The Effect of Specific Yogic Exercises and Combination of Specific Yogic Exercises with Autogenic Training On Selected Physiological, Psychological and Biochemical Variables of College Men Students

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Abstract

The purpose of the study is to find out the effect of specific yogic exercises programme and combination of specific yogic exercises with autogenic training programme on selected physiological variables such as pulse rate, vital capacity, percent body fat, psychological variables such as job anxiety, occupational stress and biochemical variables such as high density lipoprotein, low density lipoprotein and fasting blood sugar of the college men students. Sixty Men students in the age group of 20 to 30 years from the Alagappa University were randomly selected and served as the subjects for the purpose of this study. The study was formulated as a random group design consisting of specific yogic exercises and combination of specific yogic exercise with autogenic training groups. The subjects (N=60) were at random divided into three equal groups. Experimental group I - was administered specific yogic exercise group, Experimental group II- underwent combination of specific yogic exercises with autogenic training group and control group. All the groups were subjected to pre-test prior to the experimental treatment. The experimental groups participated in their respective duration of 12 weeks, six days in a week throughout the study. Analysis of Co-variance (ANACOVA) was applied to determine the significance of mean difference between the three groups. When F-ratio was found to be significant, the Scheffe's Post Hoc test was applied to test the significance of pairs of the adjusted final group means. Practice of the combination of specific yogic exercises with autogenic training and specific yogic exercises programme is significantly effective in promoting desirable changes in the dependent variables.

Keywords: Pulse rate, Vital capacity, Percent body fat, Job anxiety, Occupational stress, Fasting Blood sugar

Introduction

Human life focuses on physical, mental, social and spiritual aspects. Human health is divided into physical, mental and social dimensions. Autogenic training is a system of very specific auto suggestive formula with a purpose to relieve tension, stress and to eliminate psychosomatic disturbances including many cases of insomnia, obesity, inability to concentrate, high blood pressure, constipation, skin problems, etc. Some people use autogenic training as an aid to meditation, to improve their mental concentration in a focused way.

Yoga and autogenic training are useful to the modern man in relieving stress and tension *(Joshi et al, 1992; Sakai, 1997; Arambula et al, 2001; Malhotra et al, 2002; Steeter & Kupper, 2002)*. The purpose of any research should be to solve the existing complications of the human being. Research should help the society not only to create good health and happiness

among human beings, but also to improve the quality of life.

The purpose of the study is to find out the effect of specific yogic exercises programme and combination of specific yogic exercises with autogenic training programme on selected physiological variables such as pulse rate, vital capacity, percent body fat, psychological variables such as job anxiety, occupational stress and biochemical variables such as high density lipoprotein, low density lipoprotein and fasting blood sugar of the college men students.

Selection of subjects

Sixty Men Students from the Alagappa University were randomly selected and served as the subjects for the purpose of this study. The selected subjects were in the age group of 20 to 30 years.

Experimental design

The study was formulated as a random group design consisting of specific yogic exercises and combination of specific yogic exercise with autogenic training groups. The subjects (N=60) were at random divided into three equal groups. The groups were assigned the names as follows:

Experimental groups I-specific yogic exercises group, Experimental group II- combination of specific yogic exercises with autogenic training group and control group

All the groups were subjected to pre-test prior to the experimental treatment. The experimental groups participated in their respective duration of 12 weeks, six days in a week throughout the study. The various tests administered were: prior to training (pre test) and twelth week (post test) of the training schedule.

Selection of variables

The selected physiological variables are pulse rate; percent body fat and vital capacity. The selected psychological variables are job anxiety, occupational stress. The selected biochemical variables are high density lipoprotein, low density lipoprotein and fasting blood sugar.

Criterion measures

Physiological variables

Pulse rate was measured by manual method over a period of one minute and recorded in beats per minute.

Vital capacity was measured by using wetspirometer and each reading was recorded in millilitre.

Percent body fat was measured by using Harpenden skin fold caliper and each reading was recorded to the nearest millimeter.

Psychological variables

Level of job anxiety was measured by using standard questionnaire and recorded in points scored.

Level of occupational stress was measured by using standard questionnaire and recorded in points scored.

Biochemical variables

High density lipoprotein was tested in the biochemical laboratory and the results were recorded in mg.%.

