



## Impact of Yoga in Asthma Treatment

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### ABSTRACT

Asthma is one of the most discomforting of respiratory ailments, known to affect around 5% of the World's population. The prevalence of Asthma is approximately 300 million cases all over the world and India alone has about 15-20 million asthmatic patients. Out of every 250 death, one is due to asthma worldwide. Only standard medical treatment is one of the best medical treatments in relieving asthma and asthma attack, but now yoga has been a powerful weapon in defeating asthma. The curative and therapeutic aspect of yoga provide relief in asthma symptoms, it also improves the quality of life of the asthmatic patients and pulmonary functions. This review provides some evidences that *yoga* may be an effective tool in the management of asthma and can be practiced as an adjuvant therapy to standard medical therapy for better outcomes.

### INTRODUCTION

Asthma is a chronic inflammatory respiratory disease characterized by periodic attacks of wheezing, shortness of breath, and a tight feeling in the chest. A cough producing sticky mucous is a characteristic symptom. Asthma is an ancient Greek word that means "panting", "gasping" or inflamed "tight feeling in the chest". It is very common in children, teens and adults. It is a condition where the air passages in the lungs become inflamed. The air passages are the airways that carry air in and out of the lungs. When the air passages get inflamed, it becomes red and swollen. It starts to swell and sticky mucous or phlegm is produced. All these factors cause the airways to become narrow and make it difficult to breathe. Asthma attacks when the lungs are not getting enough air to breathe with the results of coughing, wheezing, shortness of breath and a tight feeling in the chest. Asthmatic attacks can be triggered by allergies, exercise, cold, air pollution and stress related disorders.

The World Health Organization (WHO 2016) defined asthma as "Asthma attacks all age groups but often starts in childhood. It is a disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. In an individual, they may occur from hour to hour and day to day. This condition is due to inflammation of the air

passages in the lungs and affects the sensitivity of the nerve endings in the airways so they become easily irritated. In an attack, the lining of the passages swell causing the airways to narrow and reducing the flow of air in and out of the lungs" [1].

Asthma is a problem worldwide with an estimated 300 million affected individuals [2, 3]. According to WHO report, about 250,000 annual deaths attributed to this disease. It is estimated that the number of people with asthma will grow by more than 100 million by 2025. Workplace conditions, such as exposure to fumes, gases or dust, are responsible for 11% of asthma cases worldwide. About 70% of asthmatics also have allergies. Approximately 250,000 people die prematurely each year from asthma.

Some allergens, combination of factors allergic and non-allergic, heredity, abnormal body chemistry, psychological factors, Infections (predominantly viral), occupational sensitizers, tobacco smoke, pollution and diet are those factors which influence the development and expression of asthma. The strongest risk factor for developing asthma is a family history of atopic disease [4], this increases one's risk of asthma by 3-4 times [5, 6].

### Asthma Management

Asthma is a chronic disease that cannot be cured but

medicines and life style changes can help to control the symptoms of the disease. One way to relieve from asthma is to avoid things in the environment that make symptoms worse. A number of types of medicines are also used to treat asthma. Asthma management can be considered under the following headings:

**1. Allergen Avoidance-** Prevention consists of avoidance of allergens and provoking factors. It is a good policy to maintain a dust free atmosphere at home or work place. This can be done by keeping minimum furniture, avoiding carpets, using wet mopping or vacuum cleaning and making use of foam mattresses or pillows. However, laborious skin testing or avoidance of multiple food items is not necessary unless justified by correlated documented increase in symptoms. Recent studies suggest that the following items have precipitated symptoms in specific children-

- Orange and lemon squash
- Fried foods
- Nuts
- Drinks containing ice or carbon dioxide

If symptoms are precipitated by particular food items, it is reasonable to avoid the food for a limited trial period of six weeks, and the diet should be supervised by a dietician.

**2. Pharmacotherapy-** The pharmacotherapy of asthma consists of two basic classes of medications: quick-relief and long-term preventive medications.

**i) Quick-Relief Medicines -** Quick-relief medicines are used when needed. They should be taken when symptoms are getting worse to prevent a full blown asthma attack. They can also be used to stop attacks once they have started. They are short acting inhaled bronchodilators. Commonly used quick-relief medicines are salbutamol and levosalbutamol.

**ii) Long-term Control Medicines -** Long-term control medicines or controller medicines are taken everyday usually over a long period of time. Over time, these medicines relieve symptoms and prevent asthma attacks in those with mild or moderate persistent asthma. These are not intended to relieve symptoms immediately. Some long-term medicines include-

- **Cromolyn & Nedocromil** - These inhaled medicines keep airways from swelling when a person comes in contact with a trigger.
- **Corticosteroids** - These medicines can be inhaled or taken in a pill form. These can prevent and decrease the swelling in the airways. It can also decrease the amount of mucus. These are Beclomethasone, Budesonide, Fluticasone and ciclesonide (inhaled), Prednisolone, Methyl Prednisolone, Dexamethasone (oral & injectable), and Deflazacort (oral).
- **Anti-leukotrienes** - These medicines can be inhaled in the form of pills. They open the airways, control swelling and inflammation & reduce the mucus. E.g. Montelukast.
- **Long-acting beta 2 bronchodilators (LABA)-** Overtime, these inhaled medicines help relieve symptoms. They are often combined with anti-inflammatory medicines. These are Salmeterol &

Formetrol.

