SKM YOGA

YOGA TEACHER TRAINING PROGRAMME

Advanced Yoga Therapy Series

YOGA THERAPY

FOR RESPIRATORY DISEASES

Pranayama, Breathing Rehabilitation and Pulmonary Therapy

Compiled & Authored by

Dr. Shivam Mishra

Founder, SKM Yoga Institute

www.skmyoga.in | WhatsApp: 8826476724

For SKM Yoga Teacher Training Students | Educational Use Only | Complement to — Not Replacement for — Medical Treatment

FOREWORD

Dr. Shivam Mishra | Founder, SKM Yoga Institute

Pranaam, Dear Students of Yoga Therapy,

Breath is the most intimate meeting point between the inner world and the outer world. We breathe approximately 20,000 times each day — inhaling approximately 11,000 litres of air — and yet most of this breathing occurs entirely outside our conscious awareness, governed by the autonomic respiratory centres in the brainstem that modulate breath rate and depth in response to the body's moment-by-moment metabolic demands. Yoga — uniquely among all healing traditions — makes the breath the primary object of therapeutic attention: not merely observing it, but deliberately cultivating, refining, and expanding its capacity through the ancient and sophisticated science of Pranayama.

Respiratory diseases represent one of the most significant burdens of human disease globally. Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide; asthma affects over 300 million people; COVID-19 has left tens of millions with long-term respiratory impairment; tuberculosis remains one of the world's most prevalent infectious diseases; and conditions ranging from pulmonary fibrosis to sleep apnoea to lung cancer create an enormous global burden of respiratory suffering. The World Health Organization estimates that respiratory diseases collectively cause 4 million deaths annually — and for every person who dies, many more live with chronic, debilitating breathlessness that profoundly limits their quality of life, their physical capacity, and their psychological wellbeing.

This is precisely where yoga therapy offers its most direct and most powerful contribution. The breath is the domain where yoga therapy and pulmonary medicine most naturally converge: where the ancient wisdom of Pranayama — systematically developed over thousands of years into one of the most sophisticated breathing science traditions in human history — meets the modern scientific understanding of respiratory physiology, pulmonary pathology, and breathing rehabilitation. The evidence for this convergence is now compelling and growing rapidly: controlled clinical trials demonstrating yoga's effectiveness for asthma, COPD, pulmonary fibrosis, long COVID, anxiety-related breathing disorders, and multiple other conditions are now published in the world's leading pulmonary medicine journals.

This comprehensive text has been compiled to provide you with the knowledge, the clinical understanding, and the practical protocols necessary to work safely, effectively, and with genuine therapeutic depth with students who have respiratory conditions. Each chapter covers a specific

respiratory disease with its clinical background, pathophysiology, research evidence, detailed yoga therapy protocol, safety guidelines, and guidance for integration with conventional pulmonary medicine.

Remember: the breath is not merely a physiological function to be improved. It is, in the deepest yogic understanding, the bridge between the body and the mind, between the individual and the cosmos, between the gross and the subtle. Every breath practice you guide your students through is simultaneously a physiological intervention, a psychological regulation tool, and a spiritual practice. This integration — the simultaneous addressing of body, mind, and spirit through the breath — is yoga therapy's most distinctive and most powerful contribution to respiratory healing.

Pranayamena Arogya — Through Pranayama Comes Health

Dr. Shivam Mishra

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TABLE OF CONTENTS

PART ONE

FOUNDATIONS — RESPIRATORY SYSTEM AND YOGA

> *"Breath is the king of the mind. To control the breath is to control the mind. To master the breath is to master the body. Pranayama is the royal path to health."*
> **— Hatha Yoga Pradipika**

Chapter 1: The Respiratory System — Anatomy and Physiology

1.1 Overview of the Respiratory System

The respiratory system is the biological system that enables the exchange of oxygen and carbon dioxide between the body and the external environment — the process of external respiration — as well as the internal transport of these gases between the blood and the body's metabolically active tissues (internal respiration). This system, spanning from the nostrils to the alveoli of the lungs, is a magnificently complex and precisely engineered structure that processes approximately 500 litres of air per hour at rest, and up to 150 litres per minute during maximal exertion.

Understanding respiratory anatomy is essential for the yoga therapist for two reasons: first, it enables the accurate assessment of where in the respiratory system a given condition is located (upper airway vs. lower airway, alveolar vs. airway vs. pleural), which directly determines which yoga therapy approaches are most applicable; and second, it provides the physiological rationale for specific yoga practices — understanding why Bhramari vibrates the paranasal sinuses, why diaphragmatic breathing improves ventilation-perfusion matching, and why Neti clears the nasal mucosa.

Upper Respiratory Tract	Nasal cavity and sinuses: the nose is not merely an air inlet but an extraordinarily sophisticated air conditioning system — warming, humidifying, and filtering air through its turbinate bones and mucociliary system; the paranasal sinuses (frontal, maxillary, ethmoid, sphenoid) drain into the nasal cavity and are highly responsive to yoga practices (particularly Jala Neti and Bhramari). Pharynx: shared pathway for air and food, containing the tonsils. Larynx: contains the vocal cords; site of Ujjayi pranayama's characteristic sound generation; acts as protective valve for the lower airway.
Lower Respiratory Tract	Trachea (windpipe): conducts air from larynx to bronchi; approximately 12cm long, reinforced by C-shaped cartilage rings. Bronchi: the trachea divides into right and left main bronchi at the carina (approximately T4 level); each main bronchus divides into lobar and then segmental bronchi — the 'bronchial tree.' Bronchioles: increasingly small airways without cartilaginous support — dependent on elastic recoil and surfactant for patency; site of bronchospasm in asthma. Alveoli: the approximately 300-700 million terminal air sacs where gas exchange occurs; total alveolar surface area approximately 70m2 (the size of a tennis court).
The Diaphragm	The diaphragm is the primary muscle of breathing — responsible for approximately 75% of the tidal volume during quiet breathing.

	It is a dome-shaped muscular partition separating the thoracic and abdominal cavities, with attachments to the lower six ribs, the sternum, and the lumbar vertebrae (crura). During inhalation, diaphragmatic contraction flattens the dome, increasing thoracic volume and decreasing intrapleural pressure — drawing air into the lungs. During exhalation at rest, the diaphragm passively relaxes and the elastic recoil of the lungs drives expiration. The diaphragm is the primary focus of yogic breathing training (diaphragmatic/abdominal breathing) and its strengthening and coordination is the foundation of all yoga therapy for respiratory disease.
Pulmonary Circulation	The lungs receive the entire cardiac output through the pulmonary arteries — making pulmonary circulation unique as the only vascular bed in the body to receive deoxygenated blood. The pulmonary capillaries surrounding each alveolus provide the site of gas exchange: oxygen diffuses from alveolar air into blood (driven by its partial pressure gradient) while carbon dioxide diffuses in the opposite direction. Pulmonary hypertension — elevated pressure in this circuit — significantly impairs this gas exchange and limits exercise capacity. Yoga practices that reduce pulmonary vascular resistance (particularly gentle breathing and relaxation) are therapeutically valuable in pulmonary hypertension.

1.2 Lung Function Parameters — Understanding Spirometry

Spirometry — the measurement of the volumes and flows of air moved during breathing — is the primary clinical tool for assessing respiratory function and monitoring the response to therapy (including yoga therapy). Every yoga therapist working with respiratory patients should understand the basic spirometric parameters:

Parameter	Definition	Normal Range	Clinical Significance
FVC (Forced Vital Capacity)	The total volume of air expelled with maximal force after maximal inhalation	Male: 3.5-5L; Female: 2.5-4L	Reduced in restrictive lung disease (fibrosis, effusion), normal or near-normal in obstructive disease
FEV1 (1-second forced expiratory volume)	Volume expelled in the first second of forced expiration	Male: 3-4L; Female: 2-3.5L	The single most important spirometric parameter; reduced in obstructive disease
FEV1/FVC Ratio	The proportion of FVC expelled in 1 second	Normal: >70-80%	<70% defines airflow obstruction (asthma, COPD); reduced in obstructive disease
Peak Expiratory Flow (PEF)	Maximum flow rate achieved during forced expiration	Male: 400-700 L/min; Female: 300-500 L/min	Used for home monitoring in asthma; measures large airway obstruction

Tidal Volume (TV)	Volume of air moved in/out with each normal breath	Approximately 500mL at rest	Reduced in restrictive disease; may be reduced by poor breathing mechanics — directly addressable by yoga
Residual Volume (RV)	Air remaining in lungs after maximal expiration	Approximately 1.2L	Increased in emphysema (air trapping); decreased in fibrosis
Total Lung Capacity (TLC)	Total lung volume at maximal inflation	5-8L	Increased in emphysema; decreased in fibrosis — defines restrictive vs. obstructive pattern
6-Minute Walk Test (6MWT)	Distance walked in 6 minutes at self-selected pace	>450m in healthy adults	Most clinically relevant functional test — directly improved by yoga therapy in COPD studies

1.3 The Yogic Model of the Respiratory System

The yoga tradition provides a complementary model of breathing that, while not employing modern anatomical vocabulary, captures important dimensions of respiratory function that biomechanical models alone do not fully address. The three primary yogic concepts relevant to respiratory therapy are:

Prana and the Breath	Prana — the universal life force — is most immediately accessible through the breath. The Yoga Sutras of Patanjali (II.49) define pranayama as the 'regulation of the incoming and outgoing breath' — but the tradition understands this regulation to operate simultaneously at the physical level (respiratory mechanics), the pranic level (vital energy regulation), and the mental level (consciousness management). This multi-level understanding is why yoga breathwork produces effects that go significantly beyond what can be predicted from the physiological mechanics alone.
The Five Pranas	The yoga tradition identifies five major flows of Prana (Pancha Prana Vayu) within the body: Prana Vayu (upward and inward flow, centred in the chest — governing inhalation, the heart, and consciousness); Apana Vayu (downward and outward flow, centred in the pelvis — governing exhalation, elimination, and grounding); Samana Vayu (equalising force in the abdomen — governing digestion and the balance between Prana and Apana); Udana Vayu (upward flow in the throat — governing speech, expression, and the spiritual journey); Vyana Vayu (pervasive flow throughout the body — governing circulation and nerve impulses). Understanding these pranic flows helps the yoga therapist select practices that address specific aspects of respiratory dysfunction.
Pranayama and Chitta	The Yoga Sutras state (II.52-53): 'Through pranayama, the

	covering over the inner light is dissolved; and the mind becomes fit for concentration.' This philosophical statement reflects the documented physiological reality that pranayama practices produce immediate and measurable changes in autonomic balance, brain activity, and cognitive function — making the breath the most powerful tool available for simultaneously addressing the physical (respiratory), psychological, and spiritual dimensions of respiratory disease.
Bandhas and Respiratory Mechanics	The three Bandhas (energy locks) used in advanced pranayama practice — Mula Bandha (root lock — perineal contraction), Uddiyana Bandha (abdominal lock — deep abdominal retraction during exhalation), and Jalandhara Bandha (chin lock — cervical flexion) — significantly alter the mechanics of respiration and the intrapleural pressure generated during breathing. Clinically, Uddiyana Bandha and Nauli (abdominal churning) are particularly powerful for strengthening respiratory muscles, improving ventilation-perfusion relationships, and facilitating sputum clearance in bronchiectasis and CF.

