test	Aerobic Dance Group (AG)	Yoga Training Group (YG)	Indoor Physical Activity Group (PG)	Control Group (CG)	Source of variance	df	Sum of Square	Mean Square	F-ratio
Pre-test Mean	21.15	21.40	21.75	21.05	B / S	3	5.83	1.94	0.15
					W / S	76	950.05	12.50	
Post-test Mean	19.75	17.70	18.95	20.80	B / S	3	102.70	34.23	2.82
					W / S	76	922.10	12.13	
Adjusted Post-test Mean	19.93	17.64	18.55	21.07	B / S	3	136.98	45.66	88.40
					W / S	75	38.73	0.51	

* Significant at 0.05 level for the degrees of freedom (3, 76) and (3, 75), 2.72

Table 5 reveals the computation of 'F' ratios on pre test, post test and adjusted post test means of AG, YG, PG and CG on 1.75.

The obtained 'F' ratio for the pre test means of AG, YG, PG and CG on anxiety was 0.15. Since the 'F' value was less than the required table value of 2.72 for the degrees of freedom 3 and 76, it was found to be not significant at 0.05 level of confidence.

Further, the post test 'F' ratio 2.82 after AG, YG, PG and CG on flexibility was higher than the required table value of 2.72 for the degrees of freedom 3 and 76, hence it was found to be statistically significant at 0.05 level of confidence.

The obtained 'F' ratio for the adjusted post test means of AG,

YG, PG and CG on anxiety was 88.40. Since the 'F' value was higher than the required table value of 2.72 for the degrees of freedom 3 and 75, it was found to be statistically significant at 0.05 level of confidence.

Hence, it is clear that the varied weight reduction training program significantly improved the anxiety performance of the experimental groups. Since significant improvements were recorded among the adjusted post-test means, the results were further subjected to post-hoc analysis using Scheffe's confidence interval test to find out which of the three paired means had a significant difference. The results were presented in Table 4.23.

Table 6: Scheffe's Post Hoc Test for the differences between the Paired Adjusted Post-test means of anxiety

Aerobic Dance Group (ADTG)	Yoga Training Group (YG)	Indoor Physical Activity Group (PG)	Control Group (CG)	Mean difference	Confidence Interval
19.93	17.64	-	-	2.29	0.08
19.93	-	18.55	-	1.38	
19.93	-	-	21.07	1.14	
-	17.64	18.55	-	0.91	
-	17.64	-	21.07	3.43	
-	-	18.55	21.07	2.52	

* Significant at 0.05 level

Table -6 revealed that the mean differences between the paired adjusted post test means of all groups.

The mean differences between the AD with YG, AD with PA, AD with CG, YG with PA, YG with CG, PA with CG was 2.29, 1.38, 1.14, 0.91, 3.43, and 2.52 respectively. Since the value of mean difference was higher than the critical value of 0.08. Hence, it was found to be statistically significant at 0.05 level of confidence

From the result it was inferred that 12 weeks of AD program

had improved anxiety more significantly than the YG, PA and CG.

From these results it was inferred that PA had showed better improvement on muscular strength when compared with YG and CG.

Mean values of pre, post and adjusted post test of AG, YG, PG and Control Group on anxiety are graphically illustrated through bar diagram in figure 2

