

Effects of pranayama and aerobic exercise on anxiety status of medical students

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Abstract

First year medical students are worse psychosocially at the end of year, than when they enrolled. They experience anxiety before confronting examinations, and presentations. Present study is to find out whether regular Pranayama or Aerobics can relieve anxiety, and improve their academic performance. Total 120 Medical students participated in the study. 40, for pranayama, 40, for aerobics and 40 were controls. Anxiety status was assessed by Hamilton anxiety scale (HAS 1959) and Well Being status was assessed by WHO five well being index (version 1998). before and after training. One group was doing pranayama and other group was doing aerobics every day in the morning for half an hour under expert guidance for 30 days. There was significant reduction of anxiety, well being score also showed highly significant increase. Pranayama and aerobics have remarkable effect to relax mind and body. It is recommended that these should be included in the curriculum in order to keep the medical students mentally and physically fit to face the challenge of profession.

Keywords: pranayama, aerobic exercise, medical field.

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INTRODUCTION

Stress, fear and anxiety if we start counting all these instances in life, when we experience the emotions, we may just lose count. A little bit of fear is normal, in fact just like salt in food. It is needed so that we remain disciplined, focused and dynamic. The problem starts when this fear becomes persistent and so intimidating as to start interfering our everyday life, then it becomes disturbing. Spielberg¹ defined it as the subjective feeling of tension, apprehension, nervousness and worry associated with arousal of Autonomic nervous system. Excessive and frequent anxiety can impair functioning, causes negative effect on academic performance of the students. Medical students represent a highly educated

population under significant pressures. Specially the first year students often experience anxiety due to various reasons, before confronting tests, vivas, presentations and so on. Dr. Mehmet Aktekin² has done study showing the results of Medical Examination indicate that there is a decrease in psychological health of first year medical students at the end of the year. According to a 2006 Mayo³ clinic study, students enter medical school with mental health profile similar to their peers from other colleges, but they begin to show higher rates of mental distress as they progress through medical school. First year students at end of the year become worse, which affect their academic performance, level of study and results. Slavin⁴ worked on this problem and tried to reduce unnecessary stressors without compromising the quality of education. In 2009 SLU⁵ implemented a number of curricular adjustments including pass/fail grading and reduction in hours, students are required to spend in class. Many researchers have shown that physical fitness has been found to be an important component of well being. It is one of the most popular relaxation technique used now a days. Students like to do Aerobic Exercise along with rhythmic music. It brings about changes in various hormones in the body and has widespread positive health benefits. Several studies have explored exercise as a technique for improving emotional welfare. Yoga due to

its inherent characteristics to cater physical, mental and spiritual well being forms the most suited mechanism for psychophysiological health. The pranayama has been found to have calming effect on mind and helps an individual to keep relaxed, but alert state of mind. Pranayama and Aerobics have been shown to decrease stress hormone level cortisol, improve body and mental integration, slow down constant rush of thoughts and activate parasympathetic nervous system. The aim of this study was to find out the anxiety status of first year medical students ,and to study whether regular practice of pranayama or aerobics can relieve anxiety and improve their understanding and academic performance.

MATERIAL AND METHODS

Total 120 students of first M.B.B.S. studying in Bharati Vidyapeeth Medical College Sangli were included in the study.

1. 40, Students in pranayama group.
2. 40 Students in Aerobic exercise group.
3. 40 Students as control, not doing exercise or pranayama.

Anxiety status was assessed by Hamilton Anxiety Scale (HAS19590). It is symptom rating scale which includes a questionnaire -----

The Anxiety Score --

- Mild Anxiety 18
- Moderate Anxiety 25
- Severe Anxiety 30

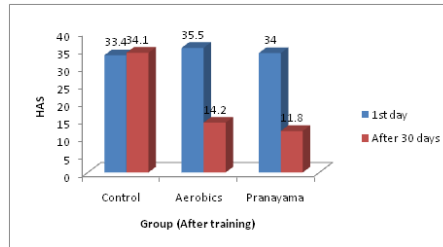
WHO Well Being Index (Version 1998) was used to assess the well being status. It consists of five statements indicating how you feel such as cheerful in good spirits and how many times a day .The percentage was obtained. Every day in the morning 7 to 7.30 am one group was doing pranayama which included Omkar, Bhastrika, Kapalbhathi Anulom-vilom and Bhramari. One group was doing Aerobics at the same time, which included jogging and different Rhythmic exercises and few stretching exercises. This whole process continued for 4 weeks.

