

## Influence of Deep Breathing Exercise on Anxiety in First Year Medical Students of Tirunelveli.

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**Abstract: Background & Objectives:** Our modern life is mostly sedentary in nature, that consists of physical inactivity, overeating, exposure to physical and emotional stress. All these acts to cause anxiety in young individuals. Anxiety when continued as stress, can cause physiological changes in our body in the form of sympathetic stimulation with reduction in parasympathetic activity, which in turn causes alterations in the cardiovascular and respiratory functions. Deep slow breathing trials have been published in various journals around the world. The current study was undertaken to assess the impact of deep breathing exercise in the anxiety reduction of selected volunteers. **Materials & Methods:** The study group consists of 146 first year medical students in the age group of 17-19 years. The anxiety level was assessed in them by using Pre-test-Brief Patient Anxiety Questionnaire. Deep breathing exercise was done for 30 minutes/day for a period of 3 months by the students. At the end of 3 months, variation in anxiety level was assessed by post-test using the same questionnaire. **Results:** The anxiety level was assessed by assigning scores and those with 1-5, 6-10 and 11-15 were said to have mild, moderate and severe anxiety respectively. There was a significant reduction in the anxiety level of students after the deep breathing exercise of 3 months as found by post-test questionnaire. **Conclusion:** Deep breathing exercise is a simple, easy method which creates awareness among the first year medical students to improve their physical & mental health and also to face their professional challenges in a better way.

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### I. Introduction

As a result of advanced technology and automation, the need for physical activity is reduced and we lead a sedentary life-style. Sanjay Chugh, a leading Indian Psychologist, says that 70% to 90% of adults visit primary care Physicians, for stress-related problems. With our normal sedentary way of living, we only use about one tenth of our lung capacity. Slower, deeper breathing, combined with the rhythmical pumping of our diaphragm and with the other muscles of respiration, helps to turn on our parasympathetic nervous system. Such breathing helps to harmonize our nervous system and reduce the amount of stress in our lives. Deep breathing significantly decreases several negative mood disorders, including tension-anxiety. By deep breathing exercise, the parasympathetic tone will be predominant [1]. The changes produced by physical stress such as effect of exercise on various physiological parameters are well studied but impacts of psychological stressors are less studied. Several studies both from West [2-5] and from Asia have reported that medical training is highly stressful particularly for those who are beginning their medical education. Its physiological mechanism may involve excessive sympathetic activation [6]. From various studies, it appears that stress either physical or mental, leads to cardiovascular morbidity. Hence, by focussing on the mental health of the younger people, we can reduce the morbidity status of the future generation and thereby, the present study is undertaken.

### II. Aims And Objectives

- To assess the anxiety level in the first year MBBS students by pretest
- To perform deep breathing exercise, daily for a period of 12 weeks by the study group
- To re-assess the anxiety level in the first year MBBS students by post test at the end of 12 weeks.

### III. Materials & Methods

The study was conducted in 146 medical students in the age group of 17-19 years, in the Department of Physiology, Tirunelveli Medical College, Tirunelveli. After getting the institutional ethical committee clearance, written informed consent was obtained from the individuals. After filling up the proforma, the anxiety level of the subjects were assessed by the brief patient health questionnaire (English), a version of Patient Health Questionnaire (PHQ) family of measures. It was designed by Dr. Robert L Spitzer et al 1999. It consisted of 7 questions and they were said to have mild, moderate and severe anxiety, based on the score (1-5 mild, 6-10

moderate and 11-15 severe) obtained. The effect of deep breathing exercise on the anxiety level of the study group was assessed by pretest and posttest questionnaire.

