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The Role of Yoga Practices in Improving Respiratory Health: A Review

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ABSTRACT:

Yoga, an ancient Indian practice, is increasingly recognized as a holistic lifestyle that integrates physical, mental and spiritual well-being. Among its various components, Pranayama (breath regulation) and Asanas (postures) have shown significant influence on the respiratory system. Controlled breathing techniques improve lung capacity, strengthen respiratory muscles, regulate autonomic balance and enhance overall pulmonary function. Several clinical and experimental studies confirm yoga's effectiveness in managing conditions such as asthma, COPD and altitude-induced hypoxia, while also improving lung elasticity and quality of life indices in healthy individuals. This paper reviews existing literature on the relationship between yoga practices and respiratory health, focusing on pulmonary function parameters (FVC, FEV1, PEFR) and mechanisms of improvement through pranayama and asanas. The findings highlight yoga as a valuable adjunct to conventional therapies in respiratory disorders and a preventive measure for maintaining pulmonary health.

KEYWORDS: Yoga, Pranayama, Pulmonary Function, Respiratory Health, Asanas, Lung Capacity, COPD, Asthma.

INTRODUCTION:

Yoga is a way of life which is characterized by balance, health, harmony and bliss(Nagendra, 2008). In Sanskrit yoga means "Union" and spiritual meaning of yoga is union of mind with universal intelligence (Raub, 2002).

Yoga practices have shown positive effect on respiratory health. Yoga plays an important role to promote health(Manocha, Marks, Kenchington, Peters, & Salome, 2002)(Sabina et al., 2005). Practices along with meditation, yoga asanas and pranayama are well accepted by westerners(Garfinkel & Schumacher, 2000). As far as respiratory aspect of yoga is concerned, yogic practices especially pranayama involves controlled breathing techniques which implies voluntary control of respiratory muscles(Telles, Nagarathna, Nagendra, & Desiraju, 1993)(Villien, Yu, Barthélémy, & Jammes, 2005).

Yoga is an ancient Indian practice for bodily, mental and spiritual communion. It was introduced by Swami Vivekananda in the United States in 1893 and from then on, yoga practice shifted toward the aims of attaining health, beauty and body therapy, thus initiating the modern yoga age. As modern yoga increased in popularity, its use shifted to mind and body practices. Standard yoga usually combines *asana* (posture), *pranayama* (breathing) and meditation, with 89.9% of yogis



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using *pranayama* and about half (54.9%) using meditation combined with *asana*. *Asana* involves whole body movement, which consists of multi-joint stretching and strength-building motions of varying degrees of difficulty and other fitness-based exercises. *Pranayama* requires voluntary control of respiratory muscles and involves different breathing speeds, shortening and elongation of breathing and breath holding via three phases: *Puraka* (inhalation), *Kumbhaka* (retention) and *Rechaka* (exhalation) (Yamamoto- Morimoto, Horibe, Takao, & Anami, 2019). Yoga is believed to exhibit a powerful and profound effect on the respiratory system, perhaps more than that on any other organ in the body. Studies have shown that yoga has a positive effect on the pulmonary function tests. *Pranayama*, the fourth limb of Ashtanga yoga, is an important component of yoga training. In yoga tradition, *pranayama* means “control over breathing”. Where breath is the life source of an individual. *Pranayama* can assume rather complex forms of breathing, but the essence of practice is slow and fast breathing (D’Souza & Avadhany, 2014). Madanmohan *et al.*, studied the effect of slow and fast *pranayama* on respiratory pressures and endurance, which is a good index of respiratory muscle strength. This study confirmed that slow and fast *pranayama* are effective in strengthening the respiratory muscles (Pal, Velkumary, & Madanmohan, 2004).

