



Effects of Practicing Pranayama on PEFR and BHT in Chronic Asthmatics

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ABSTRACT

Background and Aim: Asthma is a disease and an important cause of morbidity among both children and adults. The signs and symptoms of Asthma depend on bronchospasm, inflammation and narrowing of airway, hyper sensitivity of bronchiols. Pranayama is one of a Complementary and alternative medicine (CAM) and the art of breath control, which is considered to be the heart of yogic exercises and health. The present study was performed with the aim of evaluating the effect of Pranayama on Peak Expiratory Flow Rate (PEFR) and Breath holding time (BHT) of the Chronic Asthmatics.

Methods: We investigated the effect of Pranayama on PEFR by using a Wright's Peakflow meter, and BHT were Monitor after practicing of Pranayama in Chronic Asthmatics.

Result: After 12 weeks, there were significant improvements in BHT, PEFR.

Conclusion: The results suggest that regularly practicing Pranayama positive improvement in Peak Expiratory Flow Rate and Breath holding time of Chronic Asthmatics subjects. It also concluded that pranayama techniques are useful to increasing the strength of chest muscles, raise energy levels, respiratory stamina, and Quality of life and calm the mind and body.

KEYWORDS : Pranayama, Chronic Asthmatics, Peak Expiratory Flow Rate, Breath holding time.

1. Introduction:

Yogic techniques are known to improve overall performance of the body. Pranayama (breathing exercise) is well-known to be an ingredient of yogic techniques. Patanjali in his Yoga Sutra describes Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi as 8 angas (parts) of yoga. Amongst them, in the present grasping world, the third and fourth part, Pranayama and Asana (Postures) are considered as very important part and prescribed by modern medicine too (1). Many physicians now advise yoga to patients at risk for heart diseases, as well as those with back pain, arthritis, depression and other chronic diseases. Pranayama is one of the main devices in yogic practices, and brings back our perception and tune with cosmic energy. The favorable effects of different Pranayama are well reported and has sound scientific basis (2). These breathing exercises are reported to influence cardio-respiratory and autonomic functions and also help in reducing the scores of anxiety and stress (3,4,5).

Asthma is an ancient Greek word meaning panting or short drawn breath and which is a disease that affects the breathing passages of the lungs (bronchioles). Asthma is caused by chronic (ongoing, long-term) inflammation of these passages. This makes the breathing passages, or airways, of the person with asthma highly sensitive to various triggers. Asthma cannot be cured, but it can be managed. In India, the occurrence of asthma is found to be about 2.4% in adults over 15 years of age using the International Union against Tuberculosis and Lung Disease (IUATLD) questionnaire.

Based on previous study gives new attempt has been made to investigate the effect of Practicing Pranayama on the Chronic Asthmatics

2. Material and Methods:

The study was conducted on 50 diagnosed stable patients of Chronic Asthmatics. The patients were newly recruited from the medicine outpatient department of Government hospital Bhavani. The medication for asthma was kept same throughout the study period. The study was explained to the patients and their signed informed consent was taken. Ethical clearance was also obtained Ethics committee of Annapoorana Medical College, Salem India (Protocol number - AMC/Ethics/Proc. No. 9). All the tests will be done day 1, after 4week, 8week, 12week of Pranayama training which will be implemented for a Period of 12 weeks. All these tests are monitored by a doctor from

medicine department

(a). Inclusion criteria

Adults with asthma in the age group of 17 to 40 years who take the medication during attack.

(b). Exclusion criteria

Patients on long term medication with Bronchodilators, xanthenes,

Patients with severe asthma i.e. FEV1<60%

Patients with chronic metabolic disorders i.e. Diabetes mellitus, Hypertension.etc

Any individual FEV1<60% i.e. malignency and congenital disorders.

YOGA PRACTICE

S. No.	Name	Duration
1.	Prayer and Omkar Recitation	5 min.
2.	Breathing Exercises (Kapalbhati)	5 min.
3.	Pranayama (Bhastrika, ujjayi, shavasana)	20 min
	Total	30 min

Parameters: Peak expiratory flow rate and Breath Holding Time will be done before and after Pranayama training which will be implemented for a Period of 12 weeks.

1. Peak Expiratory Flow Rate (PEFR):

Peak expiratory flow rate measure using a Wright's Peakflow meter also called as the 'Mini-Wright' Peak Flow Meter. The maneuver regarding operation of the Peak flow meter will be demonstrated to the patient. The Peak Flow Meter is set or zeroed. The patient is told to record the Peak Flow readings in the sitting position. The patient is told to inhale maximally; the inhalation to be rapid and not forced. The patient is then asked to exhale with maximum effort as soon as the

teeth and lips were placed around the mouth piece. The neck is kept in the neutral position to avoid neck compression with neck flexion or extension, as this will reduce the PEFR. The expiratory effort required only 1-2 seconds for recording the PEFR.

