

Buteyko breathing for bronchial asthma



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Lung disease is any pathology that occurs in the lung components and causes the lungs not to function properly and this may lead to serious problems that may cause death. They are considered the third killing factor worldwide. Lung diseases include emphysema, bronchitis, bronchial asthma, pulmonary failure, pneumonia, tuberculosis and pulmonary embolism. These diseases have the following signs and symptoms which are coughing, dyspnea, short breaths, noisy breath sound, fever, chest pain, and using accessory muscle of the neck which include scalene, upper trapezium and sternocleidomastoid muscles. The common causes of these lung diseases are smoking, infections, and genetics factors (Simon, 2000). Treatment of lung disease includes medications like corticosteroid, bronchodilators, antibiotics, and physical therapy that will give patients breathing exercises. One of the most common chronic obstructive disease, is bronchial asthma. Bronchial asthma is the fifth reason for hospitalized worldwide. Physiotherapists used to treat bronchial asthma patients who have hyperventilation symptoms using breathing exercises known as buteyko breathing technique (BBT) in addition to bronchial asthma therapy. (Bishop, 2007)

Background

Professor Konstantin Buteyko was a Russian physiologist (1932-2003), who gave his name to a treatment for bronchial asthma patients. The whole idea started in 1960s when he came with the idea that shallow breathing is going to help patients who suffer from hyperventilation like bronchial asthma and stenocardia. He suggested that hyperventilation lead to decrease the amount of blood that is going to alveoli and low-level of CO₂ lead to bronchoconstriction which increase hyperventilation. (Bishop, 2007)

Literature Review

Robert L. and other on 2007 tried to evaluate the efficiency of a non pharmacological intervention Buteyko Breathing Technique (BBT) in patients with asthma with their corticosteroid medication consumption. The design of the study was a randomized control trail of buteyko technique involving 182 subject divided into group of adult with asthma their age ranged from 18-50 years old. While the control group was trained by physiotherapy for relaxation breathing technique. The main results measures by level of asthma control, defined by composite score based on Canadian asthma consensus reported 6 months after completion of intervention. The consequences show that both groups had related enhancement and a high amount with asthma control six months after accomplishment of the intervention. In the Buteyko group the degree with asthma control increased from 40% to 79% percent and in the control group from 44% to 72%. The main conclusion that six month after completion of the intervention, a large majority of subject in each group shown control of their asthma with the additional benefits of lessening in inhaled corticosteroid use in buteyko group.(Robert, 2007)

McHugh on 2003 made a study to evaluate the impact of buteyko breathing technique (BBT) on medication consumption in asthma patients. The method used is a blinded randomized control trail comparing BBT with medication control . It was directed over 38 people with asthma aged between 18-70 years. Members were followed for six months. Medication use and tempts of ventilator function were recorded. The results exhibited that BBT group shown a lessening in inhaled steroid use of 50% only and beta-agonist use

85% after six month from intervention. In the control group there was no significant outcomes. The main conclusion that BBT is a safe and effective for asthma controlling for it is sign and symptoms. BBT has clinical and potential pharm-economics benefits that must have advance studies.

(McHugh, 2003)

Cooper and his colleges in 2003 completed a study to compare the effect of two breathing exercises which they are buteyko and pranayama which is a yoga breathing method for bronchial asthma patients. This study involve 90 grown-ups who complain of asthma and control it by using medications. They were divided into three groups First group follow buteyko breathing technique , the second group use a pranayama which is a yoga technique and the last group were the placebo group. Result measure used are symptoms score level , bronchial hyper reaction, medication used, forced expiratory volume before and after buteyko technique. The results showed that ($p= 0.003$) were the mean for buteyko group and bronchodilator uses have been lessened by two puffs/day after 6 month of practicing buteyko technique while there was no change in the mean in the other two groups. There wasn't difference in the forced expiratory volume or even volume to reduce inhaled corticosteroids. The main conclusion that BBT can recover symptoms and lessen bronchodilator use but doesn't seem to change bronchial responsiveness or lung function in patients with asthma.(Cooper, 2003)

Anatomy of Respiratory System

When we breathe air it go through nose to the lower respiratory tract. The advantage of nose breathing is that when air passes through the nose it will be moisturizer, heated and cleaned from any dust. After that air moves to

