



## Effect of Yoga and Pilates on Selected Psychological Variables among Obese Women

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### Abstract

The purpose of the study was to find out the effect of Yoga and Pilates on selected Psychological variables such as Anxiety and Depression among Obese Women. It was hypothesized that there would be significant differences on selected Psychological variables among obese women due to Yoga (Group A) and Pilates (Group B) than the control group (Group C). The study was confined to obese women only. The subjects were selected from Chennai city only. The age of subjects were ranged between 40-50 years only. The independent variables were Yoga and Pilates only. The dependent variables chosen were psychological variables such as Anxiety and Depression only. Random group experimental design was used. Random sampling design was followed to select the subjects. 90 women came forward, 60 were found obese and finally 45 obese women were only selected randomly. Three groups, 15 each were formed from them: Yoga (Group A), Pilates (Group B) and Control group (no treatment but in active rest) (Group C). Treatment was given for 12 weeks, 6 days a week, One hour maximum daily in this random group experimental design for the experimental groups. Pre tests were conducted initially for all the groups on selected dependent variables. Post tests were also conducted for all the groups on selected dependent variables. Analysis of co-variance (ANCOVA) was used to assess the significant differences among the groups between the pretest and post test. The normality of the data collected was tested through Standard statistical procedures, F test (ANCOVA). The results proved that there were significant differences due to Yoga (Group A) and Pilates (Group-B) on selected psychological variables such as Anxiety and Depression (reduced). Thus, the hypothesis was accepted at 0.05 level of significance.

**Keywords:** Obesity, Yoga, Pilates, Anxiety and Depression.

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### Introduction

Obesity is the third most preventable health problem in India. Obesity can shorten life by 8 years. More than 671 million are obese globally. 30% of deaths are obese related in the world. In India, 23.9 crore people are obese. One in five men and women in India are overweight or obese. India has the third-highest number of obese and overweight people. 2.8 million Individuals die every year due to overweight or obesity. Five out of every 100 boys and girls in India below the age of 20 are overweight or obese. Around 25% of people on Tamil Nadu are obese. 20.9% women are obese.

### Objectives of the Study

To find out whether there would be any significant difference on selected Psychological variables due to Yoga and Pilates among obese women.

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### Purpose of the Study

The purpose of the study was to find out the effect of Yoga and Pilates on selected Psychological variables such as Anxiety and Depression among obese women.

### Hypothesis

It was hypothesized that there would be significant differences on selected Psychological variables among obese women due to Yoga (Group A) and Pilates (Group B) than the control group (Group C).

### Review of Related Literature

Sandra Benevedes, Joshua Caballero (2009) done this pilot study was to determine the effect of yoga on weight in youth at risk for developing type 2 diabetes. Secondly, the impact of participation in yoga on self-concept and psychiatric symptoms was measured. A 12-week prospective pilot Ashtanga yoga program enrolled twenty children and adolescents. Weight was measured before and after the program. All participants completed self-concept, anxiety, and depression inventories at the initiation and completion of the program. Fifteen

predominately Hispanic children, ages 8–15, completed the program. The average weight loss was 2 kg. Weight decreased from  $61.2 \pm 20.2$  kg to  $59.2 \pm 19.2$  kg ( $p = 0.01$ ). F of five children with low self-esteem improved, although two had decreases in self-esteem. Anxiety symptoms improved in the study. Ashtanga yoga may be beneficial as a weight loss strategy in a predominately Hispanic population.

Dhananjai et.al., (2013) done a study on yoga as an effective tool with no diet restriction to improve anxiety and depression symptoms as well as obesity in obese subjects. A total of 272 obese subjects, age matched between 20-45 years were recruited for the study. Motivated subjects were enrolled (waist circumference  $>90$  cm for men or  $>80$  cm for women). The experimental group consisted of 205 Yoga Practicing subjects with a control group of 67 Aerobic exercising subjects. Subjects having cardiac diseases, asthma and any other metabolic diseases, pregnant females, men with waist circumference  $<90$  cm and women with  $<80$  cm and age group  $<20$  and  $>45$  years were excluded. Interested individuals were initially screened for eligibility under supervision of a senior consultant. Informed consent was obtained on the first visit and anthropometrical measurements were taken. Incorporating yogic asana in the treatment protocol of patients suffering from anxiety and depression may prove beneficial in the long run.