2. Breath Holding Time (BHT):

A watch is utilized. Breathe in gently for two seconds. Exhale gently for three seconds. Hold the breath, pinching the nose after exhaling. Hold the breath until first urge to breathe in is felt. The first breath after breath hold should be calm and silent. The duration of breath holding should be counted. The subject was asked to hold his/her breath while in the sitting posture. The breath was maintained until the subject could no longer hold the breath voluntarily and the time was noted by using a stop watch. This recorded the BHT.

Result:

After 12 weeks, there were significant improvements in BHT, PEFR. Statistical software: The Statistical software, namely SPSS for windows (Version 17) used for the analysis of the data and Microsoft word and Excel were used to generate graphs, tables, etc. Data analysis was done using Independent sample t-test and paired t-test and P value < 0.005 was considered as statistically significant

Table 1. comparison of effect of pranayama on BHT and PEFR.

Parameter		Before	4week	8week	12week	P value
BHT	Mean	20.18±	23.48±	28.86±	33.64±	<0.000
	SD	2.126	2.501	3.698	4.494	
PEFR	Mean	211.40±	231.00±	267.60±	318.20±	<0.000
	SD	10.500	17.173	42.549	62.456	

Fig.1 Graphical comparison of effect of 12 weeks pranayama on BHT

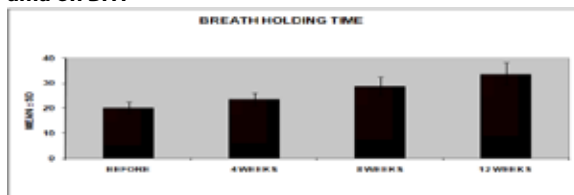
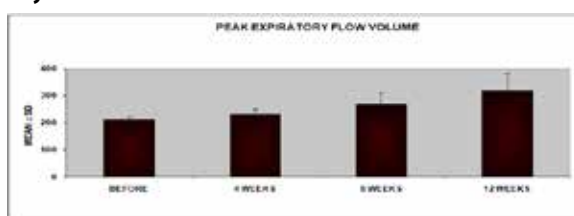


Fig.2 Graphical comparison of effect of 12 weeks pranayama on PEFR



Discussion:

Asthma is a gloomy and multifactor disease and it can be critical. So many proved data's demonstrating some psychological factors can interact the asthmatic diseases to improve and worsens the condition

of the disease. The mechanism of these psychological factors is complex still now not understood (6,7). Pranayama is a form of physiological stimulation and a type of yogic breathing exercise. Pranayama has been used to treat respiratory diseases in olden days. Actual pranayama means the process of deep inhalation and deep exhalation. Several studies have proved Pranayama to be ready to lend a hand in treat the asthma. Breathing is the only autonomic function that can be deliberately controlled and it is the key in bringing the sympathetic and the parasympathetic nervous system into harmony (8). The mechanism of pranayama is increasing the depth of breathing than normal depth of breathing. Lungs expand significantly and walls of the alveoli are stretched to maximum. Then it stimulates the stretch receptors situated in the alveolar walls. Chest continues to expand under cortisol control (9). By doing so, it enhance the surface area and air dissemination across the alveoli membrane. Exchange of O₂ and CO₂ across the thin wall of the alveoli and blood capillaries takes place more as they practice more time (10). Slow breathing like pranayama reduces the response of chemoreflex to hypercapnia and hypoxia. During slow breathing baroreflex sensitivity also high compared to the normal breathing. Pranayama activates the pulmonary stretch receptors and which induce the duration and frequency of inhibitory neural impulses (11). In our study, there were significant improvements in PEFR, BHT.

Conclusion:

The regular practice of Pranayama integrates the mind and the body, and which differs from other forms of exercises as it mainly focuses on the sensations in the body. The following may be the reasons for this; regular, slow and forceful inspiration and expiration for a longer duration during the pranayama practice, leading to strengthening of the respiratory muscles. Pranayama training causes improvement in the expiratory power and decreases the resistance to the air flow in the lungs. This resultant effect of pranayama can be used as lung strengthening tool to treat many lung diseases like asthma, allergic bronchitis, post pneumonia recoveries, tuberculosis and many occupational diseases. The stretch receptors reflexly decrease the trachea bronchial smooth muscle tone activity, which leads to decreased air flow resistance and increased airway caliber, which causes the dynamic parameters of the lung function test to improve. Our conclusion is to pranayama gives the good positive effects on Chronic Asthmatics patients.

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