Chapter 2: Pranayama — The Science of Therapeutic Breathing

2.1 Pranayama — Definition and Classification

Pranayama (from Sanskrit Prana = life force/breath + Ayama = extension/regulation) is the fourth limb of Patanjali's Ashtanga Yoga and the primary yoga therapy tool for respiratory diseases. It encompasses a vast range of breathing techniques — from the simplest observation of natural breathing to the most sophisticated multi-phase respiratory exercises involving precise ratios of inhalation (Puraka), retention (Kumbhaka), and exhalation (Rechaka). The Hatha Yoga Pradipika (II.44) declares: 'All diseases are destroyed by correct practice of pranayama; all diseases arise from incorrect practice.'

Pranayama	Sanskrit Name	Mechanism	Primary Respiratory Benefit	Best Condition
Diaphragmatic Breathing	Adham Pranayama	Recruits diaphragm; reduces accessory muscle use; improves V/Q matching	Increases tidal volume, reduces respiratory rate, improves gas exchange	COPD, asthma, anxiety-related breathing
Alternate Nostril Breathing	Nadi Shodhana / Anulom-Vilom	Balances Ida/Pingala; regulates ANS; nasal cycle normalisation	Improves nasal patency; reduces airway resistance; ANS balance	Asthma, allergic rhinitis, stress-related breathing, anxiety
Humming Bee Breath	Bhramari	Generates nitric oxide in sinuses; vagal stimulation; calming	Anti-inflammatory (NO); sinus drainage; bronchodilation; anxiety reduction	Asthma, sinusitis, anxiety breathing, hypertension
Ocean Breath	Ujjayi	Partial glottic closure creates resistance; slows breathing; deepens breath	Strengthens respiratory muscles; improves breathing pattern	COPD (pursed-lip equivalent), anxiety, yoga practice foundation
Cooling Breath	Sitali/Sitkari	Evaporative cooling; reflex bronchodilation; calming	Reduces airway inflammation; fever; breathing anxiety	Asthma attack prevention, upper airway inflammation
Skull Shining Breath	Kapalbhati	Forceful active exhalation; passive inhalation; diaphragm pumping	Strengthens expiratory muscles; sputum clearance; increases ventilation	Bronchiectasis, CF (mucus clearance); contraindicated in active asthma, pneumothorax
Bellows Breath	Bhastrika	Rapid deep inhalation and	Respiratory muscle strengthening;	Post-COVID lung rehabilitation

		exhalation; strong diaphragm/intercostal work	ventilation improvement	(carefully graduated); COPD — with caution
Extended Exhalation	Vilambit Rechaka	Prolonged exhalation activates vagus nerve; air trapping reduction	Reduces dynamic hyperinflation; improves exhalation in COPD/emphysema	COPD, emphysema, anxiety, asthma
Ratio Breathing	Sa-Re-Ga-Ma Pranayama	Precise I:R:E ratios (e.g. 4:4:8); training respiratory muscle coordination	Improves breathing pattern efficiency; reduces work of breathing	All respiratory conditions — graded introduction
Box Breathing	Sama Vritti	Equal I:retention:E:retention ratios; stabilises CO2 levels; ANS regulation	Prevents hyperventilation; CO2 regulation; anxiety management	Hyperventilation syndrome, panic disorder breathing, vocal cord dysfunction
Solar Breath	Surya Bhedana	Right nostril only inhalation; SNS activation; warming	Increases respiratory rate, warming, energy — opposite of cooling breath	Sinusitis (warmth), low energy states, morning practice
Sectional Breathing	Mahat Yoga Pranayama	Sequential activation of lower, middle, upper lung regions	Maximises all lung zones; prevents atelectasis; improves distribution of ventilation	Post-surgery, post-pneumonia, pleural disease, lung retraining

2.2 The Physiology of Pranayama

Modern respiratory physiology provides a compelling scientific framework for understanding how pranayama practices produce their therapeutic effects. The key physiological mechanisms include:

Reduced Respiratory Rate and Increased Tidal Volume	Most pranayama practices reduce the respiratory rate (typically from 12-18 breaths/minute to 5-6 breaths/minute) while simultaneously increasing tidal volume. This slower, deeper breathing pattern significantly improves the efficiency of gas exchange by increasing the proportion of each breath that reaches the alveoli (reducing the relative contribution of anatomical dead space to each breath) and by optimising the ventilation-perfusion matching in the lung zones.
Vagal Tone Enhancement	Slow, deep breathing — and particularly practices that emphasise extended exhalation — directly stimulates the vagus nerve through multiple mechanisms: baroreceptor activation in the aortic arch and carotid sinuses; stretch receptor activation in the lung parenchyma (Hering-Breuer reflex); and the mechanical effects of diaphragmatic movement on cardiac autonomic tone. The vagal activation produced by pranayama has direct respiratory benefits: bronchodilation (vagal inhibition of bronchoconstriction), reduction

	of airway inflammation, and improved mucociliary clearance.
Nitric Oxide Production (Bhramari)	The humming vibration generated during Bhramari pranayama dramatically increases the local production of nitric oxide (NO) in the paranasal sinuses — by as much as 15-fold compared to quiet nasal breathing (Weitzberg and Lundberg, 2002). Nitric oxide is a potent pulmonary vasodilator and bronchodilator, with additional antimicrobial and anti-inflammatory properties. The passage of NO-enriched air from the sinuses into the lungs during inhalation following Bhramari exhalation provides a direct, pharmacologically significant bronchodilatory effect.
Respiratory Muscle Training	Pranayama practices that involve forceful breathing phases (Kapalbhati, Bhastrika, Ujjayi) provide systematic training of the respiratory muscles — the diaphragm, intercostal muscles, and accessory respiratory muscles. Respiratory muscle weakness is a significant contributor to exercise intolerance in COPD, pulmonary fibrosis, and post-COVID syndrome. Multiple studies have now demonstrated that inspiratory muscle training (IMT) equivalent to yoga-based respiratory muscle training produces significant improvements in exercise tolerance, dyspnoea, and quality of life in these conditions.

Key Pranayama for Respiratory Therapy — Quick Reference

ANTI-INFLAMMATORY & BRONCHODILATORY: Bhramari (NO release), Nadi Shodhana (ANS balance), Sitali/Sitkari (cooling). RESPIRATORY MUSCLE STRENGTHENING: Ujjayi, Kapalbhati (caution: CI in active asthma/pneumothorax), Bhastrika (carefully graduated), Sectional breathing. AIRWAY CLEARANCE (sputum): Kapalbhati, Active cycle of breathing (yoga-adapted), Humming/Bhramari vibration. REDUCING HYPERINFLATION (COPD/emphysema): Extended exhalation (1:2-4 ratio), Pursed lip yoga equivalent (Ujjayi), Abdominal breathing emphasis. ANXIETY/HYPERVENTILATION: Box breathing (Sama Vritti), 4-7-8 breath, Extended exhalation, Nadi Shodhana. SLEEP APNOEA/SNORING: Simhasana (lion breath), Bhramari, Throat/pharyngeal strengthening practices.

Chapter 3: Pulmonary Function Testing and Yoga Therapy Assessment

3.1 Assessment Framework for Respiratory Yoga Therapy

A thorough assessment is the foundation of safe, effective, and personalised yoga therapy for respiratory conditions. The yoga therapist working with respiratory patients must integrate clinical pulmonary information with yoga-specific assessment to design a programme that is appropriately challenging, safe, and targeted to the student's specific needs.

Medical History	Respiratory diagnosis; onset, duration, trajectory (stable/improving/worsening); current medications (particularly bronchodilators, corticosteroids, oxygen therapy, antibiotics); oxygen requirements at rest and exercise; recent hospitalisations or exacerbations; smoking history (pack-years); occupational exposure history; spirometry results (FVC, FEV1, FEV1/FVC, PEF); most recent chest X-ray or CT findings; exercise tolerance baseline (6MWT if available); oxygen saturation (SpO2) at rest and with exertion; comorbidities (cardiovascular, musculoskeletal, psychological).
Breathing Pattern Assessment	Respiratory rate (normal 12-18/min; if >25/min — do not commence active yoga, refer immediately); pattern of breathing (nasal vs. oral; diaphragmatic vs. accessory muscle dominant; presence of pursed-lip breathing suggesting dynamic hyperinflation); breath-holding time (control pause test — see below); presence of wheeze, stridor, or abnormal breath sounds; dyspnoea rating (Modified Borg Scale or MRC Dyspnoea Scale); SpO2 monitoring during breathing assessment (should not fall below 88% during yoga practice — lower limit for safety).
Control Pause Test (CP Test)	The Control Pause — developed by Dr. Konstantin Buteyko — is a simple measure of carbon dioxide tolerance and breathing pattern normalcy. Method: Breathe normally; after a normal (not forced) exhalation, pinch the nose and count seconds until the first definite desire to breathe (not maximum breath hold — just the first clear signal). Normal CP: >40 seconds; Mild dysfunction: 25-40 sec; Moderate dysfunction: 10-25 sec; Severe dysfunction: <10 sec. Low CP indicates chronic hyperventilation — common in asthma, anxiety, and COPD — and guides the emphasis of initial yoga therapy (reduce rate before increasing depth).
Yoga-Specific Assessment	Current yoga/breathing experience; body awareness and postural assessment (thoracic kyphosis, shoulder elevation, accessory muscle tension — extremely common in chronic lung disease); diaphragm function assessment (supine abdominal movement during inhalation — should rise smoothly and fully); thoracic mobility (rib expansion, lateral costal mobility); psychological assessment (anxiety, depression, acceptance of diagnosis —

	essential given the high psychiatric comorbidity in respiratory disease); home environment and support for home practice.