### Methodology

The study was confined to obese women only. The subjects were selected from Chennai city only. The age of the subjects were ranged between 40-50 years only. The independent variables were Yoga and Pilates only. The dependent variables chosen were Psychological variables such as Anxiety and Depression only. Random group experimental design was used. Random sampling design was followed to select the

**Table I.** Analysis co-variance (ANCOVA) of the means of two experimental groups and the control group in anxiety

Test	Group A	Group B	Group C	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F ratio
Pre test	63.63	62.40	60.73	between	63.54	2.00	31.77	1.15
				within	1160.27	42.00	27.63	
Post test	55.83	59.77	60.77	between	204.04	2.00	102.02	3.38*
				within	1267.70	42.00	30.18	
Adjusted	54.56	59.63	62.17	between	429.04	2.00	214.52	31.73*
				within	277.16	41.00	6.76	
Mean gain	7.80	-2.63	-0.03					

\* Significant at 0.05 level of confidence (Table F ratio at 0.05 level of confidence for  $df_2$  and  $42 = 3.22$ , 2 and  $41 = 3.23$ ).

subjects. 90 women came forward, 60 were found obese and finally 45 obese women were only selected randomly. Three groups, 15 each were formed from them: Yoga (Group A), Pilates (Group B) and Control group (no treatment but in active rest) (Group C). Psychological questionnaires were used for pre and post tests to collect data.

Sl.No.	Dependent Variables	Instrument Used	Criterion Measures
1	Anxiety	Questionnaire by Carrons	Numerical Values
2	Depression	Questionnaire by Kenyon	Numerical Values

Treatment was given for 12 weeks, 6 days a week, One hour maximum daily in this random group experimental design for the experimental groups. Pre tests were conducted initially for all the groups on selected dependent variables. Post tests were also conducted for all the groups on selected dependent variables. Analysis of co-variance (ANCOVA) was used to assess the significant differences among the groups between the pretest and post test. The normality of the data collected was tested through Standard statistical procedures, F test (ANCOVA). 0.05 level of significance was fixed to test hypothesis.

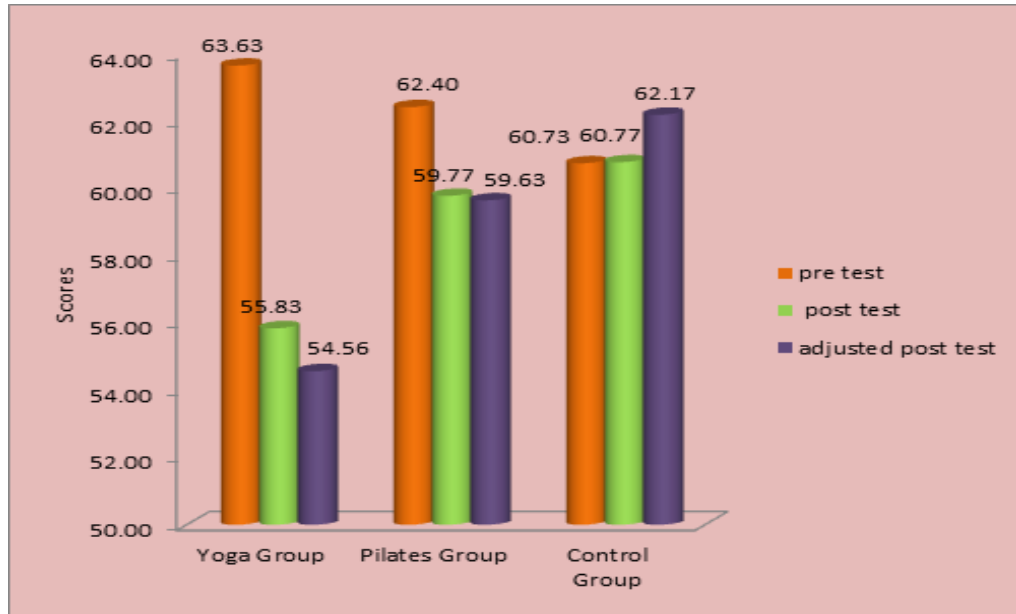
### Results and Discussions

The data pertaining to the variables collected from the three groups before and after the training period were statistically analyzed by using Analysis of Covariance (ANCOVA) to determine the significant difference and tested at 0.05 level of confidence.