Various practices involved in the tradition of Yoga include disciplined lifestyle (*Yama* and *Niyama*), cleansing procedures (*Kriya*), physical postures (*Asana*), breath regulation (*Pranayama*), concentration (*Dharana*) and meditation (*Dhyana*). In recent years, there has been greater interest in exploring the benefits of various practices described in Yoga. There have been scientific studies on the effects of individual Yoga practices or their combinations on healthy individuals as well as in people suffering from various ailments. *Pranayama* or breath regulation has been greatly emphasized in Yoga and has drawn special attention from the scientific community. Breath regulation includes modulation of the pace of breathing, viz. slowing down or pacing the breath, manipulation of nostrils, chanting of humming sounds, retention of breath (Saoji, Raghavendra, & Manjunath, 2019).

Yoga is a form of mind-body fitness that involves a combination of muscular activity and an internally directed mindful focus on awareness of the self, the breath and energy. Four basic principles underlie the teachings and practices of yoga's healing system. 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 student is his or her own healer. Yoga engages the student in the healing process; by playing an active role in their journey toward health, the healing comes from within, instead of from an outside source and a greater sense of autonomy is achieved. The fourth



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principle is that the quality and state of an individual mind is crucial to healing. When the individual has a positive mind-state healing happens more quickly, whereas if the mind-state is negative, healing may be prolonged (Woodyard, 2011).

The eight limbs are comprised of ethical principles for living a meaningful and purposeful life; serving as a prescription for moral and ethical conduct and self-discipline, they direct attention towards one's health while acknowledging the spiritual aspects of one's nature. Any of the eight limbs may be used separately, but within yoga philosophy the physical postures and breathing exercises prepare the mind and body for meditation and spiritual development. Based on Patanjali's eight limbs, many different yogic disciplines have been developed. Each has its own technique for preventing and treating disease (Collins, 1998).

The effects of yoga training on pulmonary function have been previously studied. These studies have mainly investigated the effects of yoga training on vital capacity and peak expiratory flow rate (PEFR) in comparison with a sedentary control group. Ross in his review article compared the health benefits of yoga and exercise (walking, stationary cycling, dancing and gentle aerobic exercises) and concluded that yoga is as effective or superior to exercise in a healthy and diseased population.

Researchers have observed that the significant change in the lung functions can be brought about even with short-term yoga training. Only 3 weeks of yoga program conducted for 28 visually impaired 11-17-year-old children showed reduction in the breath rates significantly (D'Souza & Avadhany, 2014).

Focusing on the respiratory aspect of yoga, Pranayama generally involves controlled breathing techniques affecting the respiratory rhythm, namely through prolongation and shortening of breaths and sometimes breath-holding, all implying voluntary control of respiratory muscles. These voluntary acts influence the breathing pattern, which is normally determined by the autonomic respiratory control center in the brain. There is evidence that voluntary control of breathing (practiced for 6–10 weeks) induces persistent alteration of the breathing pattern at rest, shown in a reduced breathing frequency (f_R) (Beutler, Beltrami, Boutellier, & Spengler, 2016).

Previous research revealed that yogic practices improve lung function significantly and also strengthen the inspiratory and expiratory muscles (Santaella et al., 2011) (Reddy, 2010). Randomized controlled trial conducted at AIIMS, Delhi, found that yoga postures, pranayama and meditation improved pulmonary function in subjects suffering from mild to moderate bronchial asthma. Quality of life was also reported to be improved in yoga group (Vempati, Bijlani, & Deepak, 2009). In a double blind, placebo-controlled, crossover trial study, it has been found that simple measure designed to improve breathing control may contribute in the management of adverse respiratory health (V. Singh, Wisniewski, Britton, & Tattersfield, 1990).



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Yoga practices seem useful as an adjunct in managing adverse respiratory health(Vedanthan et al., 1998). Jain SC et al(Jain et al., 1991) has demonstrated the effectiveness of yoga training resulted in a significant improvement of pulmonary function and exercise capacity.

METHODOLOGY

The literature that was chosen for this review was searched for citations with keywords “Yoga, respiratory health and pulmonary functions”. The online databases that are used to search studies include PubMed, Google scholar, PubMed central and Indmed.