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larynx to go into trachea. Trachea is a sensitive structure because if any cold or dry air go into it , this will cause coughing and wheezing as normal interaction to these irritation . After that air moves from the trachea to the lung through the bronchi which are entered in each lung (Figure 1). The lungs are the most important part of human respiratory system. The right lung is divided into three lobes m while the left lung is divided into two lobes. Both lungs are protected by the chest wall. In the lung small air sacs known as alveoli . Then the gases exchanged from the alveoli to the blood stream through small blood vessels known as capillaries. On the other hand , the body waste CO₂ returns to the capillaries to be exhaled during breathing. Healthy bronchial tubes make rapid gases exchange to maintain unchanged level of O₂ and CO₂ in the blood stream. The outer surface of bronchi is surrounded with smooth muscles that contract , relax in smooth rapid way in each breath. This process will maintain the required amount of air that is needed to go into lung tissues for normal gases exchange. This process of contraction and relaxation of muscles in controlled by sympathetic and parasympathetic of nerves system.(Gerard J, 2005)

What is Bronchial Asthma?

One of the most common chronic obstructive pulmonary diseases (COPD) is bronchial asthma. Bronchial asthma is a chronic inflammation of lung airways that leads to swelling and narrowing of them. The results of this narrowing is difficulty in breathing. The narrowing of airways may be total or partial and can be reversed with treatments. Bronchial asthma is one of the most common diseases , it affect one in every 15 adults in United states of America. It is known to cause physiologically reversible or total obstruction

or narrowing to air . Pathologically this will increase thickening of airways because of inflammation and bronchoconstriction. Also narrowing of airways maybe due to swelling which is caused by immune response to allergic materials. (Gerard J, 2005)

Causes of Bronchial Asthma

The main cause of bronchial asthma is inflammation of lung airways that is increased by the increase of irritable stimulations such as dust, vapor, humid weather, cold air, smoke , air pollutions, and fumes.(Gerard J, 2005)

Signs and Symptoms of Bronchial Asthma

Bronchial asthma have major sign and symptoms that are diverse depending on the severity of the disease. These signs and symptoms include wheezing that is defined as a whistling , hissing sound when exhaling air. Prolonged Coughing, that is usually at night not as good as at early morning, and may occur after workout or when unprotected against cold or dry air. Fast breathing is another symptom of bronchial asthma because fewer air reaches the lungs which is the reasons fast breathing to make up the insufficiency. Another symptoms is the usage of accessory muscle of neck and upper shoulder. Palpitation is another symptoms which is caused by as an asthma attack become worse the airways forceful air through the narrow airways become harder. Muscles of your trunk start to help. This is seen in motion (Figure 3) of the esophagus (2), and sucking in of the abdominal just under the breast bone (5) and among the ribs (4) with each breath leading to heart palpitation. As a response to less air passing through inflamed airways that will cause body to do more strength to move air and due to that heart starts to contract faster (3).(Gerard , 2005)

Prevention of Bronchial Asthma

Bronchial asthma can be prevented by following these strategies:

1. Always check with medical physician for treatment plan to manage signs and symptoms for bronchial asthma .
2. Know the trigger of asthma to be avoided such as pollen air and cold air .
3. Always monitor their breathing type so that they can recognize early symptoms of asthma attack that include coughing, wheezing or shortness of breath.
4. Quickly treat of bronchial asthma attack with immediate taking of medications prescribed and stopping the activity that may be the cause to trigger the attack. (Sue, 2002)

Treatment of Bronchial Asthma

Bronchial asthma can be treated by different types of medications like corticosteroids, bronchodilators, antibiotics, and by physical therapy. One of the important technique that help patients to control signs and symptoms of bronchial asthma is the Buteyko Breathing Technique (BBT). (Sue, 2002)

What is Buteyko Breathing Technique?

Buteyko technique is a breathing regulator technique to reduce minute ventilation besides inhibit hyperventilation to treat bronchial asthma as an alternative approach , besides to the drugs used. Buteyko technique needs that breathing originates from diaphragm not mouth. The main purpose while practicing buteyko breathing style is to breath in a very controlled and shallow manner without holding in the air like your last breath, it should be a gentle rhythm of breathing in and out.(Bruton, 2003)

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Preparation For Buteyko Breathing Technique?