Low density lipoprotein was tested in the biochemical laboratory and the results were recorded in mg%.

Fasting blood sugar was tested in the biochemical laboratory and the results were recorded in gm/dl.

Statistical technique

Analysis of Co-variance (ANACOVA) was applied to determine the significance of mean difference between the three groups. When F-ratio was found to be significant, the Scheffe's Post Hoc test was applied to test the significance of pairs of the adjusted final group means.

Table – I: Analysis of Co-Variance for the Means Difference

Variables	Adjusted Post Test Means			Source	Sum Of Squares	Mean Square	F-Value	Tf
	Control group	SYEG	CSYATG					
Pulse Rate (Beats/minute)	83.30	81.28	78.41	Between	241.02	120.51	11.53	
				With in	585.57	10.46		
Vital capacity (ml)	1074.34	1180.01	1260.65	Between	346963.49	173481.74	30.74	
				With in	316086.69	5644.41		
% Body Fat	21.75	20.67	20.08	Between	28.61	14.30	37.13	
				With in	21.57	0.39		
Job Anxiety (Points cored)	32.15	28.57	26.53	Between	323.18	161.59	40.23	3.162
				With in	224.91	4.02		
Occupational Stress (Points Scored)	131.24	126.11	122.20	Between	816.92	408.46	62.32	
				With in	367.04	6.55		
High Density Lipoprot., mg%	45.79	48.05	49.47	Between	137.02	68.51	19.30	
				With in	198.78	3.55		
Low Density Lipoprot, mg%	116.42	112.62	110.75	Between	332.70	166.35	42.65	
				With in	218.45	3.90		
Fasting Blood Sugar (Mgs./dl)	110.28	106.09	100.97	Between	870.49	435.25	35.84	
				With in	680.09	12.15		

* Significant at 0.05 levels   Table value in df 2 and 56 was 3.162

Results of Adjusted Means

The corresponding F-values needed for significance at 0.05 level is 3.162. The calculated F-values on selected criterion variables are 11.53 (Pulse Rate), 30.74 (Vital capacity, 37.13 (Percent Body Fat), 40.23 (Job Anxiety), 62.32 (Occupational stress), 19.30 (High Density Lipoprotein), 42.65 (Low Density Lipoprotein and 35.84 (Fasting Blood Sugar). Since the obtained F-ratio on criterion variables were higher than the required table value of 3.162 at 0.05 level of confidence it was found to be significant.

Since the observed mean difference among the three groups were found to be statistically significant, in order to find out which of the pairs of group means are significant, the Scheffe's Post Hoc test was applied.

**Table – II: Scheffe's Test of Significance between Paired Adjusted Post Test Means**

VARIABLES	Adjusted Post Test Means			Mean Difference	F-value
	CG	SYEG	CSYATG		
Pulse Rate (Beats per minute)	83.3	81.28		2.02	3.906
	83.3		78.41	4.89	22.876*
		81.28	78.41	2.87	7.877*
Vital capacity (Millilitre)	1074.34	1180.01		105.67	19.784*
	1074.34		1260.65	186.31	61.501*
		1180.01	1260.65	80.64	11.522*
Percent Body Fat	21.75	20.67		1.08	30.577*

	21.75		20.08	1.67	73.048*
		20.67	20.08	0.59	9.103*
Job Anxiety (Points Scored)	32.15	28.57		3.58	31.86*
	32.15		26.53	5.62	78.646*
		28.57	26.53	2.04	10.393*
Occupational Stress (Points Scored)	131.24	126.11		5.13	40.154*
	131.24		122.2	9.04	124.69*
		126.11	122.2	3.91	23.326*
High Density Lipoprotein (mg %)	45.79	48.05		2.26	14.311*
	45.79		49.47	3.68	38.189*
		48.05	4947	1.42	5.744*
Low Density Lipoprotein (mg %)	116.42	112.62		3.8	37.114*
	116.42		110.75	5.67	82.499*
		112.62	110.75	1.87	8.945*
Fasting Blood Sugar (mgs./dl)	110.28	106.09		4.19	14.497*
	110.28		100.97	9.13	71.444*
		106.09	100.97	5.12	21.444*

