



## Effects of Pilates Training and Yogic Training with and with out Combination on Selected Physical Fitness Components among College Level Obese Students

\*Mr. S. Venugopal \*\* Dr.P. Anbalagan

\* Research Scholar Karpagam University, Coimbatore

\*\* Research Guide & Assistant Professor, Bharathiar University Department of Physical Education Coimbatore

### ABSTRACT

*The purpose of the study was to find out the effects of pilates training and yogic training with and without combinations on selected physical fitness components among college level obese student. Eighty male obese students for this study were selected from Bishop Ambrose College, Coimbatore randomly and divided into four groups as three experimental and control groups. Data were collected from each subject before and after the training. The collected data were statistically analysed by using analysis of covariance (ANCOVA). It was found that there was significant improvement on percent body fat and flexibility of experimental groups when compared to the control group.*

**Keywords: Yoga, Pilates exercises, fat percentage, flexibility and balance**

### Introduction

The overall average prevalence of obesity in adults for the year 2000 was 8.2% of the global population. The prevalence of obesity progressively increases with the degree of development of countries, as seen in the data for undeveloped countries (1.8%), developing countries (4.8%), countries in transition (17.1%), and developed countries (20.4%) (WHO 2001). Excess body weight and fatness pose a threat to both the quality and quantity of one's life. Obese individuals have shorter life expectancy and greater risks of CHD, hypercholesterolemia, hypertension, diabetes mellitus, certain cancers and osteoarthritis. For a comprehensive report and roundtable discussion of the role of physical activity in the prevention and treatment of obesity and its co-morbidities. Obesity may be caused by genetic and environmental factors. As an exercise specialist, one play an important role in combating this major health problem by encouraging a physically active lifestyle and by planning exercise programs and scientifically sound diets for one's clients, in consultation with trained nutrition professionals. Restricting caloric intake and increasing caloric expenditure through physical activity and exercise are effective ways of reducing body weight and fatness while normalizing blood pressure and blood lipid profiles (Morrow, et al., 2005). Exercise is a key component in the prevention of obesity. This is a condition in which energy intake, in the form of food, exceeds the energy expenditure of daily living and the excess energy is stored in the form of adipose tissue made up of fat cells. Two factors facilitate the onset and progressive nature of obesity. The first is the age related reduction in the energy expended to maintain waking bodily functions- the basal metabolic rate - of about 2% every 10 years. The second is the lowered metabolic rate of obese individuals. Combine these two factors with reduced physical activity and the development of obesity is inevitable. Regular aerobic exercise not only increases energy expenditure during the exercise but also for some time afterwards because the non-exercising metabolic rate remains elevated during the post-exercise recovery period. A combination of exercise with reduced dietary intake provides the best strategy for counteracting obesity and the associated CVD (Hale, 2003).

Pilates is a mind-body fitness program that incorporates breathing and movement to achieve balance and body awareness. Named after its founder, Joseph H. Pilates, this fitness program is designed to be used in conjunction with

special apparatus under the supervision of capable instructors trained and certified in Pilates. Dancers, in particular, probably are one of the few groups of professionals consistently exposed to Pilates training throughout their careers, from a young age through performing and beyond. Published anecdotal evidence supports the use of Pilates in dancers sustaining injuries and requiring rehabilitation (Shybut and Miller, 2005) or physical therapy (Stolarsky, 1993). In addition, the biomechanical forces exerted while performing demi-plié movements on the reformer have been evaluated (Self, et al., 1996).

### Methodology

To achieve the purpose of this study, a qualified physician examined 750 male college students were selected from Bishop Ambrose College, Coimbatore, Tamil Nadu, India, and found out 200 obese students out of 200 obese students 80 obese students were selected at random, their age ranged from 18 to 25 years as per the college records. The selected subjects were divided into three experimental groups and a control group with twenty subjects in (n=20) each. Experimental Group I (PTG=20) underwent pilates training Group II (YTG=20) underwent yoga training group, Group III (COM=20) underwent combination of yoga and pilates training group and Group IV served as control group (CG) for the training period of 12 weeks. The following variables such as percent body fat and flexibility were measured by using BIA method and sit and reach test respectively. The pre test data were collected two days before the training programme and the posttest data were collected two days after the training programme.