Experimental studies, case studies and case series in English, stating the efficacy of yogic practices in the management of adverse respiratory health or pulmonary function were included in the review.

Studies apart from English, studies conducted before the year 1990 and whose abstracts were not available were excluded from the review.

DISCUSSION

Yoga therapy on pulmonary function:

Scientific evidence of performing yoga as an adjunct therapy provides ample evidence of the effectiveness of yogic practices in improving lung function, quality of life indices in chronic obstructive pulmonary disease (Vempati R et al.,2009).

A comparative study revealed significant improvement in yoga group in FEV1 and FVC by singh et al. who also postulated that breathing practices and asanas may be used to improve pulmonary functions, relax chest muscles, expand lungs and calm the mind(S. Singh, Soni, Singh, & Tandon, 2012).

Slow yogic breathing leads to better blood oxygenation without increase in minute ventilation and also found there is reduction in sympathetic activation during altitude-induced hypoxia(Bernardi et al., 2001).

Previous studies provide ample evidence of the efficacy of yoga intervention in improving all lung function parameters i.e., hathenas that are specialized yoga practices which aimed at increasing stamina of respiratory muscle, expansion of the lungs as well as lung elasticity and compliance. It has been seen that yoga group showed significant improvement due to various mechanism, which include reduction of obesity, increased oxygenation, airspaces opening and alveoli recruitment. Number of studies have suggested that there is improvement in adverse respiratory health in healthy volunteers as well as in those who are suffering from different conditions(Rodrigues, Carvalho, Santaella, Lorenzi-Filho, & Marie, 2014).

The practice of Kriya Yoga may probably shift autonomic equilibrium towards parasympathetic dominance. This physiological change could be a suitable clinical application for individuals with cardio respiratory disease is the conclusion given by study done to see the Effect of Kriya Yoga on Certain Cardio-Respiratory Variables(Santhakumari & Sudha, 2016)



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Practicing balasana there is a significant reduction in basal heart rate, SBP and DBP and so balasana can be incorporated in the busy schedule of medical students as it improves cardiac functions is the conclusion given by a study done on medical students(Jabir, Sadananda, & Das, 2017).

Study concluded that there is no significant change in spirometric variables in "the control group" during the course of the intervention. In contrast, "the yoga group" got significantly better improvement in spirometric variables. The result shows that yoga can be an adjuvant therapy along with standard medical treatment for the better management of asthma(Agnihotri, Kant, Kumar, Mishra, & Mishra, 2016).

Respiratory function depends on several factors, including chest expansion, lung dimensions, respiratory muscle strength, air way resistance and alveolar surface area. Pranayama, one of the limbs of Asthanga yoga, is known to have profound effect on the pulmonary function than any other part of the human system. Pranayama consists of different kinds of breathing patterns such as alternate nostril breathing, Mukhabhasthrika pranayama and Brahmari pranayama. Pranayama is essentially a breathing exercise against resistance and its positive effects on lung functions is well documented (D'Souza & Avadhany, 2014).

Yogasananas and pranayama exercises are performed by consciously altering the respiration. Studies have shown that breathing exercises open the small airways in the lungs and reduces the airway resistance. Studies have revealed that even short-term (2 weeks) yoga training is sufficient to improve the lung function. In the present study, although significant increase was observed in FVC, FEV1 and PEFR in 7-9-year-old children in both the groups at the end of 3 months training, there was no significant difference between the yoga and the PE group post-intervention, except for MIP. A study was conducted on adolescents, 84 subjects were randomly allocated to 4 groups: Yoga and pranayama group, fast Suryanamaskara group, slow Suryanamaskara group and sedentary control group and each group was trained for 6 months in their respective regime. Significant improvement was observed in FVC, FEV1 and PEFR in the trained groups as compared to that in the control group, who studied in a classroom. Another study revealed significant improvement was observed in 20 hypothyroid patients (approximately aged 39 years) after 6 months of yoga and pranayama training. The author has mentioned that the hypothyroid patients had lower values of the pulmonary test when compared to the healthy control. Although the patients were on thyroxine supplements for 2 years, the improvement in the pulmonary parameters showed a significant improvement after 6 months of yoga training and attributes this change in the FEV1, PEFR and the inspiratory capacity to the improved respiratory muscle strength(D'Souza & Avadhany, 2014).