**BRIEF PATIENT HEALTH QUESTIONNAIRE (ENGLISH)**

Over the last 2 weeks, how often have you been bothered by the following problems? (Use √ to indicate your answer)	Not at all	Several days (less than half the days)	More than half the day	Nearly everyday
	0	1	2	3
a. Feeling nervous, anxious or on edge				
b. Not being able to stop or control worrying				
c. Worrying too much about different thing				
d. Trouble relaxing				
e. Being so restless that it is hard to sit still				
f. Being easily annoyed or irritable				
g. Feeling afraid as if something awful might happen				

**EXCLUSION CRITERIA:**

- 1.The medical students should not practice any stress relieving or relaxation technique.
- 2.They should not be having any drugs or beverages in quantity which affect the autonomic nervous system like anticholinergicdrugs.
3. They should not be having any major illness which is known to affect the autonomic nervous system

**PROCEDURE** Deep breathing exercise involves the following steps

- 1.The individual was sitting upright in a comfortable position, with eyes closed and the study group was instructed to focus on the movements of their diaphragm.
- 2.While breathing in a slow deep relaxed manner, the procedure was continued for 15 minutes in the presence of the instructor in the morning session and they were asked to repeat the same procedure for 15 minutes in the evening.
3. The anxiety level of the study group was assessed by pre-test and post-test technique
4. Thus, the procedure was done for 30 minutes/ day for a period of 3 months.

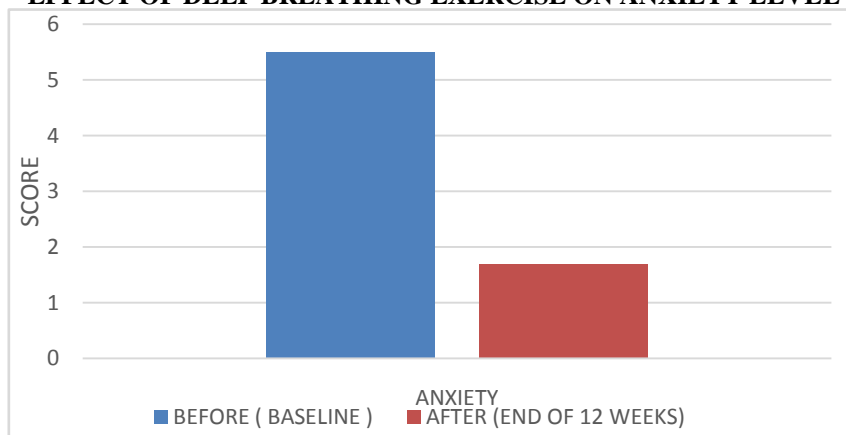
**IV. IResults**

**Table1: Gender Distribution in the study group**

AGE (YEARS)	MALE	FEMALE	TOTAL
17	23	46	69
18	30	32	62
19	4	11	15
TOTAL	57	89	146

Among the 146 students in the study group,57 were men and 89 were women.

