

ORIGINAL RESEARCH

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TO STUDY THE EFFECTIVENESS OF BUTEYKO BREATHING TECHNIQUE VERSUS DIAPHRAGMATIC BREATHING IN ASTHMATICS

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ABSTRACT

Background: Asthma is one of the most common chronic diseases in the world. It is estimated that around 300 million people in the world currently have asthma. In Asthmatics dysfunctional breathing pattern is common. Breathing pattern is the basis of abnormal patterns in asthma. The purpose of this study was to find out the effectiveness of Buteyko breathing technique versus diaphragmatic breathing in asthmatics.

Method: 46 patients with asthma aged 20-65 years were taken. The duration of the study was 2 weeks & data was collected on day zero and at the end of 2nd week. The subjects were divided into two groups A & B 23 patients of asthma in each group were distributed by convenient sampling. Each subject was assessed according to FEV1, FEV1/FVC and PEF. Statistics were applied by using SPSS 11.

Results: Results were calculated by using 0.05 level of significance. On the basis of above statistical analysis the p value for group A is less than 0.05. So the intervention on group A is effective than intervention on group B.

Conclusion: So Buteyko breathing technique proves to be more effective than diaphragmatic breathing technique in asthmatics.

Key words: Buteyko breathing Technique, Diaphragmatic breathing, Asthma

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INTRODUCTION

According to Global Initiative for Asthma (GINA) Asthma is a chronic inflammatory disorder of airways.¹ In Asthmatics dysfunctional breathing pattern is common.² Breathing re-education & Breathing based therapies have begun to re-emerge as a mean of helping asthmatics & others suffering from breathing disorders.³

Hyperventilation is a major cause of hypoxemia in asthmatics.⁴ Repeated episodic hyperventilation during the average mild to moderate attack in asthmatics may lead to a shifting in the normal homeostatic mechanism controlling breathing resulting in developing the habitual breathing pattern of chronic hidden hyperventilation.^{5,6}

The Buteyko Method is a system of breathing exercises and first developed in the 1950 to recondition the breathing pattern using breath control and breathe hold and is connected to hyperventilation and low carbon dioxide.^{7,8,9} Buteyko shows increasing evidence that reduce ventilation may be benefit for many patients with asthma.^{10,11,12}

Diaphragmatic breathing technique is the pattern of breathing utilizing the diaphragm which is the chief inspiratory muscle.¹³ Diaphragmatic breathing increases relaxation, lymphatic flow & efficiency of gas exchange, most important to maintain proper health of tissues & muscles.¹⁴ Breathing has substantial effect on parameters of basal lung function.¹⁵ This study is conducted for the purpose of studying the effectiveness of Buteyko breathing technique and diaphragmatic breathing technique in asthmatics.

MATERIAL & METHOD

Research Approach: Convenient Sampling was done on the basis of baseline assessment & diagnosis of their condition as per physician.

Research Design: It is a comparative study design. A sample of 46 patients was included in the study.

Study Setting: Multispecialty Department of Physiotherapy BOMBAY HOSPITAL Indore (Madhya Pradesh)

Inclusion Criteria

The Intrinsic asthmatic patients of age 20-65 yrs with informed consent. Previously diagnosed as mild asthmatics having Pulmonary Function Test done. Using moderate to high doses of medication for asthma. i.e. at least 1400 mg of short acting β_2 agonist weekly or 1400 mg of beclomethasone per week.

Exclusion criteria

Patients who changed medication for asthma during the 2 week run in period. Patients should be

medically stable and should not have arterial aneurysm, Hemorrhagic stroke, recent MI within 12 weeks, brain tumour, existing uncontrolled hypertension, history of serious cardiac rhythm disorder, Severe renal failure, Uncontrolled hyper & hypo thyroidism, Sickle cell disease, Psychological disorders, COPD with Corpulmonale, Pregnancy, Gastric infections, Status asthmatics, Pneumo & Haemothorax, Orthopaedic abnormality (thorax & spine), Neurological deficit, Current smoking history, Infections, Alcohol abuse. Also patients should not have Prior instructions on Buteyko Breathing Technique.

Sampling Method: 46 patients with asthma aged 20-65 years were taken. The duration of the study is 2 weeks & data was collected on day zero and on day 15th. All the patients referred by consultant physician from Bombay Hospital Indore & diagnosed as asthma & who satisfy the inclusion criteria were included in the study.

Time and Duration: The duration of data Collection was 6 months. The time of the Study is 2 weeks. The duration of each treatment session was 60-90 minutes.

Materials and Tools: Respiratory evaluation chart, Inch tape, Stethoscope, Micropore paper tape, Pen Paper, Stop watch, Pulmonary function test, Data Collection and consent form.

Data Collection Process: The data was collected by PFT parameters on 1st day when the patient was diagnosed as asthmatic followed by which he was given treatment for next 15 days. On day 15th the PFT parameters were again measured to see any change the parameters.

Protocol: Subjects were divided into 2 groups A & B. Group A was taught Buteyko Breathing technique Group B was taught Diaphragmatic Breathing Technique. Each subject was assessed according to FEV1, FEV1/FVC, PEFr on day 0 and on day 15

PROCEDURE

Group A was taught Buteyko Breathing Technique for a session of 60-90 min. per day for 2 weeks. The technique consists of 5 core components comprising Reduced Breathing, Nose Breathing, Coughing, and Voluntary hypoventilation and Breathing exercise

Group B was given Diaphragmatic breathing exercise the patient is in gravity assisted position such as a semi- Fowler's position. The patient initiates the breathing pattern with the accessory muscle of inspiration slowly & deeply through the nose keeping the shoulders relaxed & upper chest quiet, allowing the abdomen to rise exhale through

mouth. Progression is in a variety of positions (supine, sitting, standing) & during activity (walking & climbing stairs) On the 15th day again the PFT parameters were taken

Statistical Analysis

Statistics were performed by using SPSS 11. Results were calculated by using 0.05 level of significance. Paired and unpaired T-test was applied.