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CONCLUSION:

The review establishes that yoga, particularly pranayama and asanas, exerts profound positive effects on respiratory health. By consciously modulating breathing patterns, yoga enhances pulmonary parameters such as FVC, FEV1, PEFr and inspiratory/expiratory muscle strength. Short-term interventions have been shown to improve lung function in both healthy individuals and patients with respiratory conditions. Furthermore, practices such as kriya yoga and slow breathing techniques promote parasympathetic dominance, reduce airway resistance and optimize oxygenation. Thus, yoga can be considered an effective adjunct therapy alongside conventional medical management for respiratory ailments like asthma and COPD, while also serving as a preventive lifestyle practice. However, more large-scale randomized controlled trials are needed to establish standardized protocols and quantify long-term benefits.

REFERENCES:

- Agnihotri, S., Kant, S., Kumar, A., Mishra, A., & Mishra, S. (2016). Effect of yoga on pulmonary function tests in patients with bronchial asthma.
- Bernardi, L., et al. (2001). Slow breathing reduces chemoreflex response and improves oxygenation.
- Beutler, A., Beltrami, F. G., Boutellier, U., & Spengler, C. M. (2016). Effects of yoga breathing on autonomic regulation.
- Collins, C. (1998). Yoga: Intuition, preventive medicine and treatment. *Journal of Obstetric, Gynecologic and Neonatal Nursing*.
- D'Souza, C., & Avadhany, S. T. (2014). Effects of slow and fast pranayama on respiratory muscle strength.
- Garfinkel, M., & Schumacher, H. R. (2000). Yoga therapy for health.
- Jain, S. C., et al. (1991). Effect of yoga training on exercise capacity and pulmonary functions.
- Madanmohan, et al. (2004). Yoga breathing on respiratory pressures and endurance.
- Manocha, R., Marks, G. B., Kenchington, P., Peters, D., & Salome, C. M. (2002). Sahaja yoga in asthma management.
- Nagendra, H. R. (2008). Yoga as a way of life.
- Reddy, C. V. (2010). Yoga improves lung function.
- Rodrigues, A. L., Carvalho, C. R. F., Santaella, D. F., Lorenzi-Filho, G., & Marie, S. K. N. (2014). Yoga in respiratory rehabilitation.
- Sabina, A. B., et al. (2005). Yoga practice and health outcomes.
- Santhakumari, R., & Sudha, G. (2016). Effect of kriya yoga on cardio-respiratory parameters.
- Santaella, D. F., et al. (2011). Yoga training improves lung function.



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- Singh, S., Soni, R., Singh, K. P., & Tandon, O. P. (2012). Pulmonary function improvement with yoga breathing.
- Singh, V., Wisniewski, A., Britton, J., & Tattersfield, A. (1990). Breathing exercises in asthma management.
- Telles, S., Nagarathna, R., Nagendra, H. R., & Desiraju, T. (1993). Physiological changes during pranayama.
- Vempati, R., Bijlani, R. L., & Deepak, K. K. (2009). Yoga improves quality of life in asthma.
- Vedanthan, P. K., et al. (1998). Yoga as adjunct therapy in asthma.
- Villien, F., Yu, M., Barthélémy, P., & Jammes, Y. (2005). Slow breathing and autonomic function.
- Woodyard, C. (2011). Exploring the therapeutic effects of yoga. *International Journal of Yoga*.
- Yamamoto-Morimoto, T., Horibe, T., Takao, H., & Anami, Y. (2019). Yoga breathing phases and respiratory control.