- **Methyl Xanthines-** Oral & injectable bronchodilators. E.g. Theophylline, Doxophylline and aminophylline.

**3. Immunotherapy-** Immunotherapy by use of allergen injection was introduced in the early 20<sup>th</sup> century. In North America, it was the treatment of choice for allergic rhinitis and asthma. In the United Kingdom, however it was never widely used, perhaps due to availability of elective  $\beta$ - agonists and inhaled steroids 15 year before they could be prescribed in the United States. Recent recommendations do not advise allergen injection immunotherapy for asthma due to uncertain efficacy, multiplicity of allergens and potential for serious side effects [7,8].

**4. Yoga** is one of the best alternative therapies to control asthma. It is an ancient science that uses postures and breathing techniques to increase lung's airflow, air capacity and stamina and reduce stress. Yoga is meant to reduce the overall activity of the whole organism through its calming down influence on the entire nervous system and helps all the organs of the body to function at a much lower place. Asanas and pranayama have corrective, curative and strengthening effects on the condition of the lungs and the bronchiole linings. Pranayama does the internal purification and a meditation provides relief and concentration to the body and minds both. Pranayama plays an important role in the management of the Bronchial Asthma. Pranayama has been assigned a very important role in Yoga. In fact according to some yoga experts, it is much more important than the yogasanas for keeping a sound health [9,10].

Modern Yoga is based on five basic principles that are created by Swami Sivananda-

- Proper relaxation
- Proper exercise
- Proper breathing
- Proper diet and
- Proper thinking and meditation

A 3,000-year-old tradition, yoga, is now regarded in the Western world as a holistic approach to health and is classified by the National Institutes of Health as a form of Complementary and Alternative Medicine [11]. The word "yoga" comes from a Sanskrit root "yuj" which means union, or yoke, to join, and to direct and concentrate one's attention [12, 13]. Regular practice of yoga promotes strength, endurance, flexibility and facilitates characteristics of friendliness, compassion, and greater self-control, while cultivating a sense of calmness and well-being [14]. Sustained practice also leads to important outcomes such as changes in life perspective, self-awareness, and an improved sense of energy to live life fully and with genuine enjoyment [15,16,17]. The practice of yoga produces a physiological state opposite to that of the flight-or-fight stress response and with that interruption in the stress response, a sense of balance and union between the mind and body can be achieved [18].

The Yogic practices including Pranayama on asthmatic patients reported a significant degree of relaxation, positive attitude towards asthma and exercise tolerance. The study also showed a tendency towards lesser usage of beta-adrenergic inhalers [19]. Improper or ineffective use of the breath can aggravate asthma. Breathing too quickly or mouth breathing can

increase airway hyper-reactivity. Studies using a variety of pranayama techniques found benefit from the practice including decreased use of medications [20]. A number of studies examine the benefits of yoga practice to help manage asthma. In a study following people incorporating a holistic program of asana, pranayama and meditation, people in the yoga group had fewer weekly asthma attacks, improved breathing and better response to their medication [21]. Yogic practices reduce the body weight, improve lung function, decrease respiratory rate, increase vital capacity, and breathe holding time. The similar results were reported by a short term yogic practice that increased the vital capacity, FEV, BHT and decreased respiratory rate after 10 week yogic practice [22]. Peripheral blood flow also increases during Pranayama. After 10 weeks of training, the cardiac recovery index significantly improved. After 6 week, regular practice of pranayama there was increase in FVC, PEFr, BHT and a concomitant decrease in the respiratory rate. Alexander et al reported 11% increase in PEFr in patients given only relaxation therapy for bronchial asthma. Nagarathna and Nagendra carried out treatment for bronchial asthma with both breathing exercises & relaxation methods successfully. A follow up of 570 bronchial asthmatics showed significant improvement in PEFr with yogic asanas [23].

A randomized controlled study on 241 patients of mild to moderate persistent chronic bronchial asthma (121 patients of the yoga group and 120 patients of the control group) patients and concluded significant improvement in bio-chemical profile of asthmatics in the yoga group, superoxide dismutase activity also improved in yoga group than the controls [24]. They also reported that asthma symptom scores decreased significantly after the practice of asanas, pranayama and meditation for the period of 6-month practice in the yoga group in comparison to controls [25].

Pranayama nadishodhan and kapalbhati showed a significant result on forced ventilation capacity (FVC), maximum voluntary ventilation (MVV) and peak expiratory flow rate (PEFR) [26]. Another study concluded that yoga practice can be advocated for improvement of respiratory efficacy as well as an alternative therapy or as adjunct to conventional therapy in respiratory diseases [27].

## CONCLUSION

Yoga is one of the best alternative therapies. Yogasanas, pranayama and meditation are curative, therapeutic and relaxation aspects. If yoga is done along with standard medical treatment it puts a great impact in human body and the patients of asthma feel better in asthma attacks, improvement in asthma symptoms, pulmonary functions and quality of life.

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