Before starting the Buteyko Breathing technique session the physiotherapist should first takes patient pulse per minute and ability to exhale through Forced Expiratory Spiro-meter and measure the blood pressure and check if the patient have any health problems that may be contraindicated to buteyko breathing technique. Also it is important to take full medical history of management of patient bronchial asthma that usually includes hospital admission , consultant referrals and type of medication taken and their dosage. Also check if patient take other medication for other medical conditions. Physiotherapist should also check main signs and symptoms that affecting the patients daily work as if climbing stairs that increase shortness of breath to the patient. After that physiotherapist should inform bronchial asthma patient that buteyko session can be practiced three to five times a day . Before starting buteyko breathing technique session the physiotherapist should educate patient that this technique focus on breathing from the nose, so that nose clearness exercises should be given before starting session (Figure 5). The nose clearance exercises include pinching the nose gently and then move head forward and backward. Usually starting position will be sitting on chair without armrest after that progress to lying supine and finally to make patient adapt to this technique to be practiced in all active daily living of patients life, like climbing stairs. (kellet, 2005)

Steps of Buteyko Breathing Technique

The Procedure of Buteyko Breathing Techniques is characterized by the following steps:

Step 1: Close your mouth and breathe from the nose to get all the advantages mentioned before of nose breathing. (Figure 6). This step may be hard to be followed in the beginning but with practice it became easier with training.

Step 2 : Use diaphragm to during breathing in and out , when patients practice breathing using diaphragm they should take in consideration to eliminate using of accessory muscle of neck and upper chest . (Figure 7).

Step 3: Measure control pause for bronchial asthma patient , which is the time that patient able to grasp the nose and avoid air entry until the first feel of needing to re-breathe again in the same way and pattern . (Figure8) can be measure using stop watch.

Step 4: Sit in an upright position and reduce breath for around 2 – 3 minutes, after that bronchial asthma patient will take short rest for 20-30 second and followed by another reduce breathing period for 3 minute followed by short rest again.

Step 5: After the last short rest , the physiotherapists check the final control pause again to check progress in amount of time patient able to hold breath. Usually in first session patient will able to increase time of control pause 2-3 seconds.(Oliver, 2009)

Physiological Effects of Buteyko Breathing Technique

During an asthma attack people start to panic and breath faster more than body demands. They actually over breathe because they are breathing so rapidly that causes the amount of carbon dioxide in the blood to fall too low.

The body responds to that by causing the airways of the lungs to become tighter which leads to decrease inhaled air in each breathe which is shown when bronchial asthma patients trying to breathe harder. This technique will help to break this negative feedback cycle by educating bronchial asthma patients to breath in a shallow way and this will lead to decrease the amount of air that reach lung during breathing. Another benefit is increasing tolerance of body for higher levels of carbon dioxide in your blood.(Oliver, 2009)

Who will benefit from Buteyko Breathing Technique?

Buteyko breathing technique is suitable for bronchial asthma patients and some other conditions that lead to hyperventilation such as hay fever , which is allergic and inflammation due to dust , rhinitis which is also known as stuffy nose that happen due to inflammation of inner nose parts. Buteyko breathing technique can be included also for nose congestion, panic attack, resent heart, persistent cough, bronchitis, snoring and last for COPD patients .(Oliver, 2009)

Contraindications for Buteyko Breathing Technique

Patients with these conditions will not be able to practice BBT even if they have bronchial asthma or any other condition that lead to hyperventilation . These conditions include kidney failure specially if patient on dialysis, current organ transplant, previous brain hemorrhage, recent heart attack or stroke, cardiac peacemaker device, active stomach ulcer, pregnancy, schizophrenia, uncontrolled high blood pressure, any current cancer treatment, sickle- cell anemia and sever emphysema with heart failure. (Oliver, 2009)

Conclusions

Asthma is a common lung disease around the world and usually patients suffer from a lot of sign and symptoms like attacks of shortness of breath, chest tightness, and coughing that may affect their quality of life so that it need pharmacological agents to control it beside non-pharmacological techniques of pulmonary rehab such as buteyko technique. Buteyko breathing technique is a complementary method that proven it is effectiveness to control breathing in hyperventilation cases such as asthma and improve their quality of life, level of exercises, and forced respiratory volume. There are five core components of the buteyko breathing technique that they are the nose breathin , relax upper muscles, use diaphragm breathing, small gentle breaths and maintain good posture. The buteyko exercises can be done 3-5 times a day and it need committed for these exercises and make lifestyle changes, to be able to use fewer medication.