EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 4
Issue: 6
256-260
Year: 2017

A STUDY ON REDUCING RESTING PULSE RATE AND ANXIETY AMONG OBESITY MEN THROUGH YOGA PRACTICE

[1*]Manivannan L., [2]Prabhusaran N. and [3]Elangovan R.

[1]Department of Physical Education, Chennai Medical College Hospital and Research Centre, (SRM Group), Tiruchirapalli, (Affiliated The Tamilnadu Dr.MGR Medical University, Chennai) India.
[2]Department of Microbiology, Chennai Medical College Hospital and Research Centre, (SRM Group), Tiruchirapalli, (Affiliated the Tamilnadu Dr. MGR Medical University, Chennai) India.
[3]Department of Yoga, Tamilnadu Physical Education and Sports University, Chennai, India.

***Author for Correspondence: Dr. Manivannan L.**
Department of Physical Education, Chennai Medical College Hospital and Research Centre, (SRM Group), Tiruchirapalli, (Affiliated The Tamilnadu Dr.MGR Medical University, Chennai) India.

Article Received on 14/04/2017 **Article Revised on 04/05/2017** **Article Accepted on 25/05/2017**

ABSTRACT
This study was to find out the effect of yogic practices and Aerobic exercise on resting pulse rate and Anxiety among obese Men. Three sets were designed with 15 subjects each where set I underwent yogic practices, set II underwent Aerobic exercise and set III as control. This investigation was prepared by random designing that consisting of a pre and post test. The pre test was conducted for all the 45 subjects on resting pulse rate and anxiety. The experimental sets were participated in their respective yogic practices and aerobic exercise exercises for a period of six weeks. The post tests were conducted for all the subjects by the resting pulse rate and anxiety respectively after experimentation of yogic practices and Aerobic exercises. The data obtained were analyzed by Analysis of Covariance to assess the significant difference among the sets on post test for resting pulse rate and anxiety to find out the effects of yogic practices and Aerobic exercise among obese men. Further, it was concluded that yogic practices reduced effectively the resting pulse rate and anxiety among obese men than the control group. Aerobic exercise also effectively reduced resting pulse rate and anxiety among obsess men. As a conclusion, it was found that yogic practices are slightly effective than aerobic exercise on the selected reducing resting pulse rate and anxiety

KEYWORDS: Yoga, Aerobic exercise, resting pulse rate, Anxiety, obese.

INTRODUCTION
Obesity is fast becoming the developed world's greatest health problem. Adult obesity rates have almost quadrupled, become four times as great over the last 25 years. They are at least two to three stone overweight and putting their health at serious risk. Most of people eat more food than they require, and much of it is higher in calories that the human body was originally designed to cope with. Fast food, high calorie snacks, cold drink and large portion of meals given more energy than required. Thus, obesity is generated in the body. According to figures, being obese can take up to nine years off the lifespan. It also makes a person far more likely to develop a range of health related problems or psycho-somatic disease, including: Heart Disease, Arthritis, Hypertension, Diabetes Mellitus, Spondylitis, Infetility, Depression.[1] The major biochemical benefits of yoga are decrease in blood glucose, sodium, total cholesterol, triglycerides, LDL cholesterol, VLDL cholesterol, catecholamines; whereas the increasing in HDL cholesterol, cholinesterase, ATPase, hematocrit, hemoglobin, lymphocyte count, total white blood cell count, thyroxin, vitamin C and total serum protein were well documented.[2,3]

Aerobic literally means "with oxygen in and refers to the use of oxygen in muscles energy generating process. Aerobic exercises typically those performed at moderate levels of intensity for extended periods of time that maintain an increased heart rate.[4] Regular aerobic exercises will improve cardiovascular and cardio respiratory function (heart and lungs), an increased maximal oxygen consumption (VO2max), maximal cardiac output (amount of blood pumped every minute), maximal stroke volume (amount of blood pumped with each beat) and blood volume and ability to carry oxygen. Reduced workload on the heart (myocardial oxygen consumption) for any given sub maximal exercise intensity, increased blood supply to muscles and ability to use oxygen Lower heart rate and blood pressure at any level of sub maximal exercise, threshold for lactic acid accumulation. Lower resting systolic and diastolic blood

pressure in people with high blood pressure, Increased HDL Cholesterol (the good cholesterol), Decreased blood triglycerides reduced body fat and improved weight control Improved glucose tolerance and reduced insulin resistance.[5]

