



## Effects of Pilates Training and Yogic Training with and with out Combination on Selected Physiological Parameters among College Level Obese Students

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### ABSTRACT

The purpose of the study was to find out the effects of pilates training and yogic training with and without combinations on selected physiological parameters 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 cardio-respiratory endurance and blood pressure of experimental groups when compared to the control group.

**Keywords:** Yoga, Pilates exercises, cardio-respiratory endurance and blood pressure

### Introduction

As the amount of exercise required to maintain and improve health is not utilized by a majority of the population, there is a need to find exercise modalities which provide a blend of aerobic, strength and to make a physiological difference while providing a mode of exercise that appears easy to perform by the general public (Perri, et al., 2002). Exercise that combines multiple benefits is especially appealing to time-conscious potential exercisers (Hurley,1994). Pilates has become a world-wide exercise modality which enjoys wide acceptance because of a wide array of ascribed benefits including improved strength, mobility, endurance, flexibility, core stability, proprioception, body control and even a "mind-body" effect in different gravitational planes (Dreass, 2002). The two most common Pilates applications are the reformer and mat-based exercises. Pilates has had acceptance and usage in the dance community, and has been proposed as a rehabilitation and training method (Levine, et al., 2007). Much of the rationale for the use of Pilates, especially with back and core issues are inference-based from physical therapy and sports medicine (McGill, 2003). As Pilates involves breathing patterns as well as movement, the link between diaphragmatic breathing and movement is higher in this form of exercise than some other forms of exercise (Allison, 1998). Additionally, other concepts in spinal stabilization such as placing the spine in neutral, activation of the deeper core muscles such as the transverses abdominus, and the practice of "hollowing" all make Pilates potentially attractive for core strengthening (McMillan, et al.,1998).

### 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 cardio-respiratory endurance and blood pressure were measured by using 12 minutes Coopers' run/walk test and sphygmomanometer 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
Cardio- Respiratory Endurance	Pre Test	$\bar{X}$	1521.5	1495	1450.5	1429.5	B	104593.8	3	34864.58	2.19
		$\sigma$	122.99	105.94	129.03	144.16	W	1211845	76	15945.33	
	Post Test	$\bar{X}$	1573.5	1565.25	1590.5	1437.75	B	295057.5	3	98352.5	6.98*
		$\sigma$	12.52	95.73	103.63	145.48	W	1070198	76	14081.55	
	Adjusted Post Test	$\bar{X}$	1532.22	1547.06	1611.08	1476.64	B	183070.6	3	61023.5	30.48*
		$\sigma$					W	150144.4	75	2001.92	

Systolic Blood Pressure	Pre Test	$\bar{X}$	128.15	127.5	127	126.25	B	38.65	3	12.88333	0.69
		$\sigma$	4.92	4.72	4.1	3.29	W	1411.3	76	18.56974	
	Post Test	$\bar{X}$	124	123.75	121.2	125.6	B	198.7375	3	66.24583	4.68*
		$\sigma$	4.52	4.49	1.74	3.6	W	1075.75	76	14.15461	
	Adjusted Post Test	$\bar{X}$	123.46	123.59	121.33	126.17	B	233.7848	3	77.92827	9.76*
		$\sigma$					W	598.7286	75	7.983048	
Diastolic Blood Pressure	Pre Test	$\bar{X}$	88.75	88	86.85	84.2	B	238.3	3	79.43333	6.0*
		$\sigma$	4.25	3.4	3.55	3.25	W	1005.5	76	13.23026	
	Post Test	$\bar{X}$	84.2	83.35	80.55	84.6	B	200.05	3	66.68333	6.48*
		$\sigma$	3.91	3.53	1.67	3.25	W	781.5	76	10.28289	
	Adjusted Post Test	$\bar{X}$	82.97	82.63	80.62	86.48	B	325.4785	3	108.4928	26.21*
		$\sigma$					W	310.403	75	4.138706	

\* Significant at .05 level of confidence

(Cardio-respiratory endurance in Meters and Blood Pressure in mm.Hg)

(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
Cardio-Respiratory Endurance	14.84	78.86*	55.58*	64.02*	70.42*	134.44*	33.06
Systolic Blood Pressure	0.13	2.13*	2.71*	2.26*	2.58*	4.84*	2.09
Diastolic Blood Pressure	0.34	2.35*	3.51*	2.01*	3.85*	5.86*	2.0

\*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 cardio-respiratory endurance and blood pressure. It has been estimated in a recent magazine article in *Newsweek* that over 5 million people are using Pilates for exercise in the United States(Chang, 2000). Harvard's Women's Health Watch promotes Pilates as a good, safe method for exercise and conditioning(Exercise,2000). While Pilates has been effective for treating lower back pain

and other disorders (Maher, 2004). it provides only minimal resistance exercise (Mallery, 2003). Without resistance during exercise, aerobic demand is not at a high enough level to reduce inflammatory cytokines, and increase whole body metabolism for weight control (Samueloff, et al., 1982). Thus to reduce leptin and reduce cytokines, heavier exercise is necessary (Hickey and Calsbeek 2001). In the present investigation, the use of a resistive device during Pilates increased the workload dramatically. In the present investigation, the use of a Pilates, yoga and combination of pilates and yoga training improve the cardio-respiratory endurance and stabilize the blood pressure dramatically.

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

1. The pilates, yoga training and combination of pilates and yoga training methods enhance the cardio-respiratory endurance among obese college men students.
2. Due to the influence of pilates, yoga training and combined training significantly normalizes the systolic and diastolic blood pressure, 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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