

Efficacy of Yoga Therapy in the Management of Bronchial Asthma: A Narrative Review of Clinical Evidence, Mechanisms, and Practical Integration

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Abstract— Bronchial asthma is a heterogeneous chronic inflammatory airway disease characterized by variable respiratory symptoms and variable expiratory airflow limitation. Although inhaled corticosteroid-containing treatment remains the foundation of evidence-based care, many patients continue to report impaired quality of life, anxiety, dysfunctional breathing, or exercise avoidance despite pharmacological management. Yoga therapy combines controlled breathing, gentle postures, relaxation, and meditative attention and is therefore increasingly evaluated as an adjunctive, non-pharmacological intervention. This narrative review critically synthesizes evidence from major guidelines, systematic reviews, meta-analyses, and representative randomized controlled trials. The most consistent findings indicate small-to-moderate improvements in asthma-related quality of life, symptom perception, breathing pattern, and selected measures of asthma control. Improvements in spirometric indices such as forced expiratory volume in one second (FEV1), forced vital capacity (FVC), and peak expiratory flow rate (PEFR) are reported in some studies, but results are heterogeneous and less robust than patient-reported benefits. Evidence that yoga reduces exacerbations, airway inflammation, or controller-medication requirements remains insufficient. Yoga should therefore be positioned as a supervised adjunct—not an alternative—to guideline-directed asthma treatment. Safe integration requires stable disease,

continuation of prescribed inhalers, avoidance of forceful breathing or prolonged breath retention during acute symptoms, and instruction by professionals familiar with asthma. Future trials should use standardized interventions, adequate sample sizes, active control groups, objective adherence monitoring, and clinically important outcomes.

Keywords – asthma; yoga therapy; pranayama; breathing exercises; pulmonary function; quality of life; complementary therapy

I. INTRODUCTION

Asthma has complex pathophysiology, frequently affects all age groups and continues to be a leading cause of preventable morbidity and mortality. In 2023, the World Health Organization estimated that about 363 million people suffered from asthma and the disease had caused approximately 442,000 deaths. The burden is disproportionately high in low- and middle-income countries, where underdiagnoses, limited access to inhaled medicines (regardless of frequency), poor adherence, and the lack of self-management education are widespread [1].

Contemporary concepts of asthma recognize it to be heterogeneous, rather than a single uniform disease. Asthma is characterized by a history of respiratory symptoms, which are usually wheeze, breathlessness, chest tightness and cough that vary over time with varying expiratory airflow limitation. The clinical phenotype may be related to airway

inflammation, bronchial hyper-responsiveness, mucus hypersecretion and structural remodeling but their expression is heterogeneous amongst patients and over time [2].

The underlying principles are therapy with an inhaled corticosteroid-containing regimen, tailored assessment strategy, inhaler technique and adherence, trigger management, treatment of comorbidities and use of a written asthma action plan. This evidence will be discounted such that complementary strategies may be considered only if there is evidence they improve symptoms, physical function, and/or self-management without being a substitute for effective anti-inflammatory treatment. In this setting, clinically relevant as yoga incorporates breathing regulation, posture, relaxation, attention and graded physical activity - domains which may be impaired in people with an anxiety disorder secondary to dysfunctional breathing deconditioning or fear of exercise.

Yoga was generally described in earlier literature as reinforcing immunity, reversing airway obstruction and tapering medication dependence. This kind of language goes far beyond what is justified by the current evidence. A somewhat more defensible scientific position is that yoga can improve at least some patient-centered outcomes and impacts on pharmacological requirements, exacerbations and objective lung function are variable or uncertain [3–5]. This review thus focuses on possible advantages and the limitations in providing evidence.

II. OBJECTIVES

1. To summarize the clinical rationale for using yoga as an adjunct in bronchial asthma management.
2. To evaluate evidence for effects on asthma control, symptoms, quality of life, psychological well-being, pulmonary function, and medication use.
3. To explain plausible physiological and behavioral mechanisms without overstating unproven anti-inflammatory effects.

4. To propose a cautious framework for integrating yoga into standard asthma care.
5. To identify methodological limitations and priorities for future research.