Obesity is a growing public health concern in modern societies. Physical inactivity and unhealthy diet have been identified as major risk factors for obesity.[6] Ample research has highlighted the role of obesity as a risk factor for a large number of chronic health complications, such as cardiovascular disease, hypertension, type 2 diabetes, stroke, sleep apnea and certain types of cancer, as well as in mood change and depression in obese individual. Abdominal obesity has been suggested to be associated with overstimulation of the hypothalamic pituitary-adrenal (HPA) axis.[7,8] yoga is also easy and inexpensive tool requiring little in the way of equipment or professional personnel, with some studies indicating excellent long-term adherence and benefits.[9]

Yoga-based guided relaxation helped in the reduction of sympathetic activity with reduction in heart rate, skin conductance, oxygen consumption, and increase in breath volume.[10, 11] Statistically significant reduction in pulse rate after regular practice of yoga is attributed to increased vagal tone. Decreased sympathetic activity reduces catecholamine secretion and also leads to vasodilation leading to improvement in peripheral circulation. Regular yogic practices reduce basal metabolic rate and resting oxygen consumption.[12] All these may be responsible for reduction in resting pulse rate.

Anxiety disorders are characterized by long term worry, tension, nervousness, fidgeting and symptoms of autonomic system hyperactivity.[13] Meditation is an age old self regulatory strategy which is gaining more interest in mental health and psychiatry. Meditation can reduce arousal state and may ameliorate anxiety symptoms in various anxiety conditions.[14] Transcendental meditation is comparable with other kinds of relaxation therapies in reducing anxiety where some studies highlighted yoga did not show significant effectiveness in treating obsessive-compulsive disorders compared with relaxation meditation[14] that objective was taken to disprove.

MATERIALS AND METHODS

A battery of ninety (n=45) obese middle aged men were selected as samples at random from tertiary care teaching hospital and urban private hospitals of Tamilnadu, India. The selected samples were equally divided into three groups (n=15). Group I underwent yogic practices, Group II underwent Aerobic exercise and Group III acted as control. However all the three groups were advised to continue the medicines as per the recommendations of their doctors (Physicians). The study was formulated by the random design, consisting of a pretest and posttest. Pretest was conducted for all the 45 subjects on selected psychological variables anxiety and physiological variable resting pulse rate. The experimental groups participated in their respective yoga and aerobic exercise for a period of six weeks. The post tests were conducted for all the subjects again on the selected psychological variables anxiety and physiological variable resting pulse rate after experimentation of yoga and aerobic exercises.

The data obtained were analyzed by Analysis of Covariance (ANCOVA) to assess the significant difference among the groups on posttest for stress and self-confidence to find out the effects of yoga and aerobic exercise among obese men.

Training Programme

The subjects were selected by random and were divided into three groups and the experimental group I was given Yogic practices at 5.45am to 6.45am and experimental group II was given Aerobic exercise 7.00 am to 8.00am for duration of one hour (6 days a week) for six weeks. Group III is the control group, was not given any training but in active rest. Yogic programs and Aerobic exercise for selected groups are presented in the table.

Training programme for experimental groups

Table 1.

Groups	Programmes
Experimental Group - I	Loosening Exercises, Asanas, Pranayama, and relaxation.
Experimental Group - II	Aerobic exercise
Control Group	No training

Training Schedule of Experimental Group – I (Yogic Practices)

6 – Weeks yoga training programme

Duration: 6 weeks, Asanas : 30 minutes,
Weekly: 5 days, Pranayamas: 10 minutes,
Time: 45 minutes , Relaxation: 5 minutes

Table 2.

Weeks	Asanas Duration	Pranayama Times
I	5 Seconds	3
II	10 Seconds	3
III	15 Seconds	4
IV	20 Seconds	4
V	25 Seconds	5
VI	30 Seconds	5

Following movements are given for the above durations.

