



## **EFFECT OF YOGIC TECHNIQUES ON THE STRESS DUE TO EXAMS: A PILOT, RANDOMIZED AND COMPARATIVE STUDY BETWEEN THE YOGA GROUP AND CONTROL GROUP IN ENGINEERING STUDENTS**

**G. S. Thangapandiyar\* & Dr. A. Mahaboobjan\*\***

\* Research scholar, Department of Physical Education, Karpagam University,  
Coimbatore Tamilnadu

\*\* Professor & Head, Department of Physical Education, Bharathidasan University,  
Tiruchirappalli, Tamilnadu

### **Abstract:**

*A student under optimal stress does the bring out his or her best, however extremes of stress can result in stress induced disorders and deteriorating performance. Present study is conducted in first year BE students (n=50) to determine the benefit of yogic practices on the anxiety status during the routine activities and prior to the examination. Feedback scores were assessed to determine how the students had benefited from the practices. Anxiety status as assessed by the Spillberger's anxiety scale showed a statistically significant reduction following practice. In addition the anxiety score which rose prior to exams showed a statistically significant reduction on the day of the exam after the practice. These results point a beneficial role of yoga in not only causing the reduction not only in basal anxiety level but also attenuating the increase in anxiety score in the stressful state such as the exams. The results of the exam indicated a statistically significant reduction in number of failures in Yoga Group as compared to the Control Group. The improvement in various parameters such as better sense of well being, feeling of relaxation, improved concentration, self confidence, improved efficiency, good interpersonal relationship, increased attentiveness, lowered irritability levels, and an optimistic outlook in life were some of the beneficial effects enjoyed by the yoga group indicated by the feedback score.*

**Key Words:** Stress, Anxiety, Yoga & Exam

### **Introduction:**

The treatment in spite of the behavioral problems, disturbed interpersonal relationships or deteriorating performance. The Psychiatrists attribute this disturbing trend to stress created by the competitive educational systems. On entering into the professional colleges the students are in a new challenging and stressful environment. Factors contributing to the high levels of stresses in professional colleges are highly competitive curriculum, intense academic competition, excessive demands on coping abilities in physical, emotional, intellectual, financial and social terms. Possibly these and many more factors contribute to the high levels of stress in the Engineering students. With the above facts in mind the relevance of yoga in Engineering education was evaluated. Apart from the periodical and regular release of the accumulated stresses and tension which are essential to begin with, it is imperative to move towards a life with the stress retaining all the powers and capabilities obtained by a sensitive mind and a sharp intellect vital for day to day functioning in a highly competitive and stressful life of the student. "Working in relaxation "with the total "Awareness in Action" would enable one to interact in the society judiciously and effectively.

In the ancient system of education various yogic practices like Suryanamaskar, Pranayama, meditation as well as good value systems were introduced with the formal

education to enable the development of good physique, strong ethical values and good stress tolerance. A state of mental tranquility is achieved by the practice of yoga as revealed by increase in alpha index of the electroencephalogram after a short term yoga. Yoga can protect the individual by bringing the harmony between mind and body, modulating the stress responses and one's attitude to stress as also improving the mental faculties such as attention, memory, learning efficiency and positive attitude to life. Total growth of personality at physical, mental, intellectual and social level can result with the regular practice of yoga. At physical level regular practice of asanas, pranayama bestow a proportionate, flexible, normally relaxed body with an ability to withstand the stress efficiently.

At critical times necessary energy gets evoked to deal with the stressful state. A calm still mind can bring forth the best performance even when one is under stress states like exams as in the present study and helps in the development of one personality. At intellectual level yoga can sharpen memory, concentration, decreases the anxiety levels. At spiritual level yoga creates an awareness to look for happiness from within oneself and to be at peace with oneself. The following study was carried out in the students of first year BE to study the effects of short term yoga on the anxiety score at the time of exams. Feedback was elicited from the students with the help of a proforma to know their attitude towards yoga and how it had benefited them.

#### **Methods:**

50 students of First year BE, 18-19 yrs voluntarily participated in the study. None of them was suffering from any major medical or psychiatric illness and not undergone any yogic practices earlier. They were randomly divided into two groups namely Yoga Group and Control Group.

The yoga group underwent the following program for 1 hour, thrice a week for 3 months namely

<b>Yogic Techniques</b>	<b>Durarion</b>
Suriyanamaskar	2 mins
Talasan, Hastapadaasan, Utkatasan, Parvatasan, Sashankasan, Yogamudra, Uthitekapadasan, Uthitedwipadasan, Shalabhasan, Sulabhabhujangasan & Ushtrasan	25 mins
Anulomvilom, Ujjayi, Bhramari	5 mins
Yoganidra with visualisation	20 mins
Meditation on Omkar & Tratak	5 mins

The various asanas were chosen to improve the concentration, coordination, memory, and attitudinal behavior.

