

# The Role of Yoga in Bronchial Asthma



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## Introduction

Asthma is a heterogeneous disease comprising of clinical manifestations of varying severity. Patients of asthma suffer from progressive and persistent decline in lung function throughout life, the degree of decline varying among individuals.

Asthma affects 334 million people worldwide and 17 million people in India [1]. Majority of asthma patients are effectively treated with conventional therapy. Despite advances in conventional therapy, inadequate control of asthma continues to present a serious problem for a subset of patients. Patients of uncontrolled asthma pose a greater burden for healthcare and require a disproportionate amount of healthcare costs to be spent on treating their condition. Optimum therapy for uncontrolled asthma remains an unmet need.

Although majority of patients respond well to low-dose controller medications such as inhaled corticosteroids and long-acting  $\beta$ -agonists, a subset of patients remains uncontrolled despite the use of high-dose multiple-drug daily controller therapy. These patients experience substantial morbidity due to the disease and to the adverse effects of high-dose corticosteroids and generate high healthcare costs [2-5].

Yoga is a non-pharmacological adjunct to conventional therapy for asthma. The word "yoga" comes from the Sanskrit root yuj, which means union or yoke; to join and to direct and concentrate one's attention [6]. Yoga is an ancient art form based on a harmonised system of development of the body, mind, and spirit [7]. Yoga has been classified by National Institute of Health, USA as a form of Complementary and Alternative Medicine.

It is estimated that up to 300 million people practice yoga worldwide and more than half of them are Indians [8]. National Health Interview Survey last conducted in United States of

America in 2007 estimated that yoga is the sixth most common complementary health practice among adults and more than 32 million people practice it in the country [9]. The participation and awareness in Yoga continues to increase in society, hence it is important for clinicians to know about the nature of Yoga and its therapeutic benefits.

Four basic principles underlie the teachings and practices of yoga. The first principle is the human body is a holistic entity comprised of various interrelated dimensions inseparable from one another and the health or illness of any one dimension affects the other dimensions. The second principle is individuals and their needs are unique and therefore must be approached in a way that acknowledges this individuality and their practice must be tailored accordingly. The third principle is, yoga is self-empowering; the healing comes from within, instead of from an outside source and a greater sense of autonomy is achieved. The fourth principle is that the quality and state of an individual's mind is crucial to healing [10].

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 [11,12]. The practice of yoga produces a physiological state opposite to that of the flight-or-flight stress response and with that interruption in the stress response, a sense of balance between the mind and body is achieved [13]. Psychological factors like stress can modulate asthma symptoms and influence the management of asthma [14]. At the individual level, increased stress leads to the dysregulation of the hypothalamic-pituitary-adrenal and sympathetic-adrenal-medullary axes, disrupting immune and respiratory processes, and producing an increased risk of inflammatory diseases, such as asthma [15]. Yoga offers an effective method of managing and

reducing stress. Yoga integrates an individual's physical, mental and spiritual components and produces a physiological sequence of events in the body reducing this stress response. Yogic practices enhance muscular strength and body flexibility, promote and improve respiratory and cardiovascular function and enhance overall well-being and quality of life.

Asthma has many contributing factors, including exercise, allergy, air pollution, emotional factors and genetics. A multifaceted approach should be considered for its prevention and treatment. Yoga is a complementary therapy, helpful for asthma [16]. With its focus on awareness of breath and the mechanics of breathing, yoga serves as an adjunct to conventional asthma therapy [17]. Yoga is fundamentally different from conventional medical practice in its approach to asthma. Instead of trying to reduce the cause of disease to a single factor and to correct it, yoga aims to treat illness by improving health of the individual and restore inner harmony.

A study conducted by the Natural Therapies Unit of Royal Hospital for Women in Sydney, Australia showed a significant beneficial effect of Sahaja Yoga on asthma patients who were resistant to steroids [18].

Yoga practice should complement medical treatment as prescribed by the physician. Regular yoga practice that combines pranayama, asana and meditation methods offer the most benefit [19].

### Specific Pranayama Exercises

A vital scientific and therapeutic aspect of yoga, Pranayama is the breathing process or the control of the motion of inhalation, exhalation and the retention of vital energy.

**Ujjayi (breathing):** The name comes from the Sanskrit word "ujjayi," which means "to conquer" or "to be victorious." The lungs are completely filled by inspiration and while slightly contracting the throat, breathing out is done through nose. This breathing technique is used throughout Ashtanga and Vinyasa yoga practices.

**Anuloma Viloma (three-part breathing):** This three-part breath slows breathing by creating small pauses between the breath cycles. Paying attention to the movements of the belly, lower ribs and upper ribs can be helpful. During an asthma episode, this method may be more beneficial if done with very brief pauses during inhalation, to encourage maximal entry of oxygen and long, slow uninterrupted exhalation.

**Extended exhalations:** Initially the duration of inhalation and exhalation should be equal. Then aim for a 1:2 ratio of inhalation and exhalation.

**Alternate nostril breathing:** This technique slows down person's breathing, and it is believed to balance the sympathetic and parasympathetic nervous system.

**Yoga chair breathing:** The patient sits on a chair facing the back of another chair and places his arms on the back of the chair

he's facing. He inhales while gradually lifting the head and spine and opening the chest, and then exhales while moving the spine, chest, and neck into gentle flexion, which is done five times.