Required value for significance at 0.05 level = 5.545
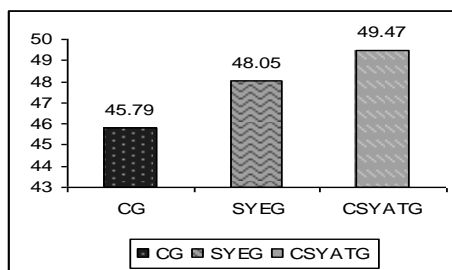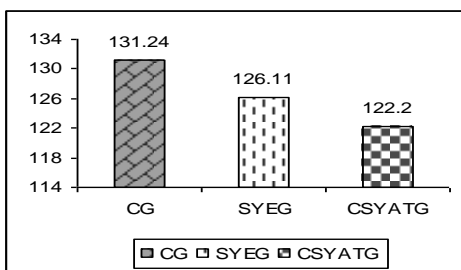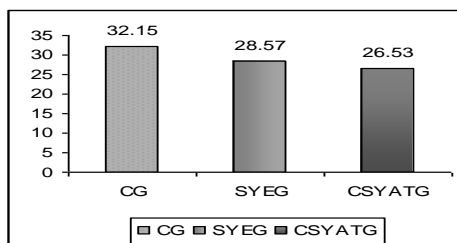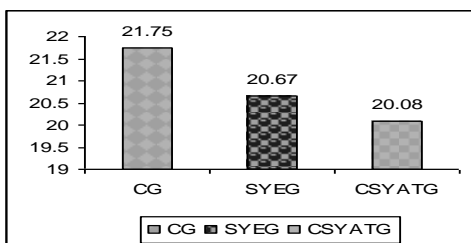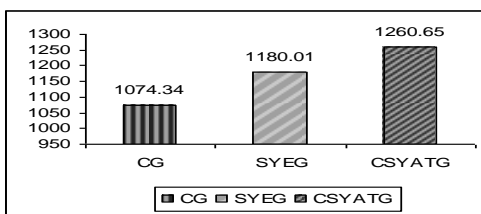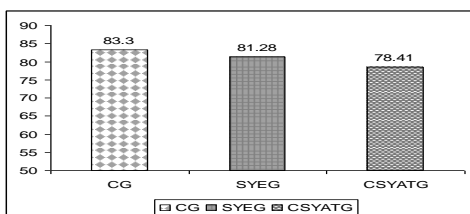
CG – Control group, SYEG – Specific yogic exercises group, CSUATG – Combination of Specific yogic exercises with autogenic training group
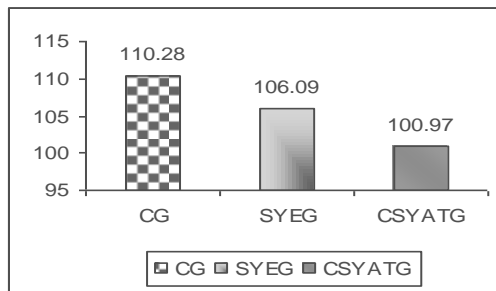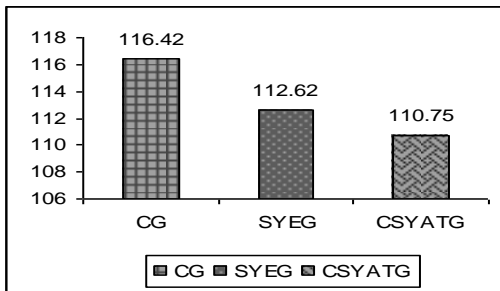
CG – Control group, SYEG – Specific yogic exercises group, CSUATG – Combination of Specific yogic exercises with autogenic training group

Discussion of Findings

The results of the study indicate that the selected physiological, psychological and biochemical variables of the subjects improved significantly after undergoing the combination of specific yogic exercises with autogenic training for a period of 12 weeks.