The obtained F - ratio value for the Anxiety were greater than the table value, it indicates that there was a significant difference among the posttest and adjusted post-test means of the Yoga and Pilates than the

Control Group. The pretest, post-test and adjusted post-test mean values of Yoga, Pilates and the Control Group on Anxiety were graphically presented in Figure I.

**Figure I.** Bar diagram showing ordered adjusted mean post test on anxiety of the experimental and control groups



The above findings can also be substantiated by observations of the experts Sandra Benevedes & Joshua Caballero (2009). The Analysis of Covariance

(ANCOVA) on Depression of the Yoga, Pilates and the Control Group were analysed and are presented in Table III.

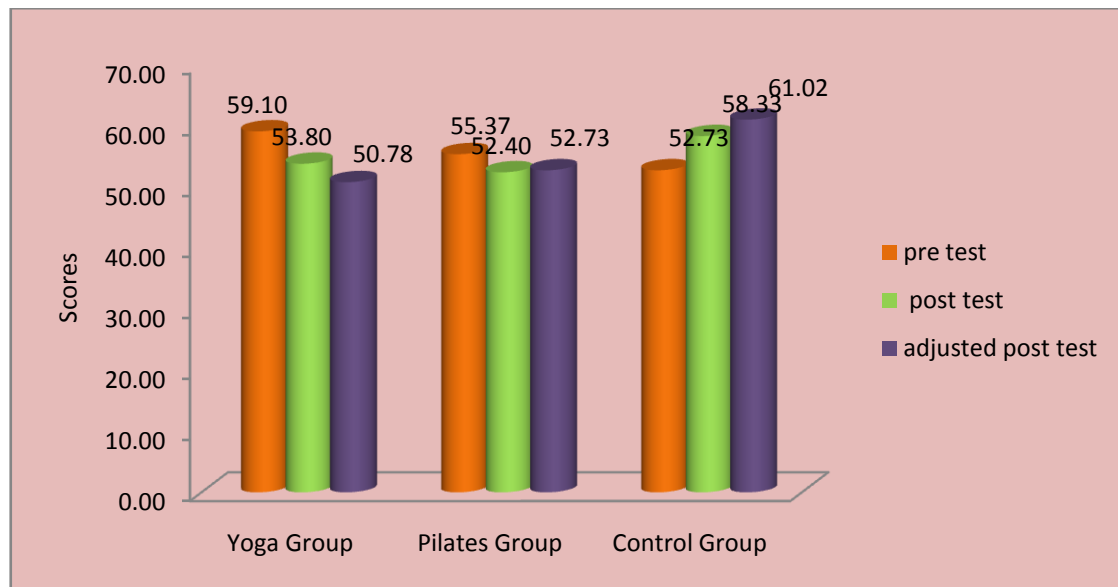
**Table II.** Analysis co-variance (ANCOVA) of the means of two experimental groups and the control group in depression

Test	Group A	Group B	Group C	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F ratio
Pre test	59.10	55.37	52.73	between	307.03	2.00	153.52	3.21
				Within	2006.77	42.00	47.78	
Post test	53.80	52.40	58.33	Between	288.58	2.00	144.29	3.38*
				Within	1793.83	42.00	42.71	
Adjusted	50.78	52.73	61.02	Between	790.64	2.00	395.32	88.35*
				Within	183.45	41.00	4.47	
Mean gain	5.30	2.97	-5.60					

**\*Significant at 0.05 level of confidence. (The table value for significant at 0.05 level of confidence with df 2 and 42 and 2 and 41 are 3.22 and 3.23).**

The obtained F - ratio value for the Depression were greater than the table value, it indicates that there was a significant difference among the post-test and adjusted post-test means of the Yoga and Pilates than the

Control Group. The pretest, post-test and adjusted post-test mean values of Yoga, Pilates and the Control Group on Depression were graphically presented in Figure II.

**Figure II.** Bar diagram showing ordered adjusted mean post test on depression- of the experimental and control groups

The above findings can also be substantiated by the observations made by renowned expert Dhananjai et al., (2013). The results proved that there were significant differences due to Yoga (Group A) and Pilates (Group-B) on selected Psychological variables such as Anxiety (reduced) and Depression (reduced). Thus, the hypothesis was accepted at 0.05 level of significance.

### Conclusions

It was concluded that Yoga (Group A) and Pilates (Group-B) made significant differences than the control group (Group C) among obese women on selected Psychological variables such as Anxiety (reduced) and Depression (reduced). The practitioners of Yoga and Pilates are better in promoting psychological variables than non-practitioners.

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