III. REVIEW METHODOLOGY

This paper is not a de novo systematic review or meta-analysis but rather a narrative review of the literature to date. Literature was identified using focused searches of PubMed/MEDLINE, the Cochrane Library, World Health Organization resources, Global Initiative for Asthma (GINA) reports, and reference lists from key reviews. The following search concepts were used: (asthma or bronchial asthma) and yoga, pranayama, breathing exercise; and (meditation or pulmonary function or asthma control or quality of life). Typical guidelines, systematic evaluations, meta-analyses, and randomized controlled trials or controlled/placebo-controlled studies of individuals with confirmed asthma were prioritized.

The primary evidence was not derived from studies focused on chronic obstructive pulmonary disease, non-clinical populations, acute severe asthma, or yoga- and structured-breathing-unrelated interventions. Its conclusions must be viewed as a critical synthesis of available evidence, rather than a fully reproducible systematic review, since the review did not employ duplicate screening or protocol registration and did not formally assess risk-of-bias or quantitatively pool data.

IV. COMPONENTS OF YOGA THERAPY RELEVANT TO ASTHMA

Yoga interventions vary widely between studies. Some are predominantly pranayama, while others integrate postures, meditation, relaxation techniques, instruction about yoga philosophy or lifestyle modification. The heterogeneity of studies also complicates causal interpretation: a positive finding could result from many possibilities, such as breathing retraining, attention by instructors, any

increase in physical activity, an expectancy effect (Hastings et al. 2013), stress reduction or the intervention itself acting synergistically or additively rather than a single yogic technique.

4.1 Controlled breathing (pranayama)

It can also help the patients identify asthma symptom from dyspnea related to anxiety, as well as maybe improving awareness of breathing pattern and reduce excessive ventilation with slow, comfortable nasal or diaphragmatic breathing. Elaborate Forced Manual Breathing, Short Breezy Breath and exotic breath-hold should not be treated as a one size fits all approach; many susceptible individuals will experience dizziness, disquiet or aggravated symptoms.

4.2 Postures (asanas)

Gentle postures may increase thoracic mobility, posture, flexibility and confidence in movement. Perhaps most importantly, these effects may matter most for inactive people or people who are not exercising because they fear being breathless. It is not established that adopting specific postures outright dilates bronchi or permanently increases lung capacity.

4.3 Relaxation and meditation

Meditation or relaxation training may affect symptom perception, anxiety, sleep, and coping. Psychological distress may allow stress to magnify dyspnea and impair patient adherence or self-management, so that relief of this distress can reduce airway inflammation and improve health-related quality of life in asthma patients even with little improvement in spirometry.

4.4 Education and self-management

Regular contact, structure and reinforcement of the healthy routine is frequently provided through supervised yoga programmes. These non-specific ingredients may enhance adherence and self-efficacy. They must be a part of inhaler education, avoidance of triggers, vaccination and an individualized asthma action plan not a replacement.

V. CLINICAL EVIDENCE

The evidence consists of multiple systematic reviews and numerous small trials, the majority conducted among adults with mild-to-moderate asthma. Quality of life and symptoms is the most robust overall conclusion (as compared to lung function, medication reduction, and serious outcomes) with lower certainty for other conclusions. Table 1 summarizes influential evidence.

TABLE 1
SELECTED CLINICAL EVIDENCE ON
YOGA AND BREATHING-BASED
INTERVENTIONS IN ASTHMA

Study	Design / sample	Intervention	Main findings	Important limitation
Cramer et al., 2014 [4]	Systematic review and meta-analysis; 14 RCTs, 824 participants	Yoga compared with usual care, psychological intervention, breathing exercise, or sham	Benefits reported for symptoms, quality of life, PEFr, and FEV1/FVC versus usual care; no consistent superiority over sham or breathing controls	Effects were not robust to all potential sources of bias; marked intervention heterogeneity
Yang et al., 2016 [3]	Cochrane review; 15 RCTs, 1,048 participants	Yoga as an adjunct to usual care or compared with control	Moderate-certainty evidence for small improvements in quality of life and symptoms; uncertainty for lung function, adverse events, and medication use	Most trials had unclear or high risk of bias in at least one domain
Santino et al., 2020 [5]	Cochrane review; 22 studies, 2,880 adults	Breathing exercises including yogic breathing, diaphragmatic methods, Buteyko, and related training	Probable improvement in quality of life and hyperventilation on symptoms; variable effects on lung function	Breathing methods and outcome measures differed substantially; evidence ranged from moderate to very low certainty
Vempati et al., 2009 [6]	RCT; 57 adults with mild-to-moderate asthma	Comprehensive yoga-based lifestyle and stress-management program plus standard care	Improvement in selected pulmonary-function measures and exercise-related outcomes	Small, single-center trial; intensive multi-component intervention limits attribution to yoga alone