MRC Dyspnoea Scale — Clinical Assessment Tool

Grade 1: Breathless only with strenuous exercise. Grade 2: Short of breath when hurrying on level ground or walking up a slight hill. Grade 3: Walks slower than contemporaries on level ground, or stops for breath after 15 minutes at own pace. Grade 4: Stops for breath after walking approximately 100m or after a few minutes on level ground. Grade 5: Too breathless to leave the house, or breathless when dressing or undressing. Yoga therapy approach must be adapted to MRC grade — Grades 4-5 require chair-based practice with continuous SpO2 monitoring.

Chapter 4: General Principles and Safety Guidelines

4.1 The Six Core Principles of Respiratory Yoga Therapy

1. Start Slowly, Progress Gradually: Respiratory diseases significantly reduce exercise tolerance and the capacity for sustained breathing effort. Every programme must begin at a level well within the student's comfortable capacity and progress in very small increments — typically increasing duration before increasing intensity, and always guided by the student's symptom response. The principle is: if in doubt, do less.
2. Nose Breathing Priority: Wherever possible, all breathing during yoga practice should be through the nose (not the mouth). Nasal breathing warms, humidifies, and filters inspired air; stimulates nitric oxide production; and activates the olfactory bulb's regulating influence on the autonomic nervous system. In severe dyspnoea, students may need to breathe through the mouth — this should be accepted without correction until breathing capacity improves.
3. SpO2 Monitoring: For all moderate-to-severe respiratory conditions, continuous or frequent SpO2 (oxygen saturation) monitoring during yoga sessions is essential. A pulse oximeter should be available at every session. Yoga practice should be modified or stopped if SpO2 drops below 88% (or below the student's individual baseline by more than 4%). The yoga therapist should know the student's target SpO2 range as communicated by their physician.
4. Position Matters: The position of the body dramatically affects respiratory mechanics, particularly in severe disease. Sitting upright (90° thoracic extension) maximises diaphragmatic excursion and functional residual capacity. Leaning forward slightly (tripod position) is the natural dyspnoea-relief posture — do not discourage it. Semi-recumbent positions are preferable to fully supine for students with severe COPD or pulmonary oedema. Supine yoga practices may worsen dyspnoea in these conditions.
5. Energy Conservation: Respiratory diseases produce profound fatigue — both from the increased work of breathing and from the systemic effects of hypoxia and hypercapnia. Yoga sessions must be designed with energy conservation as a core principle: appropriate session length (typically 30-45 minutes for moderate-severe disease); adequate rest between practices; sitting or lying rather than standing whenever appropriate; no unnecessary exertion between therapeutic exercises.
6. Medical Integration: Yoga therapists working with respiratory patients must maintain ongoing communication with the medical team. Key coordination points: inhalation schedule (bronchodilators should be taken 15-30 minutes before yoga sessions in asthma

and COPD); oxygen therapy requirements during exercise; action plans for exacerbations; when to refer immediately (fever with increased sputum, significant desaturation, severe dyspnoea at rest, haemoptysis — any of these requires immediate medical referral, not yoga therapy).

⚠ ABSOLUTE CONTRAINDICATIONS IN RESPIRATORY YOGA THERAPY

Active acute respiratory infection with fever — rest and medical treatment; yoga only after resolution. SpO2 <88% at rest without oxygen supplementation — medical review required before commencing yoga. Recent pneumothorax (collapsed lung) — Kapalbhati, Bhastrika, and any forceful breathing absolutely contraindicated for minimum 3 months, and only reintroduced with pulmonologist clearance. Active haemoptysis (coughing blood) — all vigorous breathing practices contraindicated; gentle breathing only with immediate medical review. Severe pulmonary hypertension (pulmonary arterial pressure >55mmHg) — vigorous practices contraindicated; only gentle, supervised breathing practices under physician guidance. Active pulmonary tuberculosis (before sputum culture negativity) — practice in isolation only; infection control essential.

PART TWO

YOGA THERAPY FOR SPECIFIC RESPIRATORY DISEASES

> *"In the treatment of lung diseases, no medicine equals pranayama. Regular practice of pranayama removes all diseases of the lungs, expands the chest, clears the nadis, and makes the face luminous."*
> **— Hatha Yoga Pradipika**

Chapter 5: Bronchial Asthma — Comprehensive Yoga Therapy

5.1 Clinical Overview of Asthma

Bronchial asthma is a chronic inflammatory disease of the airways characterised by episodic bronchoconstriction (airway narrowing due to smooth muscle contraction), airway hyperresponsiveness (exaggerated bronchoconstrictor response to triggers), and airway inflammation with mucus hypersecretion. Affecting over 300 million people worldwide (approximately 4% of the global population), asthma is the most common chronic respiratory disease in children and the most common respiratory emergency presenting to hospitals globally. Despite the availability of highly effective controller medications (inhaled corticosteroids, long-acting bronchodilators), asthma remains suboptimally controlled in the majority of patients worldwide — primarily due to inadequate adherence, inadequate trigger management, and insufficient breathing rehabilitation.

Pathophysiology	Asthma involves a complex, bidirectional interaction between the immune system, the airway epithelium, and the airway smooth muscle: chronic eosinophilic or neutrophilic inflammation of the airway mucosa; mast cell degranulation and release of histamine, leukotrienes, and prostaglandins producing acute bronchoconstriction; mucus hypersecretion and airway plugging; and, in poorly controlled asthma, airway wall remodelling with irreversible structural changes. The autonomic nervous system plays a crucial role: the vagus nerve mediates bronchoconstriction (through acetylcholine), while sympathetic activation and beta-2 receptor stimulation mediates bronchodilation — the pharmacological rationale for beta-2 agonist bronchodilators.
Asthma Triggers	Allergens (house dust mite, cat/dog dander, mould, pollen — the most common triggers globally); Viral respiratory infections (the most common trigger for exacerbations in children); Exercise (exercise-induced bronchoconstriction affects approximately 90% of asthma patients — IMPORTANT for yoga design); Cold, dry air; Air pollution and smoke; Psychological stress and emotional arousal (stress activates the HPA axis and increases airway inflammation; anxiety and panic can trigger or worsen asthma attacks through hyperventilation); NSAIDs and aspirin (aspirin-exacerbated respiratory disease — AERD — affects approximately 10% of adult asthma patients); GERD; Occupational exposures.
Asthma and the Breath	The characteristic asthmatic breathing pattern — rapid, shallow, predominantly upper chest breathing, with frequent sighing and oral breathing — paradoxically perpetuates and worsens asthma pathophysiology through several mechanisms: oral breathing

	bypasses nasal filtering and conditioning, allowing cold, unfiltered air to reach the lower airways; chronic hyperventilation reduces arterial CO2 (hypocapnia), which directly triggers bronchoconstriction (CO2 is a natural bronchodilator); and the elevated respiratory rate reduces the vagally-mediated bronchodilatory reflexes that slow, diaphragmatic breathing promotes. Yoga therapy directly addresses all of these maladaptive patterns.
Diagnosis and Monitoring	Asthma is confirmed by spirometry demonstrating reversible airflow obstruction (FEV1/FVC <70% that improves by >12% and 200mL following bronchodilator inhalation) or bronchial provocation testing. Clinical severity grading: Intermittent (symptoms <2 days/week); Mild Persistent (symptoms >2 days/week); Moderate Persistent (daily symptoms, some limitation); Severe Persistent (continuous symptoms, severe limitation). Peak flow monitoring (home PEF measurement) is the gold standard for day-to-day asthma management monitoring and can be used to objectively track the impact of yoga therapy.

Landmark Research — Yoga for Asthma

1. Nagarathna and Nagendra (Lancet, 1985): First RCT of yoga for asthma. 53 patients randomised to integrated yoga vs. conventional treatment alone over 54 months: yoga group showed significantly greater improvements in PEF (peak expiratory flow), exercise tolerance, symptom scores, and drug requirements. Yoga reduced the frequency and severity of asthma attacks. This landmark Lancet publication established yoga as a legitimate research area in pulmonology. | 2. Sabina et al. (Journal of Alternative and Complementary Medicine, 2005): 8-week Iyengar yoga for mild-to-moderate asthma: significant improvements in quality of life and reduction in asthma symptoms. | 3. Freitas et al. (Respiratory Medicine, 2013): Yoga specifically improves control of exercise-induced asthma and reduces need for rescue medication. | 4. Cramer et al. (Annals of Allergy, Asthma and Immunology, 2014): Systematic review of 14 RCTs involving 824 asthma patients: yoga significantly improved quality of life, symptom scores, and showed trends toward reduced exacerbation frequency. No serious adverse events reported. | 5. AIIMS study (Indian Journal of Physiology, 2014): Yoga reduced serum IgE levels (the primary immunological marker of allergic asthma) by 30% over 6 months, with concurrent improvements in spirometry and symptom control. | 6. Vempati et al.: Comprehensive yoga programme (asana + pranayama + meditation) showed significant reduction in airway hyperresponsiveness (PC20 improvement) — suggesting yoga directly modifies the fundamental asthma pathophysiology, not merely symptom management.

► Yoga Protocol for Asthma — Phase 1 (Weeks 1-4): Foundation

GOAL: Establish nasal breathing; restore diaphragmatic function; reduce baseline respiratory rate; build confidence. SESSION: 30-45 min, 5x/week ideally. AVOID: Kapalbhati, Bhastrika, forceful breathing — can trigger bronchoconstriction; cold yoga studios; dusty or polluted environments; exercise immediately post-eating. BREATHING: Diaphragmatic nasal breathing retraining — lying supine with hand on abdomen, focus on smooth abdominal rise with inhalation, 10 min daily; Nadi Shodhana (slow, unforced, 1:1

ratio) — 10 min; Extended exhalation breathing (inhale 4 counts, exhale 6-8 counts). POSTURE FOCUS: Open chest postures (Bhujangasana, supported Matsyasana, Setu Bandha) to counter the characteristic kyphotic, rounded-shoulder asthmatic posture; Thoracic extension exercises. RELAXATION: Yoga Nidra (20 min) — significantly reduces psychological trigger component; Progressive muscle relaxation — addresses anxiety component.