Yoga practices

Ardha kati chakrasana, Padahastasana,Ardha-chakrasana,Utkatasana, Paschimottanasa,Ustrasana, Ardhmatsyendrasana, Bhujangasana, Salabhasana, Dhanurasana,Navasana, Halasana,Savasana Kapalabhati, Nadi sudhi.

Training Schedule for Experimental Group – II (Aerobic exercise)

Weeks aerobic exercises training programme (Low impact) Duration: 6 weeks

Warm Up, Exercises: 5 minutes,

Weekly: 5 Class, Aerobics Exercises: 30 Minutes, Time: 45 minutes,

Cool down Exercises: 10 minutes

Table 3.

weeks	Slow moments	Medium movements	Fast movements	Warm down
I & II	15 Minutes 3 times	10 Minutes 2 times	5 Minutes 1 times	10Minutes
III & IV	10 Minutes 3 times	15 Minutes 4 times	5 Minutes 2 times	10Minutes
V& VI	10 Minutes 3 times	15 Minutes 4 times	10 Minutes 3 times	10Minutes

Following movements are given for the above durations.

On the sport marching, Marching with arms side, upward and down, Out ward toe touch with single arm, Out ward toe touch with double arm, Toe touching, Toe touching side ward movement, Toe touching with side ward movement arm movement, V-step movement, L-step right side movement, L-step left side movement, Zig-zag forward movement, V-shape forward toe touch right,& left side V-shape forward knee up right, & left side movement Grape wine movement, Single leg side ward movement, A-step movement, Dymand step movement, V- Step rotation right side movement- Step rotation left side movement.

RESULTS AND DISCUSSION

In this study the psychological anxiety and physiological variable were analyzed by yoga and aerobic exercise.

Table I

Table 6: Computation of mean and analysis of covariance of resting pulse rate of experimental and control group.

Test	Experimental Group – I (Yoga)	Experimental Group – II (Aerobic)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	80.87	79.27	77.87	Between	2	12.3	6.16	0.50
				Within	42	516.3	12.29	
Post-test mean	77.27	74.67	80.07	Between	2	86.8	43.40	5.21*
				Within	42	350.0	8.33	
Adjusted mean	76.81	74.74	78.25	Between	2	93.1	46.54	14.93*
				Within	41	127.8	3.12	
Mean diff	-2.80	-4.60	2.20					

Table F- ratio at 0.05 level of confidence. For 2 and 42 (df) = 3.1.22, 2 and 41 (df) = 3.22,2 and

*Significant at 0.05 level of confidence

Table I shows the obtained pre test means and post test means and adjusted means for resting pulse rate. The obtained value on the scores of pre test means 0.50 was less than the required value 3.22, to be significant at 0.05 level this proved that the random assignment of the subjects were successful and their scores in resting pulse rate before the training were equal and there was no significant differences. The obtained F value on the scores of post test means 5.21 was greater than the required F value 3.22, which proved that the interventional programmes, yogic and aerobic exercise were significantly improved resting pulse rate of the subjects.

Taking in to the consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 14.93 was greater than the required value 3.22 and hence it was accepted that the yogic practices and aerobic exercise significantly improved resting pulse rate of the subjects. Since significance differences were recorded, the results were subjected to post hoc analysis using Scheffe's confidence interval level. the results were presented in the table II.

Table II: Scheffe's post-hoc test for fasting blood sugar.

Experimental Group – I (Yoga)	Experimental Group – II (Aerobic)	Control Group	Mean difference	Required C.I
74.74	76.81	-	-2.08*	1.62
74.74	-	78.25	-3.51*	1.62
-	76.81	78.25	-1.43	1.62

*Significant at 0.05 level of confidence. Table II shows that there were significant differences between yogic practices and aerobic exercises and yogic practices and control group.