Study	Design / sample	Intervention	Main findings	Important limitation
Manocha et al., 2002 [7]	RCT; adults with moderate-to-severe asthma	Sahaja yoga meditation as adjunct to standard treatment	Improved airway hyper-responsiveness at the end of treatment; limited effects on other clinical outcomes	Modest sample and specialized meditation program; limited generalizability
Sabina et al., 2005 [8]	Pilot RCT; adults with mild-to-moderate asthma	Yoga and breath work versus an active control	Feasible intervention, but no clear advantage across major clinical indices	Pilot size and active-control design reduced power to detect small effects
Sodhi et al., 2009 [9]	Controlled trial; stable asthma	Yoga training including breathing practices	Reported improvement in selected pulmonary-function parameters	Short follow-up and limited reporting of allocation and blinding
Agnihotri et al., 2017 [10]	RCT; 300 participants with mild-to-moderate persistent asthma	Asanas, pranayama, and meditation for 30 minutes, 5 days/week, 6 months	Improved asthma-related quality-of-life scores	Limited information on blinding, adherence, and objective outcomes
Yüce and Taşci, 2020 [11]	Single-blind RCT	Pranayama plus standard treatment versus relaxation plus standard treatment	Improved asthma control and quality of life; no significant between-group improvement in pulmonary-function tests	Short intervention period and comparison with another attention-based intervention
Singh et al., 2023 [12]	Meta-analysis of adult asthma studies	Yoga including postures, breathing, and meditation	Moderate evidence of benefit for selected pulmonary-function and patient-reported outcomes	Heterogeneity and variable methodological quality of included trials

5.1 Asthma control and symptom burden

Overall, systematic reviews generally suggest that yoga is superior to usual care for symptom scores and self-reported asthma control, but effect sizes are moderate in size and tend to attenuate when compared with an active intervention. The frequency of these features suggests that ongoing focus on breathing, relaxation and self-regulation could be therapeutically beneficial but the precise yoga ingredient still proves difficult to disentangle [3–5].

It is important to distinguish perceived symptoms from airway inflammation. This may lead to a

patient feeling less breathless or anxious, to using their rescue medication more appropriately but not showing a large change in their FEV1. Although this represents a clinically relevant improvement, it should not be interpreted as evidence that yoga has supplanted the need for anti-inflammatory therapy.

5.2 Quality of life and psychological outcomes

Supportive evidence for asthma-related quality of life is the most consistently reported outcome. This might translate into fear of symptoms, activity confidence, sleep and emotional regulation. Cochrane review of yoga showed an average improvement on Asthma Quality of Life Questionnaire scores that was beyond traditional minimal clinically important differences in pooled analyses, but trial quality and heterogeneity limited certainty [3].

Asthma symptoms often co-occur with anxiety and dysfunctional breathing. Anxiety slowing, respiration regulation with relaxation, and cognitions through mindfulness are likely to help diminish catastrophizing of breathlessness and improve coping tendency. However, psychological benefit should be distinguished from demonstrable reduction of eosinophilic inflammation or protection against severe exacerbation.

5.3 Pulmonary function

Conflicting findings regarding FEV1, FVC, FEV1/FVC and PEF are reported. Although some trials and meta-analyses report statistically significant changes, mainly in PEF or FVC [8–13], others [14–23] have not found any clinically relevant improvement. This variability may be explained by several factors including small samples [4,6,11–13], different baseline disease severities [6], short follow-up [11], effort-dependent spirometry [12] and the (often vague) details of the yoga protocols used in these studies [4,6].