RESULTS

Statistical Analysis was done; Mean and Standard Deviation (S D) were calculated. Paired and Unpaired t tests were applied, in order to compare the results of pretraining and postraining groups, and to compare the Pranayama and the Aerobics Groups with each other.

Table 1: Hamilton Anxiety Scale (HAS)

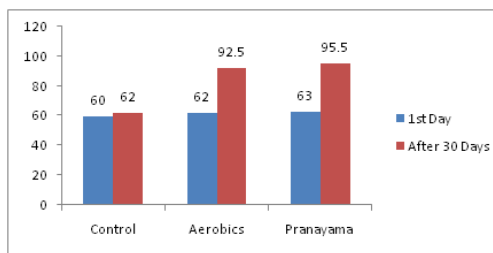
Group	1 st day Mean ± SD	After 30 days Mean±SD	'P' Value
Control	33.4±1.2	34.4±2.5	
Aerobics	35.5±2.5	14.2±1.3	P < 0.0001
Pranayama	34±1.8	11.8±1.8	



Graph 1: Hamilton Anxiety Scale (HAS)

Table 2: WHO well being index

Group	1 st day Mean ± SD	After 30Days Mean ± SD	'P' Value
Control	60 ± 3.5	62 ± 2.7	
Aerobics	62 ± 1.3	92.5 ± 1.7	P < 0.0001
Pranayama	63 ± 1.6	95.5 ± 1.5	



Graph 2:

It is seen from the table no. 1 and graph no. 1 that there is highly significant decrease in Hamilton Anxiety Scale after 30 days of pranayama and aerobics .There was no significant difference in between Aerobics and Pranayama. From table no.2 and graph no. 2 it is seen that there was a highly significant increase in WHO Well Being index after Aerobics and Pranayama.

DISCUSSION

Medical students are trained to improve the health of others but they themselves show higher rates mental distress as they progress through medical college. Many Medical Schools in many countries have changed their institutional cultures, adjustments of curricula, pass/ fail evaluations, which have been shown to reduce stress and anxiety without compromising the quality of education. In medical education setting anxiety is often experienced by students when taking a test-called as test—anxiety. Azadeh Nemati studied this and stated that excess and frequent anxiety can impair concentration and performance during examinations and produces negative effects on all personal, social and academic performance. Physical exercise has been shown to enhance numerous aspects of mental functions such as mood, self esteem and general psychological well being⁷ Several studies have shown that physical exercise improves and protects cerebral function suggesting that physically active individuals have better cognitive functions and are at a lower risk, of developing anxiety disorders. When