The control group was allowed to carry on with any work such as reading, writing etc. for 1 hour during the time the yoga group underwent the yoga practices.

1. Spillberger's Anxiety Scale: was used to determine the anxiety score in the both groups. The anxiety score was determined on two occasions before and after the practice sessions as follows :-

Before the Practice:

One month before the exams which served as a basal reading .On the day of exam to determine the anxiety state due to the exam stress.

After the Practice:

One month before the exams this served as the new basal reading. On the day of exam to determine the effect of the practice sessions on the anxiety status at the time of exam. Scores were compared in both the groups before and after the practice sessions using paired t test on both the occasions. (Table 1)

Table 1: Mean Anxiety Score

Control Group:-

Time of Measurement	Before Sessions	After Sessions	Significance
One Month before Exam	30.64±3.02	32.45±2.95	NS
On the Day of Exam	46.21±3.15	47.76±3.42	NS

Time of Control Group:

Time of Measurement	Before Sessions	After Sessions	Significance
One Month Before Exam	30.92±2.36	20.36±2.12	P<0.00
On the Day of Exam	46.75±2.82	30.84±2.45	P<0.00

1. Feedback evaluation of the program: A subjective assessment of the sessions was done in the yoga group using a proforma in which the 14 parameters were assessed. Each of these parameters was graded and the score allotted (Table 2)

Table 2: Proforma for the Feedback (Scores Allotted)

Answer every question honestly. Has the training in yoga made any change in the following parameters to you. Tick in the appropriate column.

Parameters	Increased or Improved Greatly	Moderate Increased	No Change	Moderate Decreased	Decreased Greatly
Sense of well being	+2	+1	0	-1	-2
Calm & relaxed feeling	+2	+1	0	-1	-2
Attention, concentration	+2	+1	0	-1	-2
Hrs required to feel the freshness	-2	-1	0	+1	+2
Self confidence	+2	+1	0	-1	-2
Efficiency in any task	+2	+1	0	-1	-2
Irritability levels	-2	-1	0	+1	+2
Stamina	+2	+1	0	-1	-2
Tiredness	-2	-1	0	+1	+2
Appetite	+2	+1	0	-1	-2
Optimistic outlook in life	+2	+1	0	-1	-2
Headache, bodyache etc	-2	-1	0	+1	+2
Interpersonal relationship	+2	+1	0	-1	-2

Scores allotted for the Feedback Score Calculation is indicated.

Students were asked to tick against the column which was most appropriate as regards their experience and attitude in the each of the parameters. The scores were totaled to determine the positive score. The number of students who have chosen a particular grade is expressed as a percentage of the students (Table 3).

Table 3: Feedback score for various parameters expressed as the percentage (%) of the participants.

Parameters	Increased or Improved Greatly %	Some What Increased %	Remained Same %	Some What Decreased %	Decreased Greatly %
Sense of well being	48	40	12	0	0
Calm & relaxed feeling	68	28	4	0	0
Attention, concentration	52	40	8	0	0
Hrs required to feel the freshness	4	4	44	48	0
Self confidence	32	48	20	0	0
Efficiency in any task	40	52	8	0	0
Irritability levels	0	0	16	0	0
Stamina	36	48	16	0	0
Tiredness	4	4	16	64	12
Appetite	8	20	68	4	0
Optimistic outlook in life	30	52	28	0	0

Headache, bodyache etc	4	4	12	48	32
Interpersonal relationship	48	32	20	0	0

Table 4: Correlation between the Average Attendance of Yoga Classes and Average Feedback Score.

(Total no. of classes conducted=40)

Attendance (% of Classes)	Average Attendance (No. of Classes)	Average Feedback Score
90-100	38.4	22.8
80-90	33.6	18.2
70-80	28.5	11.5

c) Performance in the exam as determined by the number of failures of failures in the control and yoga group was compared in both the groups using chi sq test.

**Results:**

**1. Spillberger’s Anxiety Score: (Table 1)**

**Before Practice:**

A month before the exam (basal reading)

The mean anxiety score was 30.64 & 30.92 a month before the exams in yoga & control groups respectively before the practice sessions.

On the day of exam:

The mean anxiety score rose to 46.21 and 46.75 in the control and yoga group respectively indicating increased anxiety status at the time of exam in both the groups.

**After Practice:**

A month before the exam

The mean anxiety score there reduced to 20.30 significant (P<0.001) as compared to the score prior to the practice. There was no statistically significant change in the anxiety score in the control group.

On the day of exam:

On the day of exam the mean anxiety score was 46.75 prior to yoga practice and 30.84 in yoga group the following practice. The decrease in anxiety score at the time of exam was statistically significant. (P<0.001) The mean anxiety score did not show any statistically significant change in the control group.