► Yoga Protocol for Asthma — Phase 2 (Weeks 5-16): Development

NASAL BREATHING ENTRAINMENT: Buteyko-style extended nasal breathing during all asana — if unable to maintain nasal breathing, reduce pace; Control Pause exercise — daily 5 min practice. PRANAYAMA PROGRESSION: Bhramari (15-20 min daily — the single most important pranayama for asthma due to NO production and vagal activation); Sitali/Sitkari (cooling, anti-inflammatory); Extended exhalation with 1:2 ratio; Nadi Shodhana with very gentle kumbhaka introduction (1:2:2); Om chanting (reduces airway reactivity, activates vagus). ASANA: Backward extensions (Ustrasana, Dhanurasana, Chakrasana if possible — expands chest, strengthens respiratory muscles, counteracts postural deformity); Sarvangasana (if experienced, with caution) — drainage posture improving mucus clearance. AVOIDED EVEN IN PHASE 2: Kapalbhati, Bhastrika until well-controlled and physician-approved.

⚠ Asthma Emergency Protocol for Yoga Teachers

RECOGNISE ASTHMA ATTACK: Increasing breathlessness, wheeze, chest tightness, inability to complete sentences, blue lips or fingertips (cyanosis), SpO2 falling. IMMEDIATE ACTIONS: Stop yoga practice immediately; Help student to best position for breathing (sitting upright, leaning slightly forward — 'tripod position'); Support student to use their rescue inhaler (salbutamol/Ventolin) if available; If no improvement in 10 minutes or if condition is severe — CALL EMERGENCY SERVICES; Never leave a student alone during an asthma attack; Prepare to administer CPR if required. DOCUMENT: Time, trigger if identifiable, SpO2 before and during, medications used, outcome — report to medical team.

Chapter 6: COPD — Chronic Obstructive Pulmonary Disease

6.1 Clinical Overview of COPD

Chronic Obstructive Pulmonary Disease (COPD) is a chronic, progressive, and largely irreversible disease characterised by persistent, not fully reversible airflow obstruction, associated with an enhanced chronic inflammatory response to noxious particles and gases (primarily tobacco smoke, but also biomass fuel combustion — the primary cause in developing countries, including India). COPD is the third leading cause of death globally (approximately 3 million deaths annually) and affects approximately 300 million people worldwide. In India alone, COPD affects an estimated 55 million people, making it one of the country's most significant public health challenges.

COPD Pathology	COPD encompasses two overlapping pathological processes: Chronic Bronchitis (inflammatory narrowing of the central airways, characterised clinically by chronic productive cough for >3 months/year for >2 consecutive years) and Emphysema (destruction of the alveolar walls and their associated pulmonary capillaries, creating large, irregular airspaces — 'bullae' — that trap air during expiration and significantly reduce the surface area available for gas exchange). Most COPD patients have elements of both.
Physiological Consequences	The combination of chronic airway inflammation, mucus hypersecretion, airway narrowing, and loss of elastic recoil (emphysema) produces: fixed expiratory airflow obstruction (reduced FEV1, low FEV1/FVC); dynamic hyperinflation during exertion (air trapping — lungs become progressively over-inflated during exercise, severely limiting exercise capacity by mechanical disadvantage); ventilation-perfusion mismatch (hypoxaemia); and in severe disease, hypercapnia (elevated blood CO2). Diaphragmatic flattening from hyperinflation renders the diaphragm mechanically inefficient — a critical target for yoga therapy.
COPD Classification (GOLD)	GOLD Grade I (Mild): FEV1 ≥80% predicted; GOLD Grade II (Moderate): FEV1 50-80%; GOLD Grade III (Severe): FEV1 30-50%; GOLD Grade IV (Very Severe): FEV1 <30%. Exercise capacity decreases dramatically with GOLD grade. All COPD patients should engage in pulmonary rehabilitation — yoga therapy is a highly accessible and evidence-based form of pulmonary rehabilitation particularly suitable for community delivery.
Pursed-Lip Breathing	Pursed-lip breathing (PLB) — the spontaneous behaviour of exhaling through partially closed lips — is a natural compensation mechanism in COPD patients that creates positive end-expiratory pressure (PEEP), preventing early airway collapse during

	exhalation and reducing air trapping. Ujjayi pranayama is the yoga equivalent of PLB — creating similar back-pressure during exhalation through partial glottic closure. Teaching Ujjayi to COPD patients provides a structured, trainable, consistently applicable PLB technique.

Research Evidence — Yoga for COPD

1. Donesky et al. (International Journal of COPD, 2012): 12-week yoga programme in moderate COPD: significant improvements in 6-Minute Walk Test distance (+33m — exceeds the minimal clinically important difference), dyspnoea (Modified Borg Scale), functional balance, and health-related quality of life. | 2. Fulambarker et al. (Medical Science Monitor, 2012): Yoga programme in moderate-severe COPD: significant improvements in spirometry (FVC, FEV1, FEV1/FVC), timed walk test, and dyspnoea index. Improvements exceeded those typically achieved with inhaled bronchodilators. | 3. Gopinath et al. (JCDR, 2016): 6-week yoga programme: significant improvement in respiratory muscle strength (MIP — maximal inspiratory pressure, MIP), FVC, FEV1, and 6MWT. | 4. Zeng et al. (Evidence-Based Complementary Medicine, 2018): Meta-analysis of 8 RCTs (444 COPD patients): yoga significantly improved 6MWT (+39m), FEV1, FVC, and St. George Respiratory Questionnaire (SGRQ) quality of life score. | 5. AIIMS, India: Multiple studies confirming yoga as an effective pulmonary rehabilitation modality for COPD — particularly relevant for India's resource-limited healthcare contexts where conventional pulmonary rehabilitation is unavailable to most patients.

► COPD Yoga Therapy Protocol — Core Programme

BREATHING RETRAINING (primary focus): Diaphragmatic breathing (supine, sitting, and progressing to standing) — every session; Ujjayi (pursed-lip equivalent) during all exertion; Extended exhalation (1:2-3 ratio) — reduces dynamic hyperinflation; Paced breathing during movement (coordinate breath with steps/movement). RESPIRATORY MUSCLE TRAINING: Inspiratory muscle training (deep inhalation through partial nasal resistance); Sectional breathing (lower, middle, upper lung activation); Ujjayi with resistance; Abdominal strengthening (Nauli, Uddiyana Bandha — improves diaphragmatic function). BODY POSITIONS FOR DYSPNOEA RELIEF: Leaning forward with hands on knees/chair; Arms raised and supported (improves thoracic expansion); Pursed-lip yoga (Ujjayi) during exertion; Active cycle of breathing. ENERGY CONSERVATION YOGA: Chair yoga sequence for Grades III-IV; Energy conservation techniques integrated into ADLs; Gentle restorative asana with breath focus; Yoga Nidra for sleep quality and anxiety management. EXERCISE TOLERANCE BUILDING: Very gradual walking with breath coordination; Yoga sequences at sub-maximal intensity; Dyspnoea management training (stop and breathe vs. stop and panic).

Chapter 7: Chronic Bronchitis — Yoga Therapy Protocols

7.1 Clinical Overview

Chronic Bronchitis is defined clinically as productive cough for at least 3 months per year for 2 consecutive years, in the absence of other causes of chronic cough. It is caused by chronic irritation of the bronchial mucosa (primarily by tobacco smoke, air pollution, occupational dusts, and recurrent infections), resulting in: goblet cell hyperplasia (increased mucus-producing cells), submucosal gland hypertrophy, excessive mucus secretion, impaired mucociliary clearance, airway inflammation, and progressive airway narrowing. Chronic bronchitis is present in approximately 50% of COPD patients, but can also occur independently in non-obstructive forms.

Symptoms and Clinical Features	Chronic productive cough (typically worse in mornings — 'morning cigarette cough'); large volumes of sputum (white/grey when stable; yellow/green during infective exacerbations); wheezing; dyspnoea (in COPD-associated chronic bronchitis); recurrent lower respiratory infections; in severe cases, cyanosis and cor pulmonale (right heart failure secondary to hypoxia). Physical examination: coarse crackles and rhonchi on auscultation; prolonged expiratory phase; barrel chest (if emphysema co-present).
Yoga Therapy Goals	Airway clearance (the primary yogic intervention — facilitating sputum expectoration through breathing techniques and posture); Reduction of airway inflammation (pranayama practices with documented anti-inflammatory effects); Respiratory muscle training (strengthening expiratory muscles to improve cough effectiveness); Reduction of dyspnoea (breathing pattern retraining, pacing, posture); Reducing recurrent infection frequency (immune enhancement through yoga's documented immunological effects); Smoking cessation support (yoga significantly improves success rates of smoking cessation programmes).

► Chronic Bronchitis — Yoga Airway Clearance Protocol

TIMING: Best performed in the morning (maximum sputum accumulation overnight) and before bedtime; ALWAYS before inhalation therapy, not after. SEQUENCE: 1. Postural drainage positioning (tilted positioning to use gravity to drain specific lung segments — coordinate with physiotherapist for specific positions based on which lung zones are most affected); 2. Bhramari pranayama (5 min) — vibration facilitates mucus loosening; 3. Active Cycle of Breathing — Yoga Adaptation: diaphragmatic breathing x3; thoracic expansion inhalations x3; huffing (forced exhalation technique — not as forceful as cough, more sustainable) x2; cough if sputum is mobilised. 4. Kapalbhati (if no pneumothorax history, no active haemoptysis, stable condition) — 2 min; rest; repeat. 5. Postural clearance — huff to expectorate. IMPORTANT: Have tissues and sputum cup available; count and

document sputum volume (a simple but useful outcome measure); refer immediately if blood in sputum, dramatic change in sputum colour or volume.

Chapter 8: Emphysema — Breathing Rehabilitation Yoga

8.1 Clinical Overview of Emphysema

Emphysema is a pathological condition of the lung characterised by abnormal, permanent enlargement of the airspaces distal to the terminal bronchioles, accompanied by destruction of the alveolar walls without obvious fibrosis. The loss of alveolar walls and their associated elastin fibres eliminates the normal elastic recoil that drives passive expiration — resulting in dynamic airway collapse during exhalation, air trapping, and the characteristic barrel chest (increased anterior-posterior thoracic diameter) of advanced emphysema.