students are placed in stressful conditions as memorizing large portions of content in small period time ,competitions and rigorous examination periods ,Mishra and MCK (2000)⁸ stated that they experience anxiety and stress. According to him an optimal level of arousal is necessary to complete the task best, such as an exam-performance or competitive event .However when the anxiety or level of arousal exceeds that optimum the result is decline in performance. Pranayama seems to have a significant positive effect on test anxiety and test performance .Azadh Nemati and Medknow⁶ has advised to use pranayama as an important technique by the students prior to their examinations to reduce their test anxiety and increase their test performance Different clinical studies support that yoga reduces anxiety and has calming effect on mind. Pranayama due its inherent characteristics to cater for physical mental and spiritual well being forms the most suited mechanism for psycho-physiological health. When the whole brain is integrated one is less stressed more effective and happier. Robert Keith Wallace and Dr Fred Travis⁹ state that this is a technique, any body can do it, he coined the term Relaxation Response—Hypo metabolic state of parasympathetic predominance. In addition to bringing down hormonal levels of sympathetic activity, studies have demonstrated that practice of deep breathing enhances Melatonin along with its well known Circadian regulating effect is also associated with combating stress, feel good hormone, anti free radical effect etc. Imaging studies have shown that long term practice of yoga can increase the size of the brain .Better Thalamo-Cortical organisation resulting in better sleep organisation with enhanced slow wave sleep, REM sleep and increase number of sleep cycles which is useful in neurological conditions like anxiety, depression etc. Several studies have proved that regular pranayama practice decreases sympathetic tone which is beneficial to the body and reduces stress. In our study students have experienced dramatic relief of anxiety and remarkable improvement in sense of well being. Our findings correlate with many others. Pranayama is known to increase oxygen supply to all the tissues and prolonged exhalation causes a healthy level of CO₂, which helps relaxation process. The gradual rise of CO₂ concentration stimulate cerebral and cardiac circulation .The Olfactory nerve endings in upper part of the nasal cavity when stimulated, direct inputs from outside world to the most primitive part of the brain the Limbic System, the seat of Emotion in man. Yoga modulates stress response systems. (Kirkwood^{SSSS}) For a nervous student who knows too well how anxiety manifests itself in the body and mind , knowledge that something as simple as breathing differently can produce ,positive physical and mental response and to use ones

own breath is valuable.(Janakiram¹¹) Gupta¹² found that yogic exercise reduced the symptoms of anxiety like racing heart, palpitations, tremors sweating increased blood pressure dry mouth etc. The practice of pranayama is only effective if it is done consistently and with awareness. An anxious nervous system stimulates its stress centres through peptides and it is controlled by yoga. (Bo Forbes¹³). Purpose of pranayama is to increase quantum of life force (prana).It helps in preventing human degeneration. It improves concentration, relieves stress and depression and thereby improves academic performance. Exercise training elicits adaptive increase in mitochondrial content and respiratory capacity leading to delay in fatigue and increase enzymatic activity. Aerobic exercise may also protect CNS, from oxidative stress by increasing oxidative enzymatic activity. Alterations in the level of certain neurotransmitters such as serotonin norepinephrine and dopamine may play a key role in reducing anxiety. In order to combat anxiety and other negative moods several studies have proposed exercise for improving emotional welfare.(Schlicht,¹⁴ Kim and Kim¹⁵ ,Bergerand Motl¹⁶). Bartholomo and Linder¹⁷ in their study stated that aerobic exercise distracts the individual from stressful and anxiety provoking stimuli .Exercise incorporates repetitive movements, do not involve competition with others, is a predictable activity and require a steady relaxed breathing pattern. Kleine¹⁸ analysed and showed that school children showed decreased anxiety levels after regular aerobic exercise. So in both Aerobics and Pranayama stress hormone cortisol level is reduced and there is improved integration in body and mind .Rapid breathing activates sympathetic nervous system causing release of stress hormones. In Yoga Breathing, there is spontaneous reduction in breathing rate, lengthening exhalation, stimulating, parasympathetic nervous system. Dr Scott Rogers¹⁹ said it is perfectly okay to come here and study hard and do as well as you can but it is also okay to take care of yourself. While Medical Schools are challenging, it also can be fun. Dr Dyrbye²⁰ said it is certainly important for the student to learn right coping strategies, time management skills and stress reduction techniques.

CONCLUSION

In medical colleges 3/4th of the students and residents experience Burnout and they are likely to make medical errors and do not fully discuss all treatment options with patients. Regular practice of Pranayama and Aerobics has remarkable effect of reducing anxiety status and improving sense of well being. Students felt calm, cheerful, and in good spirits. Medical colleges should take provocative measures to support student's mental health and general wellness and find ways to support

them when problems arise. From our study we suggest either Pranayama or Aerobics should be included in the curriculum, in order to keep the Medical students mentally and physically fit to face the challenge of the profession. This will result in more well rounded physicians, who are more connected and emphatic and also can take better care of themselves, and can serve as role-model for their patients. Various public and Government Institutions presently are in the process of providing adjust clinical care through Yoga and pursuing research as well.

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