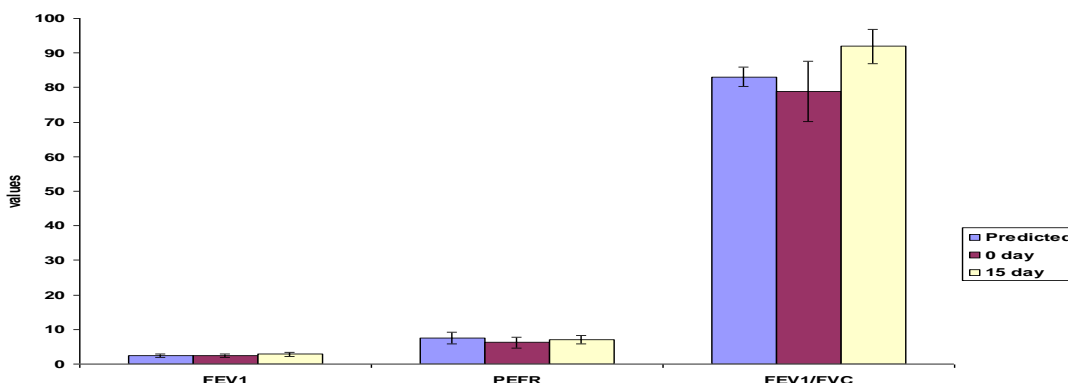
Interpretation:

penetration resets the respiratory centre located in medulla.

Another biochemical mechanism of Buteyko is through its influence on nitric oxide (NO). NO is involved in a large number of physiological responses including bronchodilation, Buteyko practitioner's insistence on nasal breathing as a

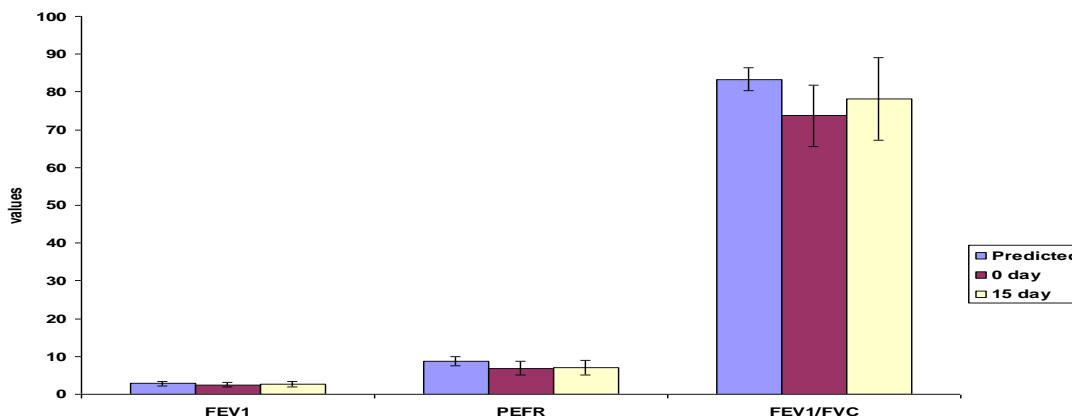
Graph-1

Comparison of mean values of Predicted, 0 day and 15 day for FEV1, PEFR and FEV1/FVC in Group A



Graph-2

Comparison of mean values of Predicted, 0 day and 15 day for FEV1, PEFR and FEV1/FVC in Group B



RESULT

Results were calculated by using 0.05 level of significance. On the basis of above statistical the p value for group A is less than 0.05. So the intervention on group A is effective than intervention on group B.

DISCUSSION

From the statistical analysis it is clear that Buteyko breathing technique is effective in asthmatics. The goal of Buteyko breathing technique is to gradually reset or readjust the breathing centre of higher aCO₂ values and reduced minute ventilation. Control pause increases aCO₂ concentration which penetrates the blood brain barrier. This

large percentage of the body's NO levels are made in the paranasal sinuses.

Thirdly Buteyko Method teaches to reduce volume of breathing by using a combination of increased abdominal muscle and relaxation of accessory muscles of breathing. This reduces the effort of breathing, leads to relaxation of respiratory muscles, and improves the function of the diaphragm, thus reducing the amount of hyperinflation or trapping of air in the lungs

Fourthly long breath holds enable the body to reverse carbon dioxide gas exchange so that the body reabsorbs carbondioxide. Repeated use of extended breath holds increases the body's

production of endogenous antioxidants and raises the anaerobic threshold, thus increasing capacity to exercise at higher levels of exertion, an effect similar to altitude or hypoxic training. Stopping breathing and then restarting when respiratory impulses intensify may help to reset abnormal breathing rhythms.

Fifty cerebral vasodilation that results from a drop in Oxygen or rise in CO₂ after breath holding may also help to reset the breathing pattern by changing the input to the central and peripheral chemoreceptors.

CONCLUSION

On the basis of above statistical analysis Buteyko breathing technique proves to be more effective than diaphragmatic breathing technique.

LIMITATIONS

- The improvements seen were not associated with measurable effect on physiological parameters of airway inflammation.
- The subjects included in the study were mild to moderate asthmatics.
- PEFr is affected by diurnal variations.

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