The analysis of co-variance and repeated measures of analysis of variance of pulse rate on combination of specific yogic exercises with autogenic training showed that there was significant improvement in pulse rate due to 12 weeks of the training. The finding of the study showed that there was a significant improvement in normalizing the pulse rate in combination of specific yogic exercises with autogenic training group better than the specific yogic exercises group and control group. Yoga and autogenic training is now practiced around the world for its physical, physiological, Psychological, biochemical and spiritual benefits. It reduces the stress and increases relaxation, which may have a favorable effect on heart rates. The present study confirmed with the results of *Pawlow & Jones (2002), Arambula et al (2001) and Bhargava et al (1988).*

The analysis of co-variance of vital capacity on combination of specific yogic exercises with autogenic training

group and specific yogic exercises group showed that there was significant improvement in vital capacity due to 12 weeks of the training. The finding of the study showed that there was significant improvement in increasing the vital capacity in combination of specific yogic exercises with autogenic training group and specific yogic exercises group better than the specific yogic exercises group and control group. Yoga and autogenic training also improves the lung capacity it was discovered that pranayama caused general health improvement through the enhancement of lung function and to improve respiratory capacity of the human being. Asans tone up the lungs. Pranayama is highly useful oxygenation being better, tissue hypoxia never comes. The finding of the study are in agreement with the studies reported by *Cysarz. & Bussing (2005), Czamara & Michele (2003), Joshi et al (1992) and Birkel & Edgren (2000).*

The finding of the study showed that there was a significant improvement in controlling the body fat level in combination of specific yogic exercises with autogenic training group and specific yogic exercises group was better than the specific yogic exercises group and control group. Health risk associated with too much body fat. The regular yoga practice

and autogenic training can help in weight management, some of the asanas stimulate sluggish glands to increase their hormonal secretions. especially, has a big effect on our weight because it affects body metabolism fat metabolism is also increased and hence fat is coverted to muscle energy to loosing fat one will have a better muscle tone and a higher vitality level. It reduces anxiety, and yoga deep breathing to increases the oxygen delivery to the body cells, including the fat cells.

The finding of the study showed that there was a significant improvement in controlling the job anxiety level in combination of specific yogic exercises with autogenic training group showed control in job anxiety level was better than the specific yogic exercises group and control group. yoga teacher how to relax mentally and physically and to manage stress reactions. Yoga promotes relaxation, improves circulation and reduces stress and anxiety, autogenic training provides a flexible approach to a wide variety of physical and psychological problems with surprisingly favourable results and to relieve the symptoms of anxiety, stress, fatigue and irritability.The present study agree with the findings of *Stetter and Kupper (2002), Takeichi and Sato (2000), Sakai (1997) and Khasky and Smith (1999).*

The analysis of co-variance of occupational stress on combination of specific yogic exercises with autogenic training group and specific yogic exercises group showed that there was significant improvement in occupation stress due to 12 weeks of the training. The finding of the study showed that there was a significant improvement in controlling the occupational stress in combination of specific yogic exercises with autogenic training group showed control in the occupational stress which was better than the specific yogic exercises group and control group. Autogenic training is probably one of the most powerful techniques for dealing with stress and consists of series of simple mental exercises. Many of the controlled medical trails on autogenic training have established to many of the commonly acknowledged stress related diseases. Yoga minimizes impact of stress on the individual. Yogic science believes that the regular practice of asana and pranayama strengthens the nervous system and helps people face stressful situations positively and yoga is highly recommended for people in stressful working environments. The findings of the present study are in agreement with the results *Johnson and Johnson (1984).*

The analysis of co-variance of high density lipoprotein and low density lipoproteing on combination of specific yogic exercises with autogenic training group and specific yogic exercises group showed that there was significant improvement in controlling the high density lipoprotein and low density lipoprotein due to 12 weeks of the training. The finding of the study showed that there was a significant improvement in normalizing the high density lipoprotein and low density lipoprotein level in combination of specific yogic exercises with autogenic training group showed control the high density lipoprotein and low density lipoprotein level which was better than the specific yogic exercises group and control group. The biochemical benefits of yoga such as decrease of LDL cholesterol, glucose and catecholamine and triggers the resilience of the body. Yoga balances the weight of the person without losing its strength through the different stretching asanas.