A more balanced scientific conclusion is that yoga may enhance buccal breathing, thoracic flexibility, or performance on pulmonary tests in select patients but has not been shown to consistently normalize

airway obstruction. Consequently, objective pulmonary-function testing should therefore be continued as part of medical assessment where such clinical indications apply.

5.4 Medication use and exacerbations

Reduced bronchodilator use was reported in early trials, while pooled analyses suggest possible medication reduction. By comparison, medication outcomes were inconsistently defined and oftentimes patient-reported and only infrequently embedded in a protocol-driven step-down approach. Recommendation that inhaled corticosteroids be reduced solely on the basis of yoga initiation is not well evidenced. [3–5]

Sparsely reported outcomes were for severe exacerbations, emergency visits, hospitalization, oral corticosteroid bursts and mortality. However, further phase III studies with larger sample sizes and longer follow-up durations are needed to confirm these results. In the absence of such evidence, yoga should be regarded as supportive rehabilitation and not a disease-modifying therapy.

5.5 Safety and acceptability

Reports of serious adverse events related to yoga are not prominent in the available trials (but under-reporting cannot be excluded). Gentle supervised programs are typically tolerated well. Potential harms include musculoskeletal injury from overdoing the positions, as well as hyperventilation, [14] dizziness, increased anxiety resulting from mindful breathing and/or prolonged use of rescue medication if participants misuse yoga (associated with immediate crisis).[15]

The safety profile is less an outcome of the technique's cultural label and more a function of the total intense dose alongside instructor expertise, disease stability, and integration with medical care. On the other hand, acute wheeze that rapidly worsens, severe breathlessness or inability to speak, cyanosis, or poor response to reliever medication should be managed with an asthma action plan and

best practice–based urgent medical evaluation – not breathing drills.

VI. PLAUSIBLE MECHANISMS

Yoga is a heterogeneous behavioral intervention. It is probably not a single mechanism, but effects are mediated through many interacting pathways.

6.1 Breathing-pattern regulation

What slow and controlled breathing basically does is minimize involuntary hyperventilation, facilitate nasal breathing and stimulation of lower-rib-cage and diaphragm movement (which plays a crucial role in lung functioning), and enhance awareness of sensations of respiration. This might be particularly pertinent in those patients in whom there is complex coexisting dysfunctional breathing.

6.2 Autonomic and stress regulation

Relaxation and meditation might modulate sympathetic arousal and improve emotional regulation. Anxiety also amplifies dyspnea and contributes to poor sleep and self-management. Durable autonomic changes specifically related to asthma are not well established.

6.3 Musculoskeletal and physical-conditioning effects

It is obvious that postures and gentle exercise are better at helping thoracic mobility, flexibility, and general activity tolerance. Particularly, these benefits can counter deconditioning and fear-avoidance. These should not be construed as a direct reversal of airway inflammation but rather effects of rehabilitation.

6.4 Behavioral adherence and self-efficacy

Regular supervised practice creates routine, brings attention to symptoms, and provides agency. Improved self-efficacy could lead to better adherence and more appropriate symptom response if instructors validated rather than invalidated the medical asthma plan.

6.5 Inflammation and immune function

There have been small cohort studies of inflammatory markers, but there is no evidence strong enough to say that yoga has clinically

important anti-inflammatory or immunomodulatory effects in asthma. These mechanisms are still hypotheses in need of appropriately powered biomarker trials.

VII. PRACTICAL INTEGRATION INTO ASTHMA CARE

Involved patients may consider Yoga in shared decision-making. This therapy is best suited for those whose asthma is well managed and who have been educated that yoga does not replace inhaled corticosteroids, reliever medication, or emergency care. The framework below must be regarded conservatively and as a starting point for clinical discussion, not a universal prescription.

TABLE II
SUGGESTED FRAMEWORK FOR SAFE
ADJUNCTIVE YOGA PRACTICE IN
ASTHMA

Domain	Practical recommendation
Eligibility	Stable asthma; no current exacerbation; medical treatment and inhaler technique reviewed; patient interested and able to exercise safely.
Instruction	Begin under a qualified yoga therapist, physiotherapist, or instructor familiar with asthma and emergency procedures.
Session content	Gentle warm-up, comfortable postures, slow non-forceful breathing, relaxation, and gradual progression.
Initial dose	Approximately 20–40 minutes, 3–5 days per week, adjusted to symptoms, fitness, comorbidities, and adherence.
Monitoring	Track symptoms, reliever use, activity tolerance, Asthma Control Test/Questionnaire score, and—when clinically relevant—spirometry or peak flow.
Medication	Continue prescribed controller and reliever medicines. Medication step-down should occur only under the treating clinician’s supervision.