**2. Feedback Score**

a) The effect of yogic practices on the different parameters has been shown. The number of students who have chosen a particular grade for a specific parameter is expressed as % (Table 3)

b) There was a direct correlation between the feedback score and average attendance of the classes which indicates that when average attendance of classes is more than the average feedback score is significantly high (r=0.97, P<0.01) (Table 4)

Performance (Table 5):

Table 5: Number of Failures before & After Practice in Yoga and Control Group

Group	Before	After	X2
Control (N=25)	7 (28%)	11 (44%)	2.2*
Yoga (N=25)	8 (32%)	2 (8%)	4.5**

\*Not significant (P>0.05) \*\*P<0.05

The number of failures before and after In control group did not show statistically significant change (P;>0.05) while in yoga group there was a statistically significant reduction in failures in exam following the yogic practices (P<0.05).

**Discussion:**

Stress is known for the modulating the activity of autonomic nervous system and central nervous system in a way so as to cope up with the stress and adapting to it. Stress may be external (environmental), internal (emotions) or sometimes there may be combinations of both interacting with each other. (6,7). In stressful states with the preponderance of the sympathetic activity, yogic as a pranayama can lead to a state of the reduced sympathetic activity shifting the autonomic balance towards the relative parasympathetic dominance.

The present study revealed a definite reduction in the anxiety score following yoga. In challenging situations such as exams without doubt a certain element of anxiety was beneficial as an individual performs in a best way under the optimal stress but beyond the limited performance deteriorates. It was in such challenging situations that the yoga was beneficial as seen in the present study wherein an optimal level of arousal did persist at the time of exam resulting in better performance as compared to the control group with the high levels of anxiety.

A high positive feedback score of yoga group with regard to the parameters such as sense of well being, feeling of relaxation, improved concentration, self confidence, improved efficiency, good interpersonal relationship, increased attentiveness, lowered irritability levels, and an optimistic outlook in life are some of the beneficial effects enjoyed by the yoga group. Similar results have been shown by Schell et al (4). These are the useful traits for success in any profession. As indicated by a positive correlation of positive score & attendance, regular practice of yoga would be useful. Since it was the first time yoga was introduced in the college we also determined whether the students enjoyed the yoga sessions. 95% thoroughly enjoyed the sessions while 5% enjoyed it to some extent. Regarding the opportunities to join the yoga classes when arranged in future whether they would like to join the classes-there was came with an overwhelming positive response of 100%. Opinions expressed by the students regarding yoga.

a) Should be a continuous on-going activity

b) Yoga should be included as a part of the curriculum as a theory.

c) Should be started from the time of admission into professional colleges so as to benefit the students in the long run.

Yoga with physical, emotional, mental, personality development and holistic understanding offers to cope with the stressful states. Meeting the modern lifestyle is full of challenges, stress and tensions an all round personality development has become mandatory for the student. The aspect of relaxation and detachment is lacking in our education process and it is this new dimension that needs to be added to the curriculum. Thus the yoga can be beneficial in achieving a tranquil state of mind during the routine activities and yet providing the concentration and arousal is essential in demanding or stressful situations like examinations.

**References:**

1. Nagendra HR, Nagaratna R. New perspectives in stress management. 3,d ed. Vivekananda Kendra Yoga Anusandhana Samathan. 1994
2. Selvamurthy W. Yoga for everyone: A Physiologist's view. Souvenir, 2nd Congress of Asian and Oceanian Physiological Societies 1990; 12-15.
3. Schell FJ Allolio B, Schoneche OW. Physiological and psychological effect of Hatha yoga exercises in 'healthy women. In J Psychosom 1994; 41: 46-52.
4. Wood C. Mood changes and perceptions of vitality: a comparison of effects of relaxation, visualisation & yoga. JR Soc Med 1993; 86: U: 254-58.

5. Udupa KN. Stress and its management by yoga 2nd ed. Narendra Prakash Jain, Delhi, 1985.
6. Brain and psychophysiology of stress. Eds. K.N. Sharma, W. Selvamurthy, and N. Battacharya. Indian Council of Medical Research 1983.
7. Anantharaman V, Subramanyam S. Physiological benefits in Hatha yoga training. The Yoga Review 1983; 3: 9-24.
8. Joseph SK, Sridharan SKB, Patil ML, Kumaria, Selvamurthy W, Joseph NT, Nayar HS. Study of some physiological and biochemical parameters in subjects undergoing yogic training. Ind J Med Res 1981; 74: 120-124.
9. Selvamurthy W, Nayar HS, Joseph NT, Joseph S. Physiological effects of yogic practices. NIMHANS J 1983; 1: 71-80.