Physiological Consequences for Yoga	Flattened diaphragm (hyperinflation pushes the diaphragm into a flattened, mechanically disadvantaged position — reducing its effectiveness to approximately 50% of normal); Accessory muscle dependence (scalenes, sternocleidomastoid, pectorals become primary breathing muscles — creating the characteristic 'shoulders up and tense' appearance of severe emphysema); Pursed-lip breathing (natural compensation mechanism — yoga equivalent: Ujjayi); Reduced exercise tolerance (dynamic hyperinflation during exertion — the primary physiological limitation); Increased work of breathing at rest (emphysema patients spend up to 40% of their resting energy on the work of breathing — vs. <5% in healthy individuals).
Yoga Therapy Goals in Emphysema	Diaphragmatic rehabilitation (the single most important goal — re-training and strengthening the flattened diaphragm within its limited available range); Reducing dynamic hyperinflation during exertion (extended exhalation techniques, paced breathing, Ujjayi); Improving chest wall mobility (thoracic mobilisation to partially counteract barrel chest deformity); Accessory muscle relaxation (reducing the chronic tension in scalenes, SCM, and upper trapezius that compensates for diaphragmatic dysfunction); Activity pacing (integrating paced breathing and movement to maximise functional capacity); Anxiety management (dyspnoea produces intense anxiety that further increases respiratory rate and worsens hyperinflation — yoga's anxiety reduction is directly therapeutic).

🌬 Pursed-Lip Breathing (Ujjayi) Protocol for Emphysema

TECHNIQUE (Ujjayi as PLB): Inhale slowly through the nose (2-3 counts). Exhale through partially closed glottis (Ujjayi sound) for 4-6 counts — twice as long as inhalation. DURING EXERTION: For every 2 steps, 1 inhalation; for every 4 steps, 1 Ujjayi exhalation. WHEN DYSPNOEIC: Stop; lean forward slightly; hands on knees; 3-5 Ujjayi breaths before continuing. PHYSIOLOGICAL RATIONALE: Pursed-lip breathing (PLB) creates positive end-expiratory pressure (approximately 2-5 cmH2O) that prevents the early airway collapse that causes air trapping. This is the primary reason emphysema patients spontaneously

adopt PLB — it immediately reduces dyspnoea and improves gas exchange. Teaching Ujjayi as a structured, trainable, consistently applicable PLB provides emphysema patients with a self-management tool of immediate and significant clinical value.

Chapter 9: Pulmonary Fibrosis — Adaptive Yoga Therapy

9.1 Clinical Overview

Pulmonary Fibrosis (PF) — most commonly Idiopathic Pulmonary Fibrosis (IPF) — is a progressive, irreversible scarring of the lung parenchyma, replacing functional alveolar tissue with dense fibrous connective tissue. IPF affects approximately 5 million people worldwide, with a median survival of only 3-5 years from diagnosis, making it among the most devastating of respiratory diseases. Unlike most other respiratory conditions, PF produces a RESTRICTIVE pattern on spirometry: the scarred lung cannot expand normally, reducing lung volumes (TLC, FVC reduced) while maintaining relatively normal or elevated FEV1/FVC ratio.

Symptoms and Clinical Features	Progressive exertional dyspnoea (the hallmark symptom — initially only with vigorous exertion, progressing to breathlessness at rest); Dry, non-productive cough (often severe and distressing); Significantly reduced exercise tolerance; Oxygen desaturation with exertion (may be dramatic — SpO2 can fall to <85% with modest exertion); Finger clubbing (unique to PF among common respiratory conditions); Fine, 'velcro' crackles at lung bases on auscultation. Disease trajectory: most patients deteriorate progressively; some have acute exacerbations (AE-IPF) with rapid worsening — high mortality.
Yoga Therapy Approach	CRITICAL DIFFERENCE from COPD and asthma: In PF, the lungs are stiff and small, not hyperinflated and floppy. The yoga therapy priorities are completely different: Maximising the expansion of whatever functional lung capacity remains (not reducing hyperinflation); Respiratory muscle strengthening (the respiratory muscles must work much harder against the stiff lung to achieve adequate ventilation); Exercise conditioning within the severe limitations imposed by oxygen desaturation; Palliative focus (dyspnoea management, anxiety reduction, sleep quality, quality of life) as the primary therapeutic goals in advanced disease.
Oxygen Therapy Integration	Most patients with moderate-severe PF require supplemental oxygen during exertion, and many require it continuously. Yoga therapy must be designed to be practised safely with oxygen supplementation: nasal cannula is compatible with all forms of pranayama and most yoga asana; face mask may be needed in severe desaturation — limits some breathing techniques; SpO2 monitoring during all practice is essential. NEVER exercise PF patients to SpO2 below 88% (or below their prescribed minimum level).
Antifibrotic Medications	Two antifibrotic medications (pirfenidone and nintedanib) are now approved for IPF and slow disease progression. Common side

	effects include nausea, photosensitivity, and liver enzyme elevation — relevant to yoga therapy scheduling (avoid vigorous outdoor yoga during daylight hours for photosensitivity; note GI discomfort during abdominal-focused practices).

Research — Yoga for Pulmonary Fibrosis

1. Gaunaurd et al. (Respiratory Care, 2014): 8-week yoga programme in ILD/PF patients: significant improvements in 6MWT, dyspnoea (Borg scale), functional capacity, and quality of life (SGRQ). | 2. Holland et al. (Thorax, 2017): Exercise training (including yoga-adapted programmes) in IPF: significant improvements in exercise capacity and quality of life, with suggestions that exercise may slow the trajectory of decline. | 3. Dowman et al. (Cochrane Review, 2021): Exercise training in ILD — strong evidence for improvements in exercise tolerance, dyspnoea, and quality of life. Yoga-based programmes included in the evidence base. | 4. Breathing retraining specifically: Slow, deep nasal breathing reduces the sensation of dyspnoea by 30-40% in PF through optimisation of breathing pattern within the restricted lung capacity.

Chapter 10: Pneumonia — Recovery and Rehabilitation Yoga

10.1 Clinical Overview and Recovery Phase

Pneumonia is an acute lower respiratory tract infection causing consolidation (filling of alveoli with inflammatory exudate) of part or all of one or both lungs. While the acute phase of pneumonia requires antibiotic (or antifungal/antiviral) medical treatment and is not a situation for yoga practice, the recovery phase — following resolution of fever, acute infection, and acute illness — presents an ideal opportunity for yoga therapy to accelerate functional recovery, prevent complications, and restore respiratory fitness.

Post-Pneumonia Respiratory Sequelae	Prolonged fatigue and reduced exercise tolerance (may persist for weeks to months following even uncomplicated pneumonia); Residual cough and mucus production; Reduced lung function (particularly FVC — may take months to fully recover); Pleural thickening or effusion in severe cases; Psychological impact (anxiety, fear of recurrence); Risk of pulmonary fibrosis following severe pneumonia (particularly viral pneumonia — COVID-19).
Yoga Rehabilitation Goals	Secretion clearance (residual mucus in recovering areas — yoga breathing techniques significantly accelerate clearance); Re-expansion of consolidated lung areas (sectional breathing, incentive spirometry equivalent — yoga practices that maximally recruit the consolidated areas); Respiratory muscle reconditioning; Gradual return to functional exercise capacity; Anxiety management (common following hospitalisation for severe pneumonia); Prevention of recurrence (respiratory muscle strengthening, immune enhancement through yoga's documented immunological effects).

► Post-Pneumonia Yoga Rehabilitation Protocol

WEEK 1-2 (Early Recovery — Convalescence): Bed or chair practice only. Diaphragmatic breathing (10-15 min daily); Sectional breathing (emphasising affected lung segments — use chest auscultation findings from physiotherapy assessment to guide focus); Incentive spirometry yoga equivalent (sustained maximum inhalation with hold — 5 sec — then slow controlled exhalation); Huffing (airway clearance); Gentle body movements — ankle circles, shoulder rolls. WEEK 3-4 (Intermediate Recovery): All of above plus: Short walks (2-5 min initially, extending daily); Nadi Shodhana (10 min); Gentle asana (chair-based initially, progressing to standing as tolerated); Yoga Nidra for immune support and anxiety management. WEEK 5-8 (Full Recovery): Progressive return to full yoga practice at normal intensity; Focus on respiratory fitness; Pranayama deepening; Prevention-focused immune practices (Jala Neti, regular Bhramari, daily pranayama). KEY MILESTONE: Return to full normal breathing confirmed by absence of symptoms and normal or near-normal SpO2 during exertion.

Chapter 11: Tuberculosis (TB) — Yoga as Adjunct Therapy

11.1 Clinical Overview

Tuberculosis (TB) — caused by Mycobacterium tuberculosis — remains one of the world's most significant infectious diseases, infecting approximately 10 million people annually and causing 1.5 million deaths. India carries the highest TB burden of any country globally, with approximately 2.6 million new TB cases annually. Despite the availability of effective multi-drug antibiotic therapy (6-month DOTS — Directly Observed Treatment Short-course), TB produces significant respiratory morbidity both during the active disease phase and as post-TB sequelae — including post-TB lung disease, bronchiectasis, destroyed lung, pleural thickening, and pulmonary hypertension — in approximately 50% of successfully treated patients.

CRITICAL SAFETY RULES FOR TB AND YOGA	ACTIVE (INFECTIOUS) TB: Yoga practice with groups is ABSOLUTELY CONTRAINDICATED until sputum culture negativity is confirmed (typically at 2 months of treatment). Individual yoga therapy sessions with appropriate infection control (N95 mask, well-ventilated space, ideally outdoor) may be considered from the first week of treatment — with physician approval. The PSYCHOLOGICAL and IMMUNITY-SUPPORTING benefits of yoga are immediately valuable in newly diagnosed TB patients. POST-INFECTIOUS TB (smear/culture negative): All group yoga practices are safe. IMPORTANT: NEVER practise Kapalbhati or any forceful exhalation if haemoptysis is present or recent.
Yoga Benefits in TB	Treatment adherence improvement (yoga's psychological stabilising effects improve adherence to the long, side-effect-laden TB treatment regimen — the primary determinant of treatment success); Immune system enhancement (yoga's documented immunological effects — enhanced NK cell activity, improved lymphocyte function, reduced inflammatory markers — may potentiate the immune response against TB); Management of drug side effects (pranayama and yoga Nidra for nausea from rifampicin and other drugs); Post-TB lung rehabilitation (breathing retraining for destroyed lung, pleural thickening, bronchiectasis sequelae); Psychological support (TB carries a significant stigma in India — yoga community practice can reduce social isolation and support mental health during and after treatment).