Table III: Computation of mean and analysis of covariance on Anxiety of control and experimental groups(Scores in points)

Test	Experimental Group – I (Yoga)	Experimental Group – II (Aerobic)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	53.73	53.47	52.53	Between	2	5.0	2.49	0.07
				Within	42	1579.6	37.61	
Post-test mean	61.73	62.40	53.73	Between	2	912.2	456.09	21.04
				Within	42	910.3	21.67	
Adjusted mean	62.63	61.79	52.25	Between	2	994.9	497.44	79.83
				Within	41	255.5	6.23	
Mean Gain	8.00	8.93	1.20					

Table F- ratio at 0.05 level of confidence. For 2 and 42 (df) = 3.1.22, 2 and 41 (df) = 3.22,2 and
*Significant at 0.05 level of confidence

Table III shows the obtained pre test means and post test means and adjusted means for Anxiety. The obtained value on the scores of pre test means 0.07 was less than the required value 3.22, to be significant at 0.05 level this proved that the random assignment of the subjects were successful and their scores in anxiety before the training were equal and there was no significant differences. The obtained F value on the scores of post test means 21.04 was greater than the required F value 3.22, which proved that the interventional programmes, yogic and aerobic exercise were significantly, influences Anxiety of the subjects.

Taking in to the consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 79.83 was greater than the required value 3.22 and hence it was accepted that the yogic practices and aerobic exercise significantly influenced anxiety of the subjects. Since significance differences were recorded, the results were subjected to post hoc analysis using Scheffe's confidence interval level. The results were presented in the table IV.

Table IV.
Table 5: Scheffe's post-hoc test for Anxiety.

Experimental Group – I (Yoga)	Experimental Group – II (Aerobic)	Control group	Mean difference	Required C.I
62.63	61.79		0.84	2.29
62.63		52.25	10.38*	2.29
	61.79	52.25	9.54*	2.29

*Significant at 0.05 level of confidence

Table IV shows that there were significant differences between yogic practices and aerobic exercises and yogic practices and control group.

CONCLUSION

Further the study was concluded by highlighting that yogic practices and aerobic exercise have made significant positive differences on reduced resting pulse rate and anxiety among obese middle aged men. It is also found that yogic practices are slightly effective than aerobic exercise.

REFERENCES

1. Dhara R. Doshi. & Dr. Yogesh A. Jogsan. A Study on Impact of Yoga on Self-Control in Obese Women, 2012; 1- 3.
2. Sharma, R., Gupta, N., Bijlani, R.L. Effect of yoga based lifestyle intervention on subjective well being. Indian Journal of Physiology and Pharmacology, 2008; 52: 123-131.
3. Malathi, A., Asha, D., Shah, N., Patil, N., Maratha, S. Effect of yoga practices on subjective well being. Indian Journal of Physiology and Pharmacology, 2000; 44: 202-206.

4. Prem Sunder, Yoga for Fitness, (New Delhi: Khel Sahitya Kendra Published, 2009; 32.
5. Www2.Gsu.Edu/Wwwfit/Benefits.Html#Aerobic Perez CE. Fruit and vegetable consumption. Health Rep, 2002; 13: 23-31.
6. Rosmond R, Dallman M, Bjorntorp P. Stress-related cortisol secretion in men: Relationships with abdominal obesity and endocrine, metabolic and hemodynamic abnormalities. J Clin Endocrinol Metab, 1998; 83: 1853.
7. Bjorntorp P. Neuroendocrine factors in obesity. J Endocrinol, 1997; 155: 193-5.
8. Miller J, Fletcher K, Kabat-Zinn J. Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders. Gen Hosp Psychiatry, 1995; 17: 192-200.
9. Bussing A, Michalsen A, Khalsa SB, Telles S, Sherman KJ. Effects of yoga on mental and physical health: A short summary of reviews. Evid Based Comp Alternat ed, 2012; 2012: 165410.
10. Raub JA. Psychophysiologic effects of Hatha Yoga on musculoskeletal and cardiopulmonary function: a literature review. J Altern Complement Med, 2002; 8(6): 797–812.
11. Jaysinghe SR. Yoga in cardiac health (a review). Eur J Cardiovasc Prev Rehabil, 2004; 11(5): 369–75.
12. Iyengar BKS. Light on Yoga. London: Geoprheallen and Unwin Publishing Ltd, 1986; 5: 19.
13. Krisanaprakornkit T, Krisanaprakornkit W, Piyavhatkul N, Laopaiboon M. Meditation therapy for anxiety disorders.13 Cochrane Database Systematic Review, 2006; 25: 4998-5003.