### ANALYSIS OF DATA

The data collected from the experimental group prior and after experimentation on selected variables were statistically examined by using analysis of covariance (ANCOVA) was used as statistical technique. Whenever the 'F' ratio was found to be significant the Scheffe's test was used as post-hoc test to determine which of the paired means differed significantly. In all the cases to test the significance, 0.05 level of confidence was used.

### TABLE I ANALYSIS OF COVARIANCE ON CRITERION VARIABLES OF EXPERIMENTAL AND CONTROL GROUPS

Variables	Tests/ Groups	PTG	YTG	COM	CG	S O V	SS	df	MS	"F" Ratio	
% Body Fat	Pre Test	$\bar{X}$	25.81	25.21	26.44	24.77	B	31.6373	3	10.5458	3.33*
		$\sigma$	1.01	2.55	0.98	2.04	W	240.654	76	3.1665	
	Post Test	$\bar{X}$	23.40	22.97	22.47	24.53	B	46.3195	3	15.4398	5.51*
		$\sigma$	1.1	2.22	1.16	1.92	W	213.151	76	2.80462	
	Adjusted Post Test	$\bar{X}$	23.18	23.27	21.7	25.21	B	111.439	3	37.1465	84.01*
		$\sigma$					W	33.1621	75	0.44216	
Flexibility	Pre Test	$\bar{X}$	16.55	17.4	18	16.7	B	26.9375	3	8.97916	0.90
		$\sigma$	3.61	2.5	3.57	2.74	W	749.95	76	9.86776	
	Post Test	$\bar{X}$	19.35	20	22	17.45	B	211.3	3	70.4333	7.92*
		$\sigma$	3.48	2.53	3.35	2.39	W	675.5	76	8.88815	
	Adjusted Post Test	$\bar{X}$	19.89	19.79	21.26	17.86	B	115.589	3	38.5299	29.8*
		$\sigma$					W	96.6836	75	1.28911	

\* Significant at .05 level of confidence

(Body fat in %, and Flexibility in Centimeters)

(The table value required for 0.05 level of significance with f 3, 76 and 3, 75 are 2.73)

**TABLE II  
SCHEFFE'S TEST ON CRITERION VARIABLES OF EXPERIMENTAL AND CONTROL GROUPS**

Variables	PTG vs YTG	PTG vs COM	PTG vs CG	YTG vs COM	YTG vs CG	COM vs CG	Ci
Body Fat	0.1	1.37*	2.03*	1.47*	1.93*	3.4*	0.49
Flexibility	0.85*	1.45*	0.15	0.6*	0.7*	1.3*	0.84

\*Significant at 0.05 level

**Results and Discussion**

The results of the study indicate that significant difference exist among the pre, post and adjusted post test means of experimental and control groups on the percent body fat and flexibility. The above findings are agreement with the study conducted by Segal, et al., (2004). Body composition improved significantly compared to other Pilates studies, and at a level comparable to other forms of training (Jago, et

al.,2006). There may have been short-term elevation of REE for a period after exercise that could be partially responsible for both weight loss and body composition improvement (Stone, et al.,1982).

**Conclusions**

From the analysis of the data, the following conclusions were drawn.

1. The experimental groups namely the pilates, yoga training and combination of pilates and yoga training groups improved significantly on flexibility when compared to the control groups.
2. Due to the influence of pilates, yoga training and combined training significantly reduced the body fat percentage, when compared with control group as well as pre test.
3. Combined training was identified as the best training and was a suitable training system to improve all the selected criterion variables when compared to the pilates and yoga training.
4. Pilates training methods were identified as one of the methods to improve all the selected dependent variables.
5. Similar studies may be conducted for people suffering from degenerative diseases like diabetics and hypertension.

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