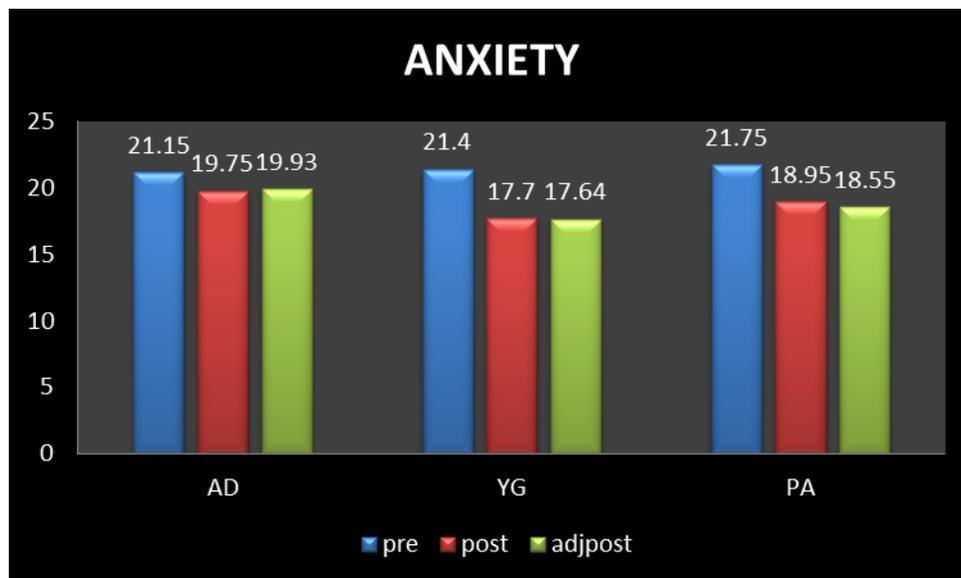


Fig 2: Bar diagram showing pre, post and adjusted post test means of Aerobic Dance Training Group, Yoga Training Group and Indoor Physical Activity Group and Control Group on anxiety

Discussions on Findings

The results of the study indicated that the physiological variable such as Body Fat composition and Cardio Respiratory Endurance significantly improved significantly after twelve weeks of weight reduction training programme on physical fitness among college obese women the changes in the selected variables were attributed the proper planning, preparation and execution of the training package given to the students. The findings of the present study had similarity with the findings of the investigations referred in this study.

The results as presented in dependent 't' test, analysis of variance and Scheffe's post-hoc test showed that the selected three experimental group namely aerobic group, yoga group and physical group significantly decreased stress due to twelve weeks of varied weight reduction training program. The obtained result also state that the three experimental groups were significantly differed when compared to control group.

However, statistically significant improvement in stress was found in Yoga Training Group than other three groups as the obtained mean differences were greater than the required Scheffe's confidence interval.

The result of this study is in accordance with Levine and Rachel (2007) who conducted a study to examine the differences in perceived stress, affect, anxiety, and coping ability on yoga, physical activity and kinesiology enrolled students and concluded that yoga students reported using more positive coping strategies.

The results as presented in dependent 't' test, analysis of variance and Scheffe's post-hoc test showed that the selected three experimental group namely aerobic group, yoga group and physical group significantly decreased anxiety due to twelve weeks of varied weight reduction training program. The obtained result also state that the three experimental groups were significantly differed when compared to control group.

However, statistically significant improvement in anxiety was found in Yoga Training Group than other three groups as the obtained mean differences were greater than the required Scheffe's confidence interval.

The result of this study is in agreement with Masoumeh *et al.* (2018) conducted to investigate the effects of yoga on stress, anxiety, and depression in women living in Ilam, Iran. For

eligible samples, hatha yoga exercises and training sessions were held for 4 weeks and the results of the study revealed that yoga has an effective role in reducing stress, anxiety, and depression.

Álvaro Infantes-Paniagua *et al.* (2021) aimed to measure, in their study, the associations between physical activity and different dimensions of academic, physical, and global self-concept in a sample of 10- to 18-year-old Spanish gifted students. Johannes Vollmer *et al.* (2021) investigated the direct and indirect relationships between Socio-economic status (SES) factors, such as parental educational level, occupational status, and family income, and adolescents' global physical self-concept (GPSC). Fahimeh Bahari *et al.* (2021) evaluated the effect of a combined aerobic and resistance training programme on muscular strength, static and dynamic balance and resiliency of women with multiple sclerosis (MS). Arcadio A. *et al.* (2021) explored the effect of physical activities and self-esteem on the academic performance of high school students in central southern Chile. Surabhi *et al.*, (2020) ^[20] evaluated the impact of 8 weeks of a yoga-based lifestyle intervention (YBLI) on psycho-neuro-immune markers, gene expression patterns, and QOL in RA patients on routine medical therapy.

Conclusions

1. It was concluded that the varied weight reduction training had produced significant improvement on selected psychological variables namely Stress and Anxiety among college obese women.
2. It was concluded that the Yoga Training was more effective than the other weight reduction training program such as Aerobics Training and Indoor physical Activity Training in improving the selected psychological variables namely, Stress, Anxiety, among college obese women.

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