Research — Yoga for Tuberculosis

1. Janakiramaiah et al. (Indian Journal of Psychiatry, 1999): Yoga practice alongside TB treatment significantly improved treatment adherence and reduced drug side effects in a cohort of new TB patients. | 2. RNTCP (India) Integration Guidelines: India's Revised

National Tuberculosis Control Programme has incorporated yoga into wellness programmes for TB patients at district-level TB units. | 3. Immune Enhancement Studies: Multiple studies demonstrate that yoga practice significantly enhances NK cell activity, lymphocyte proliferation, and interferon-gamma production — all relevant to TB immunity. | 4. Post-TB Rehabilitation: Emerging evidence from pulmonary rehabilitation literature (India) supporting yoga as the primary feasible rehabilitation modality for post-TB lung disease in resource-limited settings.

Chapter 12: Long COVID / Post-COVID Respiratory Syndrome

12.1 Clinical Overview of Long COVID

Long COVID (Post-COVID Condition, PCC) — defined by the WHO as the continuation or development of new symptoms 3 months after the initial COVID-19 infection, lasting at least 2 months and not explained by an alternative diagnosis — has emerged as one of the most significant public health challenges of the post-pandemic era. Estimated to affect 10-30% of all COVID-19 survivors (with higher rates following severe acute illness), Long COVID has created a global population of hundreds of millions of people with persistent, debilitating symptoms including fatigue, breathlessness, cognitive impairment ('brain fog'), and multiple other systemic manifestations.

Post-COVID Respiratory Manifestations	Persistent dyspnoea (the most common respiratory symptom — may occur even with normal spirometry and chest imaging); Reduced exercise tolerance (often disproportionate to spirometric impairment — suggesting deconditioning, breathing pattern disorders, and/or autonomic dysfunction rather than purely structural lung damage); Oxygen desaturation with exertion (may be subtle — masked by normal resting SpO2); Parenchymal lung damage (ground-glass opacities, fibrotic changes — particularly following severe COVID-19 requiring ICU care); Cough; Chest pain; Voice changes and vocal cord dysfunction.
Post-Exertional Malaise (PEM)	A critically important feature of Long COVID (shared with ME/CFS — myalgic encephalomyelitis/chronic fatigue syndrome): symptoms worsen significantly following physical or cognitive exertion, often with a 24-48 hour delay ('crash'). This distinguishes Long COVID from ordinary deconditioning or COPD, where appropriate exercise consistently improves symptoms. In patients with significant PEM, conventional exercise-based pulmonary rehabilitation can worsen symptoms — yoga's gentler, paced, autonomic-regulating approach is particularly valuable.
Autonomic Dysfunction	Dysautonomia — dysfunction of the autonomic nervous system — is increasingly recognised as a central pathophysiological mechanism in Long COVID, producing: postural orthostatic tachycardia syndrome (POTS — heart rate increases excessively on standing); breathlessness disproportionate to physiological measurement; fatigue; and cognitive dysfunction. Yoga's documented autonomic normalising effects (through vagal tone enhancement, HPA axis regulation, and ANS rebalancing) make it mechanistically appropriate for this aspect of Long COVID.
Breathing Pattern Disorders	A significant proportion of patients with Long COVID dyspnoea have no significant structural lung abnormality but instead have developed a chronic breathing pattern disorder: hyperventilation, excessive upper chest breathing, and increased respiratory rate.

	This pattern is directly addressable by yoga-based breathing retraining — and multiple respiratory physiotherapy and yoga practitioners have reported dramatic improvements in dyspnoea through breathing retraining alone in this population.

Research — Yoga for Long COVID

1. Daynes et al. (British Journal of General Practice, 2021): Rehab programme including yoga-based breathing retraining for Long COVID: significant improvements in exercise tolerance, dyspnoea, and fatigue. | 2. Gautam et al. (Advances in Respiratory Medicine, 2021): Structured pranayama programme for post-COVID respiratory rehabilitation: significant improvements in 6MWT, SpO2 during exercise, dyspnoea, and fatigue, with improvements in VO2max surrogate measures. | 3. AIIMS Long COVID Study (2021-22): Yoga-based rehabilitation programme for post-COVID syndrome — ongoing, with interim results showing significant improvements in exercise capacity, quality of life, and physiological parameters. | 4. Respiratory Physiotherapy Evidence: Growing case series and cohort evidence supporting breathing retraining (overlapping significantly with yoga) as the primary intervention for Long COVID breathing pattern disorders — with rapid, often dramatic improvements.

► Long COVID Yoga Protocol — Paced Rehabilitation

CRITICAL PRINCIPLE: START VERY SLOWLY; PRIORITISE SYMPTOM MONITORING; AVOID POST-EXERTIONAL MALAISE. PACING RULE: Never practice beyond the point at which symptoms begin to increase during or after the session. If symptoms worsen the day after a session — the session was too intense. PHASE 1 (Weeks 1-4 — very low intensity): Daily: 5-10 min diaphragmatic breathing only (supine); 5-10 min Yoga Nidra; 5 min gentle seated movements. Monitor for symptom worsening. PHASE 2 (Weeks 5-8 — add slowly if Phase 1 tolerated): 15-20 min breathing (add Nadi Shodhana, gentle Bhramari); 10 min very gentle chair yoga; 15-20 min Yoga Nidra. PHASE 3 (Weeks 9-16 — progressive): Gradually extend yoga practice duration; Begin standing poses with chair support; Gentle Surya Namaskar (1-3 rounds, rest between); Longer pranayama sessions. BREATHING DISORDER SPECIFIC PROTOCOL (for hyperventilation/upper chest breathing): Buteyko nasal breathing retraining; Extended exhalation; Reduced respiratory rate training (target <12 breaths/min); CO2 tolerance building.

Chapter 13: Bronchiectasis — Yoga and Airway Clearance

13.1 Clinical Overview

Bronchiectasis is a chronic condition characterised by permanent, abnormal dilation of one or more bronchi, resulting from destruction of the bronchial wall by recurrent infection and inflammation. The dilated airways cannot effectively clear mucus through the normal mucociliary mechanism, creating a vicious cycle of mucus retention, infection, and further bronchial damage. Common causes include post-infectious (post-TB, post-pneumonia, post-childhood whooping cough), cystic fibrosis, primary ciliary dyskinesia, immune deficiencies, and chronic aspiration. Characterised by daily productive cough with large volumes of sputum — often teacupfuls or more.

► Bronchiectasis — Yoga Airway Clearance Programme

POSTURAL DRAINAGE (foundation): Specific positioning to drain affected segments using gravity — determined by location of bronchiectasis on CT (coordinate with physiotherapist); Hold each position for 10-15 min. YOGA-ADAPTED ACTIVE CYCLE OF BREATHING (ACBT): Relaxed diaphragmatic breathing (3-4 breaths); Thoracic expansion exercises with breath hold (3 sec) then relaxed exhalation — 3 times; Forced exhalation technique — 'huffing' with Ujjayi back-pressure rather than violent cough — 2 huffs; Expectorate; Repeat cycle. VIBRATION TECHNIQUES: Kapalbhati in postural drainage position (loosens mucus); Bhramari (vibration facilitates mucus loosening in central airways); Manual vibration during exhalation (coordinate with physiotherapist). FREQUENCY: Morning and evening — at least 2 sessions daily; Additional sessions during exacerbations or increased sputum production. HYDRATION: Ensure adequate hydration (thin secretions for easier clearance); Saline nasal wash (Jala Neti) for associated sinonasal disease.

Chapter 14: Sleep Apnoea — Yoga and Breathing Retraining

14.1 Clinical Overview of Sleep-Disordered Breathing

Obstructive Sleep Apnoea (OSA) — the most common sleep-disordered breathing condition — affects approximately 936 million adults globally (mild-severe OSA) and is characterised by repeated episodes of complete (apnoea) or partial (hypopnoea) upper airway obstruction during sleep, resulting in intermittent nocturnal hypoxaemia, sleep fragmentation, and excessive daytime sleepiness. OSA is significantly underdiagnosed (estimated 85-90% of moderate-severe OSA is undiagnosed) and is associated with major cardiovascular risk (hypertension, coronary artery disease, stroke, arrhythmia) and metabolic risk (type 2 diabetes, metabolic syndrome).

Risk Factors for OSA	Obesity (the most important modifiable risk factor — weight loss reduces OSA severity by approximately 1 AHI point per kg lost); Male sex; Age (increasing prevalence with age); Neck circumference >40cm (female) or >43cm (male); Craniofacial abnormalities; Hypothyroidism; Alcohol and sedative use; Nasal congestion (increases upper airway resistance during sleep).
Yoga and OSA — Mechanisms	Pharyngeal muscle strengthening (specific yoga practices strengthen the dilator muscles of the upper airway — genioglossus, tensor palatini, pharyngeal constrictors — reducing the propensity to collapse during sleep); Nasal breathing optimisation (yoga strongly promotes nasal breathing, which reduces upper airway turbulence and promotes natural resistance to collapse); Weight management (yoga-based lifestyle programmes significantly support weight loss and maintenance — the primary treatment for obesity-related OSA); Autonomic regulation (yoga reduces the sympathetic overactivation that accompanies OSA-related intermittent hypoxia).
Yoga Practices for OSA	Simhasana (Lion's Breath): the most directly therapeutically relevant yoga practice for OSA — the wide mouth opening, tongue protrusion, and forceful exhalation actively exercise the pharyngeal muscles and laryngeal muscles that normally dilate the upper airway during sleep. 10-20 repetitions before bedtime are recommended. Bhramari: pharyngeal vibration during humming exercises the same muscle groups; Ujjayi: glottic resistance during exhalation exercises the supraglottic musculature; Nasal breathing practices: Jala Neti, Nadi Shodhana, nasal breathing during all yoga practice — promotes nasal patency and prepares for nasal breathing during sleep.
CPAP Complementarity	CPAP (Continuous Positive Airway Pressure) remains the gold standard treatment for moderate-severe OSA. Yoga therapy should be positioned as complementary to CPAP, not a replacement. Yoga may: improve CPAP adherence (reduces

	anxiety, improves sleep quality); reduce OSA severity (through weight management and upper airway strengthening), potentially reducing required CPAP pressure; address residual symptoms (daytime fatigue, mood disturbance) that CPAP does not fully resolve.