**EFFECT OF DEEP BREATHING EXERCISE ON ANXIETY LEVEL**

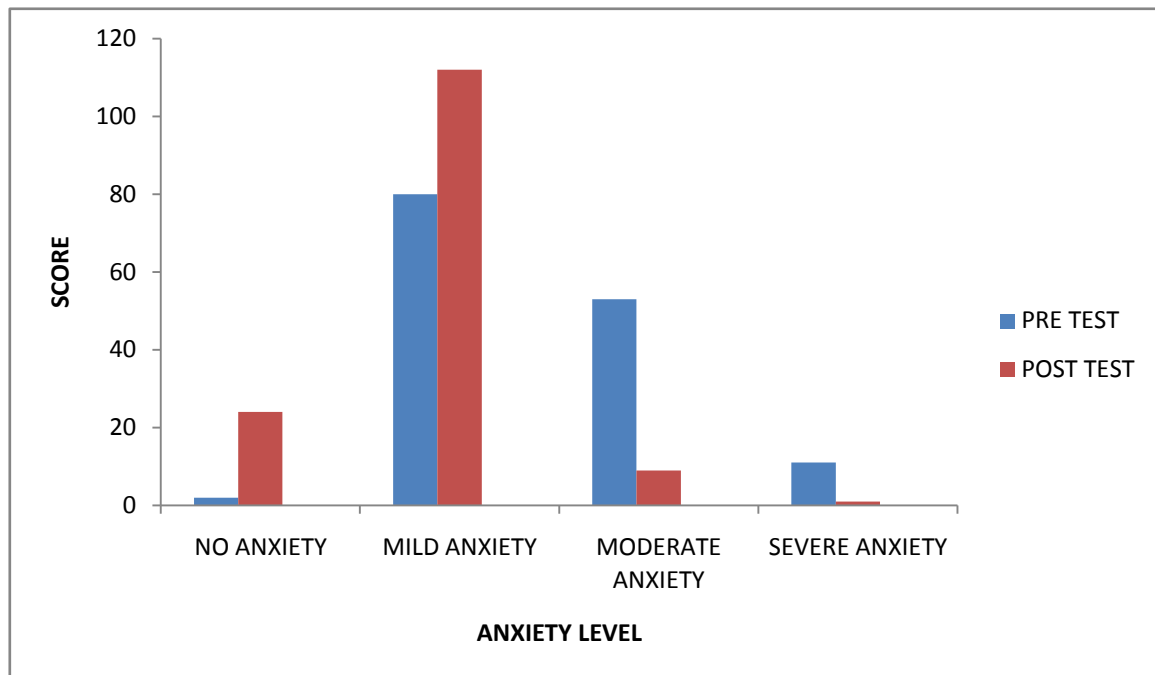


**TABLE.2PRETEST AND POST TEST DISTRIBUTION OF STUDENTS**

	No anxiety	Mild anxiety	Moderate anxiety	Severe anxiety	Total
Pre test	2	80	53	11	146
Post Test	24	112	9	1	146

From the above table, we can come to a conclusion that, anxiety level of the students have been found to be reduced, as seen by the Pre-Test and Post-Test values.

**FIGURE.2 EFFECT OF DEEP BREATHING EXERCISE ON ANXIETY LEVEL.**



### V. Discussion

The present study, which analysed the effect of Deep Breathing Exercise on anxiety level of the study group by pretest and post-test showed highly significant results and this correlates with the study of Vernon A. Barnes et al [7]. In the present study, anxiety level in the medical students at the beginning of the study showed predominant levels. Out of 146 students studied, only 2 were of no anxiety level, whereas all others had anxiety of various levels. At the end of the study i.e. 12 weeks after the deep breathing exercise, the anxiety level in all of them were re-assessed and it was found that there was significant level of reduction in anxiety. This correlates with the earlier report by Collen M Johnson et al 2009(8)

The psychological change improves the physiology of body according to emerging aspect of medicine which is known as mind-body medicine or psychoimmunoneurology [9]. Our brains are only 2% of our body weight, yet they consume 20% of the oxygen we inhale. The shallow breathing associated with stress and negative emotions, reduces the oxygen level of our blood. When there is a slow deep breathing, our body gets enough oxygen and that breaks the stress cycle. Slow and deep breathing itself has a calming effect on the mind and helps an individual to de-stress. (10) This calming effect may also exert profound physiological effects on pulmonary, cardiovascular and mental functions of the brain. Better oxygenation of the blood, that reaches the brain helps in improving the nervous activity that reduces the anxiety and its related effects on various systems of the body.

Pranayama is known to increase neural plasticity and to alter information processing making it a possible treatment for psychological and stress disorders or improving one's psychological profile [11,12]. Pranayamic breathing has been shown to be a beneficial clinical application in the treatment of psychological disorders as well as physiological diseases. Research has revealed pranayamic breathing to be a low risk, cost effective adjunct treatment that can be potentially applied to improve symptoms associated with cardiovascular disorders, autonomic disorders, and psychological disorders including those involving stress [12]. Within the research conducted on the many different types of pranayama, slow rhythmic deep breathing seems to be the most practical and hold the most physiological benefit. Although slow deep breathing is said to be one

of the most practical relaxation techniques and holds a great deal of potential in the treatment of autonomic and psychological disorders, two problems exist in present research that prevent full application and understanding of this practice[13]. The first is that there is no coherent model for the mechanism underlying slow deep breathing. A physiological description of the pranayamic mechanism would provide insight into the cellular physiology of deep breathing and the dynamic connection between the nervous system and respiration. Secondly, many studies report only the effects of pranayama, yogic postures, and meditation collectively. In future research, deep breathing needs to be studied exclusively without meditation or postures in order to fully understand the pranayamic mechanism.

## VI. Conclusion

To conclude, this study reveals the usefulness of deep breathing exercise as non-pharmacological adjunct in reducing the anxiety among the students. When pursued further, this simple procedure can also help in preventing and postponing the cardiovascular morbidities such as hypertension, myocardial ischemia in future.

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