Domain	Practical recommendation
Avoid	Forceful rapid breathing, prolonged breath retention, extreme heat, allergen-rich environments, and practice during acute wheeze or respiratory infection.
Stop and seek help	Rapidly worsening breathlessness, difficulty speaking, chest retractions, cyanosis, faintness, or poor response to reliever medication. Follow the written asthma action plan.

7.1 Selection of practices

No single posture has been proven essential for asthma. Commonly used gentle chest-opening or spinal-mobility postures—such as supported bridge, cobra variations, fish-pose modifications, seated twists, and relaxation in a supported position—may be selected for comfort and mobility rather than because they have a unique bronchodilator action. Individualization is especially important for people with obesity, hypertension, pregnancy, osteoporosis, musculoskeletal pain, or severe asthma.

Breathing practice should emphasize comfort, smoothness, and absence of air hunger. Slow diaphragmatic or lower-rib-cage breathing may be appropriate; rapid bhastrika-like breathing, aggressive kapalabhati, and prolonged kumbhaka should not be routinely recommended to patients with asthma without expert assessment. The scientifically boring answer—gentle, gradual, repeatable practice—is often the clinically useful one.

VIII. LIMITATIONS OF THE EVIDENCE BASE

- Small sample sizes and inadequate statistical power in many trials.
- Substantial variation in yoga style, session duration, instructor training, home practice, and treatment fidelity.

- Frequent use of wait-list or usual-care controls, which cannot separate specific effects from attention and expectancy.
- Incomplete blinding, allocation concealment, adverse-event reporting, and intention-to-treat analysis.
- Greater emphasis on short-term patient-reported outcomes than on exacerbations, healthcare use, inflammation, and long-term medication requirements.
- Limited representation of severe asthma, children, older adults, and diverse health systems.
- Potential publication bias and selective reporting of positive pulmonary-function outcomes.
- These limitations do not mean that yoga is useless. The extent, specificity and durability of benefit are unclear. Studies that compare standardized yoga protocols with credible active controls; pre-register outcomes, objectively monitor adherence and report harms, or include clinically meaningful endpoints such as exacerbations, oral corticosteroid bursts, rescue-inhaler use and sustained changes in validated asthma-control scores are required.

IX. FUTURE RESEARCH PRIORITIES

1. Develop consensus-based, reproducible yoga protocols with clearly described components, intensity, progression, and instructor qualifications.
2. Recruit adequately powered multicenter samples and stratify by asthma phenotype, severity, age, obesity, anxiety, and dysfunctional breathing.
3. Use active comparator groups to distinguish yoga-specific effects from general exercise, relaxation, education, and social contact.
4. Measure validated patient-reported outcomes together with spirometry, exacerbations, rescue medication, adherence, and biomarkers.
5. Evaluate durability after supervised treatment ends and determine the minimum effective home-practice dose.

6. Conduct implementation and cost-effectiveness studies in primary care and low-resource settings.
7. Report adverse events and protocol deviations transparently.

X. CONCLUSION

Yoga therapy appears to be a reasonable and generally acceptable adjunct in selected patients with stable bronchial asthma. The most robust evidence indicates modest improvements in asthma-related quality of life, symptom perception, psychological well-being and control of breathing pattern. Objective pulmonary-function findings were inconsistent and affected by methodological shortcomings; some studies also reported nonsignificant improvements in PEFr, FEV₁, or FVC. The evidence was inadequate to infer that yoga reduces or prevents severe exacerbations, reverses airways inflammation or allows for unsupervised withdrawal of asthma medication. Thus, clinical integration ought to be evidence-concordant: gentle individualized care; open supervision; continuation of guideline-driven treatment; and explicit safe usage indicators. Yoga might help patients with asthma to live better; however, it should not be offered as an alternative to the treatments that control asthma and prevent unnecessary deaths.

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