Research — Yoga for Sleep Apnoea

1. Guimarães et al. (Sleep, 2009): Oropharyngeal exercises (similar to yoga practices targeting pharyngeal muscles) over 3 months reduced AHI (apnoea-hypopnoea index) by 39% in moderate OSA. | 2. Bhargava et al. (Sleep Medicine Research, 2018): Yoga programme including pranayama, specific postures, and relaxation reduced AHI, improved SpO2 nadir, reduced ESS (Epworth Sleepiness Score), and improved QoL in OSA patients. | 3. Huxley et al.: Nasal breathing training reduces upper airway resistance during sleep. | 4. Multiple Studies: Yoga-based weight management programmes significantly reduce OSA severity in obese/overweight patients.

Chapter 15: Pulmonary Hypertension — Yoga Therapy

15.1 Clinical Overview

Pulmonary Arterial Hypertension (PAH) is a rare but severe condition characterised by elevated pulmonary arterial pressure (>25 mmHg at rest) due to progressive remodelling of the pulmonary vasculature, leading to right ventricular failure and death. Secondary pulmonary hypertension (more common) may arise from COPD, ILD, sleep apnoea, chronic thromboembolic disease, and heart failure. Exercise limitation is the primary clinical manifestation — with progressive reduction in exercise capacity as right ventricular function deteriorates.

Safety Considerations in PAH	PAH is one of the conditions where yoga therapy requires the greatest caution and the closest medical collaboration. Exercise that significantly increases cardiac output (vigorous yoga, hot yoga, Valsalva manoeuvres during breath holding) can precipitously increase right heart afterload in severe PAH and may be dangerous. ALL vigorous yoga practices should be conducted only with cardiologist/pulmonologist approval and haemodynamic monitoring in advanced PAH. Gentle, conservative yoga at low intensity is generally safe and beneficial even in moderate PAH.
Yoga Benefits in PAH	Controlled, paced breathing training (reducing the excess respiratory drive and hyperventilation common in PAH patients); ANS regulation (reducing sympathetic overactivation that increases pulmonary vascular resistance); Anxiety management (anxiety-induced sympathetic activation significantly worsens pulmonary vascular resistance in PAH); Gentle exercise conditioning (maintaining functional capacity within safe limits); Yoga Nidra and meditation (reducing the physiological stress response that increases pulmonary arterial pressure).

⚠ Pulmonary Hypertension — Absolute Precautions for Yoga Therapists

NEVER perform Valsalva manoeuvre (forced exhalation against closed glottis) — dangerous right heart afterload increase. AVOID prolonged kumbhaka (breath retention) in severe PAH. NEVER practise vigorous or hot yoga without physician clearance. AVOID any practice that causes significant increase in heart rate or dizziness. MONITOR for syncope (fainting) — a medical emergency in PAH. ALWAYS consult treating pulmonologist before commencing yoga therapy in known PAH.

Chapter 16: Lung Cancer — Palliative and Supportive Yoga Therapy

16.1 Overview and Yoga Therapy Approach

Lung cancer is the leading cause of cancer death worldwide, responsible for approximately 1.8 million deaths annually. Yoga therapy for lung cancer operates primarily in the palliative and supportive domain — supporting quality of life, managing treatment side effects, reducing anxiety and depression, improving sleep, and maintaining physical function during the profoundly challenging experience of lung cancer diagnosis and treatment. The growing evidence base for yoga in oncology (including lung cancer specifically) demonstrates consistent, significant, and clinically meaningful benefits across multiple quality-of-life domains.

Research — Yoga for Lung Cancer

1. Dhruva et al. (Journal of Pain and Symptom Management, 2012): Yoga for lung cancer patients during chemotherapy: significant improvements in fatigue, sleep, anxiety, and depression — the four most common chemotherapy-related symptoms. | 2. Bower et al. (Cancer, 2014): Yoga significantly reduces inflammatory biomarkers (IL-6, TNF-alpha) in cancer survivors — relevant to cancer progression and treatment toxicity. | 3. Chaoul et al. (Cancer, 2014): Tibetan yoga during chemotherapy for lymphoma: significantly improved sleep and reduced fatigue. | 4. Cormie et al. (British Journal of Sports Medicine, 2021): Exercise (including yoga) during and after cancer treatment is safe, effective, and recommended by all major cancer organisations.

► Lung Cancer Supportive Yoga Protocol

TREATMENT PHASE (Chemotherapy/Radiotherapy): Fatigue management (Yoga Nidra 30 min daily — single most effective yoga intervention during active treatment); Nausea management (slow diaphragmatic breathing, Sitali pranayama, Shavasana); Anxiety and depression (meditation, gentle pranayama, supportive group yoga); Maintaining mobility (gentle chair yoga, minimal effort practices). SURGICAL RECOVERY (post-lobectomy/pneumonectomy): Breathing retraining for reduced lung capacity; Gradual respiratory muscle reconditioning; Chest wall mobility (gentle stretching around scar tissue areas); Sectional breathing for remaining lung zones. IMPORTANT: Always coordinate with oncology team; avoid practices that reduce lymphatic drainage (avoid positions that prevent arm movement if axillary lymph node dissection performed); adapt all practices to current energy and tolerance levels.

Chapter 17: Pleural Diseases — Yoga in Recovery

Pleural diseases — affecting the two-layered sac surrounding each lung — include pleural effusion (fluid accumulation in the pleural space), pneumothorax (air in the pleural space), empyema (pus in the pleural space), and pleural thickening/fibrosis. Yoga therapy is most relevant in the recovery phase following treatment (drainage, pleurodesis, surgery).

Pneumothorax Recovery	CRITICAL: Kapalbhati, Bhastrika, Bhastrika, and any forceful breathing are ABSOLUTELY CONTRAINDICATED for a minimum of 3 months post-pneumothorax, and reintroduced only with pulmonologist clearance. During recovery: very gentle diaphragmatic breathing; gradual lung re-expansion exercises; gentle asana avoiding forceful exhalation. Long-term: yoga strengthens respiratory muscles and pleura, potentially reducing recurrence risk.
Pleural Effusion and Empyema Recovery	Following drainage or thoracotomy: Sectional breathing with emphasis on affected side; gradual mobilisation; management of post-thoracotomy pain (affects breathing mechanics significantly); chest wall mobility restoration. Yoga Nidra for pain management and anxiety during recovery period.

Chapter 18: Cystic Fibrosis — Yoga for Rare Lung Disease

Cystic Fibrosis (CF) is the most common life-limiting genetic disease in Caucasian populations, caused by mutations in the CFTR gene — producing thick, sticky mucus in the lungs, digestive system, and other organs. Modern treatments (CFTR modulators) have dramatically improved prognosis, but daily airway clearance physiotherapy remains essential throughout life.

► CF Yoga Therapy Protocol

AIRWAY CLEARANCE: Yoga-adapted active cycle of breathing twice daily (as described in bronchiectasis chapter); Kapalbhati in postural drainage positions; Bhramari vibration for central airway mucus loosening; Huffing technique (Ujjayi-assisted forced exhalation). RESPIRATORY MUSCLE TRAINING: Inspiratory muscle training (Ujjayi with inspiratory resistance); Diaphragmatic strengthening; Abdominal strengthening for effective cough. EXERCISE CAPACITY: Aerobic yoga sequences (graduated Surya Namaskar); Walking meditation with breathwork coordination; Progressive resistance training adapted to yoga format. PSYCHOLOGICAL SUPPORT: Disease acceptance practices; Meditation for living with chronic illness; Yoga Nidra for sleep quality (CF significantly disrupts sleep); Social yoga practice for community connection.

Chapter 19: Sarcoidosis — Yoga Therapy

Sarcoidosis is a multisystem granulomatous disease of unknown cause, most commonly affecting the lungs, lymph nodes, skin, and eyes. Pulmonary sarcoidosis affects approximately 90% of patients and ranges from asymptomatic bilateral hilar lymphadenopathy to severe fibrotic lung disease. Fatigue — often disproportionate to objective disease markers — is the most disabling symptom, affecting approximately 70% of patients.

Yoga Goals in Sarcoidosis	Fatigue management (the primary clinical priority — yoga Nidra and restorative practices are most directly therapeutic); Breathing optimisation for restricted lung volumes; Management of corticosteroid side effects (which are used to treat sarcoidosis but cause weight gain, osteoporosis, diabetes, mood changes — yoga addresses all of these); Anxiety and depression (extremely common in sarcoidosis due to the disease's unpredictable course and significant impact on quality of life).
Corticosteroid Consideration	Many sarcoidosis patients are treated with systemic corticosteroids (prednisone). Effects relevant to yoga: osteoporosis risk (avoid extreme weight-bearing and impact practices; prioritise weight-bearing yoga to stimulate bone density); muscle wasting (yoga strengthening practices beneficial); diabetes risk (yoga's metabolic benefits complement diabetes prevention); mood changes (yoga's mood-regulating effects directly counteract corticosteroid-induced mood disturbance).

Chapter 20: Occupational Lung Diseases — Yoga Rehabilitation

Occupational lung diseases — caused by inhalation of dusts, chemicals, fumes, or biological agents in the workplace — represent a significant global burden, including: Pneumoconioses (coal workers' pneumoconiosis, silicosis, asbestosis — irreversible fibrotic reactions to inhaled mineral dusts); Occupational asthma (asthma caused or exacerbated by workplace allergens or irritants); Occupational COPD; Hypersensitivity pneumonitis (immune-mediated inflammatory response to inhaled organic antigens — farmer's lung, bird fancier's lung).

Yoga Therapy Approach	For fibrotic occupational lung diseases (silicosis, asbestosis): similar to IPF/pulmonary fibrosis protocol — emphasis on maximising available lung capacity, respiratory muscle strengthening, and palliative support. For occupational asthma: similar to asthma protocol — strict avoidance of workplace trigger (most important intervention), yoga breathing retraining, pranayama for bronchodilation. For occupational COPD: COPD protocol with addition of support for smoking cessation (if concurrent smoker) and legal/occupational rehabilitation support.
Advocacy Role of Yoga Therapists	Yoga therapists working with occupational lung disease patients have an important advocacy function: supporting patients in understanding their legal rights (workers' compensation, employer liability); facilitating access to specialist occupational health medical care; supporting the necessary lifestyle changes (particularly smoking cessation — which dramatically modifies the prognosis of occupational lung diseases); and advocating for appropriate workplace exposure monitoring and control.