Yoga lowers blood sugar and LDL cholesterol and boosts HDL cholesterol. The autogenic technique is one of self help which can enable the individual to manage health and other problems like blood sugar, LDL cholesterol etc., more successfully. The present study confirmed with the results of *Winter (1985) and Vyas & Dikshit (2002).*

The analysis of co-variance and repeated measures of analysis of variance of fasting blood sugar on combination of specific yogic exercises with autogenic training group and specific yogic exercises group showed that there was significant improvement in reducing the blood sugar level due to 12 weeks of the training. The finding of the study showed that there was a significant improvement in controlling the blood sugar level in combination of specific yogic exercises with autogenic training group and specific yogic exercises group. Combination of specific yogic exercises with autogenic training group showed control in blood sugar level which was better than the specific yogic exercises group and control group. Ananas help normalize blood sugar due to the high intensity workout. Yogic exercises can on the clinical condition which will increase the cellular activity of the muscle, which needs more sugar. The advanced asanas require a lot of energy and this helps normalize blood sugar. Yoga and autogenic training is an effective treatment for diabetes. The present study confirmed with the results *Turtz (1986) and Malhotra et al (2005).*

Conclusions

Practice of the combination of specific yogic exercises with autogenic training programme is significantly effective than the specific yogic exercises programme and control group in promoting desirable changes in selected physiological variables such as pulse rate, vital capacity, percent body fat, psychological variables such as job anxiety, occupational stress and biochemical variables such as high density lipoprotin, low density lipoprotein and fasting blood sugar among the college men students.

Practice of the specific yogic exercises programme is significantly effective than the control group in promoting desirable changes in selected physiological variables such as vital capacity, percent body fat, psychological variables such as job anxiety, occupational stress and biochemical variables such as high density lipoprotein, low density lipoprotein, fasting blood sugar among the college men students.

References:

Arambula, P., Peper, E., Kawakami, M. and Gibney, K.H. 2001. The physiological correlates of Kundalini Yoga meditation: A study of a yoga master. *Appl. Psychophysiol. Biofeedback,* JP**.(2):** 147-153.

Bhargava, R., Gogate, M.G and Mascarenhas, J.F. 1988. Autonomic responses to breath holding and its variations following pranayama. Ind. J. Physiol. Pharamacol., **(4):** 257-264.

Birkel., D.A., Edgren, L., 2000. Hatha yoga: improved vital capacity of college students. Altern. Ther. Health Med. **6(6):** 55-63.

Czamara, Joli Michele, 2003. Therapeutic benefits of yoga: A100-week pilot study. Master's thesis. D'Youville College, Buffalo, New York, Masters *Abstracts International*, 217.

Joshi, L.N., Joshi, V.D. and Gokhale, L.V. 1992. Effect of short term Pranayama practice on breathing rate and ventilatory functions of lung. Ind. J. Physiol. & Pharmacol., **36(2):** 105-108.

Khasky, A. D. and Smith, J.C. 1999. Stress, relaxation states and creativity. *Percep. Motor Skills,* **8(2):** 409-416.

Malhotra, V., Singh, S., Tandon, O.P., Madhu, S.V. Prasad, A. and Sharma, S.B. 2002. Effect of Yoga asanas on nerve conduction in type 2 diabetes. *Ind. J. Physiol. Pharmacol.,* **46(3):** 298-306.

Pawlow, L.A., Jones, G.E. 2002. The impact of abbreviated progressive muscle relaxation on salivary cortical. *Biol. Psychol.*, **(1):** 1-16.

Takeichi, M., Sato, T., 2000. Studies on the psychosomatic functioning on fill-health according to Eastern and Western medicine. *The Am. J. Chin. Med.* **28(1):** 9-24.

Cysarz, D. & Bussing, A. 2005. Cardio respiratory synchronization Zen meditation, Europ. *J. Appl. Physiol.*, **95(1):** 88-95.

Johnson & Johnson 1984. Effects of anxiety-reducing hypnotic training on learning and reading-comprehension tesks. Journal of the National Medical Association, P.76 (3): PP.233-235.

Sakai 1997. Effort of autogenic training for anxiety disorders: a clinical study in a psychiatric setting. Fukuoka Igaku Zasshi, P.88(3): PP. 56-64.

Streeter & Kupper 2002. Autogenic training: A meta-analysis of clinical outcome studies. Appl. Psychophysiol. & Biofeed., **10(1):** 45-98.

Turtz, J.S. 1986. The effects of stress management training on stress level, death anxiety for persons with type II diabetes mellitus. Dissertation Abstracts International, **47(3):** 1289.

Vyas, R. & Dikshit, N. 2002. Effect of meditation on respiratory, cardiovascular system and lipid profile. *Ind. J. Physiol. Pharmac.,* **46(4):** 487-491.

Winter 1985. Biochemical indices associated with meditation practice. *Neurosc. & Behav. Rev.,* **9(4):** 557-561.