**Kapalabhati:** The word kapalabhati is made up of two words: kapal meaning "skull" and bhati meaning "shining". The technique involves short and strong forceful exhalations and inhalation happens spontaneously.

### Specific Asanas

The concept of using asanas is to alter one's physical posture to increase breathing potential and breathe better. Asanas are isometric exercises that involve a coordinated action of synergistic and antagonist muscles in bringing about steadiness and flexibility. A gentle and progressive asana practice will allow the patient to increase lung capacity and strengthen intercostal muscles and muscles of back and diaphragm in preparation for pranayama [20].

**Headstand (Sirshasana):** It is the most important among inverted asanas. It is usually done at the end of the yoga asana practices.

**Shoulderstand (Sarvangasana):** It is an inverted pose, with the body resting on the shoulders.

**Plough (Halasana):** Hala Asana promotes strength and flexibility in all the regions of the back and neck.

**Fish (Matsyasana):** The pose opens the rib cage, deepens the breath and reverses kyphosis.

**Sitting Forward Bend (Paschimothanasana):** This pose uses gravity to calm and soothe the nervous system.

**Cobra (Bhujangasana):** This pose promotes thoraco-diaphragmatic breathing, stretches the chest, strengthens the upper back and shoulders, and diminishes kyphosis.

**Locust (Shalabhasana):** Shalabhasana strengthens back muscles and cures ailments like sciatica and back ache.

**Bow (Dhanurasana):** It tones back muscles and maintains the elasticity of spine, improving posture and increasing vitality.

**Spinal twist (Ardha Matsyendrasana):** Ardha Matsyendrasana tones the spinal nerves and ligaments, improves digestion and also improves liver and pancreas health.

**Crow (Kakasana):** Kakasana is a balancing posture which strengthens the shoulders, arms and wrists.

**Standing forward bend (Padahastanasana):** It is an inverted posture which provides many of the same benefits of the seated forward bend, the main physical benefit is to stretch the entire backside of the body from the head to the heels.

**Triangle (Trikonasana):** Trikonasana (triangle pose) augments the movement of the Half Spinal Twist and gives an excellent lateral stretch to the spine, toning the spinal nerves and helping the proper functioning of the digestive system.

### Meditation

United States National Center for Complementary and Alternative Medicine (NCCAM) defines meditation as “a conscious mental process that induces a set of integrated physiological changes termed the relaxation response.

Asthma flares is associated with anxiety and pain. The body’s sympathetic nervous system, responsible for its “fight or flight” response, goes into overdrive at the onset of an asthma flare, and releases stress hormones into the body. Meditation lowers stress hormone levels and decreases activity in the body’s sympathetic nervous system. Meditation relaxes the mind and increases mental alertness [21]. The controlled breathing regime practiced as part of the meditation process is extremely beneficial for the lungs. Meditation opens air passages and improves airflow. With practice, one can learn to relax the body and breathe deeply early during the onset of an asthma attack; at the same time, focusing on the breathing freely will calm the mind and prevent anxiety or panic to take control.

Wilson et al did a crossover study to evaluate the benefits of Transcendental meditation on asthma. The results indicated that transcendental meditation is a useful adjunct in treating asthma [22]. In the Indian scenario, study by Biju et al showed that yoga resulted in significant improvement in pulmonary function tests, decrease in frequency of asthma attacks and decrease in frequency of use of inhalers whereas the disease status in controls deteriorated [23]. Yoga improves the mechanical efficiency of our breathing and increases the total lung capacity [24].

Thus, we see, Yoga contains elements that address problems associated with asthma at every level - pranayama that slows breathing and regulates the flow of “prana”, asana that relax and tone the muscles, relaxation and meditation that act to calm the mind and emotions culturing to heal the spirit. Treatment of asthma is continually evolving. Multidisciplinary collaboration by bringing together researchers and clinicians should be the way forward in endeavours to provide effective solutions to help patients (Table 1).

**Table 1:** Common forms of Yoga [21].

<i>Hatha</i>	General term for yoga incorporating postures, as opposed to breathing or medication techniques. It’s a basic, beginner style with less challenging postures.
<i>Vinyasa</i>	Fluid, flowing style wherein students move continuously between postures with co-ordinate breathing.
<i>Iyengar</i>	Style known for emphasis on props to maintain proper body alignment even in less flexible students. Accessible to anyone.
<i>Astanga</i>	Vigorous school of yoga where students move rapidly and smoothly from one posture to next. Recommended for more athletic students
<i>Bikram</i>	Practiced in a room heated to over 100 degree Fahrenheit. Best for physically able practitioners (als known as “hot” yoga)
<i>Viniyoga</i>	Incorporates breathing and chanting exercises. Postures are gentle and can be done by less fit students.
<i>Kundalini</i>	Flowing style of yoga with emphasis on breathing techniques. May have more spiritual aspects than other styles.
<i>Kripalu</i>	Incorporates emotional and spiritual aspects similar to psychotherapy. Breathing and postures are combined, which can be physically challenging
<i>Anusara</i>	Emphasis on alignment, similar to Iyengar. Also incorporates chanting and breathing exercises.
<i>Sudarshan Kriya</i>	A series of breathing techniques with differing rates and levels of airway resistance that practitioners claim can balance the autonomic nervous system.

Disclaimer: Please do not stop using asthma treatment without the advice of the specialist. Yoga should only be used to complement standard medical treatment.

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