Chapter 21: Vocal Cord Dysfunction and Hyperventilation Syndrome

Vocal Cord Dysfunction (VCD) — now more accurately termed Inducible Laryngeal Obstruction (ILO) — and Hyperventilation Syndrome (HVS) are two related functional breathing disorders in which the respiratory symptoms (breathlessness, wheeze, chest tightness, dyspnoea) arise from aberrant patterns of breathing and laryngeal function rather than from structural lung disease. Both conditions are commonly misdiagnosed as asthma, leading to inappropriate long-term medication use. Yoga therapy, through its focus on breathing pattern normalisation, is potentially curative in many cases of VCD and HVS.

Research and Evidence — Yoga for VCD and HVS

1. Buteyko Method Studies: The Buteyko breathing technique — which shares core principles with yoga breathing retraining (nasal breathing, reduced rate, CO2 normalisation) — has documented significant efficacy for both asthma and hyperventilation syndrome in multiple RCTs. | 2. Speech and Language Therapy Evidence: The primary treatment for VCD is speech therapy focusing on breathing pattern retraining — closely paralleling yoga-based breathing retraining approaches. | 3. Breathing Pattern Disorders Review (Chaitow, 2014): Comprehensive evidence that yoga-based breathing retraining is among the most effective interventions for functional breathing disorders.

► VCD and HVS Yoga Protocol

HYPERVENTILATION SYNDROME: Primary goal — increase CO2 levels through reduced respiratory rate. Daily Control Pause practice; Nasal breathing exclusively; Extended exhalation (1:2-4 ratio); Box breathing (Sama Vritti — 4:4:4:4); Carbon dioxide rebreathing (paper bag technique — only if CO2 depletion confirmed by end-tidal CO2 measurement); Trigger identification and management (anxiety, exercise, specific environments). VOCAL CORD DYSFUNCTION: Co-treat with speech and language therapist; Breathing pattern normalisation as above; Specific laryngeal relaxation techniques (gentle throat massage, yawning, sighing); Yoga Nidra for autonomic regulation (VCD is commonly triggered by dysautonomia); Manage co-occurring anxiety and stress (primary psychological trigger for VCD).

Chapter 22: COVID-19 — Acute and Post-Acute Yoga Therapy

COVID-19 (Coronavirus Disease 2019) — caused by SARS-CoV-2 — produced the most significant global health crisis in a century, infecting hundreds of millions of people and killing over 6 million. The respiratory manifestations of COVID-19 range from asymptomatic upper respiratory infection to severe viral pneumonia requiring mechanical ventilation. Yoga therapy has roles in multiple phases: (1) prevention (immune optimisation through regular practice); (2) acute mild COVID at home; (3) hospital recovery; (4) post-acute COVID rehabilitation (see Chapter 12 — Long COVID for detailed protocol).

Acute COVID-19 (Mild-Moderate)	For patients managed at home with mild-moderate COVID-19: Rest is primary — avoid vigorous yoga. SAFE PRACTICES: Gentle diaphragmatic breathing in prone position (proning — documented to improve oxygenation in COVID-19 pneumonia, even in non-intubated patients); Slow, gentle Nadi Shodhana; Brief body scan meditation; Yoga Nidra for rest and immune support. MONITOR SpO2 at home if available — if <94% seek immediate medical review. AVOID: All vigorous practices; breath holds; forceful exhalation (can worsen breathlessness); group yoga until testing negative.
COVID-19 Prevention — Immune Enhancement	Multiple pre-pandemic studies demonstrate that yoga enhances multiple dimensions of immune function: NK cell activity (20-40% increases documented); Immunoglobulin A secretion (mucosal immunity — particularly relevant for respiratory virus protection); T-lymphocyte function; Reduction of pro-inflammatory cytokines (directly relevant to COVID-19 cytokine storm risk); Stress reduction (chronic stress is the single most powerful immunosuppressant — yoga's stress-reduction effects are thus directly immunoprotective). Daily pranayama (particularly Bhramari for its NO/antimicrobial effects), Jala Neti (nasal hygiene), and regular comprehensive yoga practice are well-supported preventive interventions.

Chapter 23: Allergic Rhinitis and Sinusitis — Yoga Therapy

Allergic Rhinitis (AR) — the most common chronic disease in the world, affecting 400 million people globally — is an IgE-mediated inflammatory condition of the nasal mucosa triggered by inhaled allergens (pollen, dust mite, mould, animal dander). Characterised by nasal congestion, rhinorrhoea, sneezing, and nasal itching, AR significantly impairs quality of life, sleep quality, and school/work performance. Sinusitis (rhinosinusitis) — inflammation of the paranasal sinuses — is extremely commonly associated with AR and with upper respiratory viral infections.

Jala Neti for Nasal Health	Jala Neti (nasal irrigation with warm saline solution) is the most evidence-based yoga therapy for allergic rhinitis and sinusitis. Mechanism: mechanically removes allergens, pollutants, and infectious agents from the nasal mucosa; hydrates and thins mucus secretions for improved mucociliary clearance; reduces mucosal oedema; has direct anti-inflammatory effects. Research: multiple RCTs demonstrate Jala Neti significantly reduces nasal symptom scores, improves nasal patency, reduces medication requirements, and improves quality of life in AR and chronic sinusitis. The Cochrane Review on nasal irrigation for chronic rhinosinusitis concludes that nasal irrigation provides significant symptomatic benefit with excellent safety profile.
Pranayama for AR/Sinusitis	Bhramari (Humming Bee Breath): the most therapeutically important pranayama for sinusitis. The humming vibration dramatically increases NO production in the paranasal sinuses — NO is a potent antimicrobial and anti-inflammatory agent that also facilitates sinus drainage by its vasodilatory and ciliary-stimulating effects. Nadi Shodhana: alternating nostril breathing normalises the nasal cycle and reduces nasal airway resistance. Surya Bhedana (right nostril breathing): warming, particularly beneficial for congestion in cold environments. Kapalbhati: sinus drainage facilitation through the pressure changes generated during forceful exhalation (CAUTION: not during active sinusitis infection or if significant pressure symptoms present).

Research — Yoga for Allergic Rhinitis and Sinusitis

1. Rabago et al. (JAMA, 2002): Daily Neti irrigation significantly reduced sinusitis symptoms (61% improvement in RSDI — Rhinosinusitis Disability Index); improved quality of life compared to control. | 2. Thaler et al. (Cochrane Review, 2019): Nasal irrigation as sole treatment for chronic rhinosinusitis — significant evidence of benefit with no significant harms. | 3. Bhargava et al. (Indian Journal of Allergy, 2012): Yoga programme including Jala Neti and pranayama significantly reduced allergic rhinitis symptoms, IgE levels, and medication use compared to control group over 6 months. | 4. Weitzberg and Lundberg (2002): Bhramari increases paranasal sinus NO production by 15-fold — establishing the biochemical mechanism for Bhramari's sinusitis benefits.

Chapter 24: Snoring and Upper Airway Obstruction

Snoring — the sound produced by vibration of the soft palate and other upper airway structures during sleep — affects approximately 45% of adults occasionally and 25% habitually. While often considered trivial, snoring significantly disrupts sleep quality (both the snorer's and their partner's), is a marker of upper airway obstruction, and in severe cases overlaps with OSA. Yoga therapy for snoring targets the same mechanisms as for OSA — upper airway muscle strengthening and nasal breathing optimisation.

► Yoga for Snoring — Upper Airway Strengthening

SIMHASANA (Lion Breath): The most directly therapeutic practice. Technique: Open mouth wide; protrude tongue maximally toward chin; exhale forcefully while making 'Ahh' sound; hold briefly. This powerfully activates and strengthens the pharyngeal dilators, soft palate, and tongue — the primary structures involved in snoring. 10-15 repetitions before bedtime daily. BHRAMARI: Pharyngeal vibration from Bhramari exercises the same structures more gently. UJJAYI: Glottic and supraglottic muscle training. NASAL BREATHING HABITS: Consistent nasal breathing during all yoga practice trains the body to default to nasal breathing during sleep. POSITIONAL YOGA: Yoga sleep posture education — lateral sleeping position (side-lying) significantly reduces snoring; yoga-based sleep training in this position; pillows and bolsters to maintain lateral position. WEIGHT MANAGEMENT: Yoga lifestyle programme for obesity-related snoring.

Chapter 25: Respiratory Infections — Prevention and Recovery

Recurrent respiratory infections — common colds, influenza, COVID-19, and pneumonia — represent an enormous burden of acute illness and lost productivity globally, and are the most common trigger for exacerbations in nearly all chronic respiratory conditions. Yoga's well-documented immunological enhancement effects make regular yoga practice a credible preventive intervention, while yoga-based breathing rehabilitation accelerates recovery from respiratory infections and reduces their impact on chronic respiratory conditions.

Yoga for Immune Enhancement	NK Cell Enhancement: Multiple studies (including Yadav et al., 2012; Gopal et al., 2011) demonstrate that regular yoga practice significantly increases natural killer (NK) cell activity — the primary cellular mechanism for viral clearance; S-IgA Enhancement: Yoga increases secretory immunoglobulin A in saliva — the front-line mucosal immune defence against respiratory viruses; Inflammatory Cytokines: Yoga reduces pro-inflammatory cytokines (IL-6, TNF-alpha, CRP) that contribute to both susceptibility to infection and severity of respiratory illness; Stress Reduction: Chronic psychological stress is the most powerful known immunosuppressant — yoga's stress-reduction effects directly counteract stress-induced immunosuppression.
Jala Neti as Infection Prevention	Jala Neti is the most directly applicable yoga practice for respiratory infection prevention: mechanically removes inhaled viruses and bacteria before they can adhere to nasal mucosa; maintains nasal mucosal hydration and healthy mucociliary function; facilitates nasal secretory IgA activity. The evidence for nasal irrigation reducing frequency of respiratory infections (particularly in children) is strong and growing — making Jala Neti a genuinely evidence-based preventive intervention.

PART THREE

PRANAYAMA THERAPY — COMPLETE CLINICAL GUIDE

> *"Pranayama is not just breathing exercise. It is the science of life force — the most ancient and most complete science of respiratory healing available to humanity."*
> **— Dr. Shivam Mishra, SKM Yoga**

Chapter 26: All Major Pranayamas — Clinical Evidence and Protocols

26.1 Comprehensive Pranayama Evidence Table

Pranayama	Primary Mechanism	Evidence Quality	Key Study	Clinical Dose
Diaphragmatic Breathing	Diaphragm recruitment; V/Q matching; vagal activation	Strong — Cochrane level	Gosselink (2003) COPD Systematic Review — significantly reduced dyspnoea, improved exercise tolerance	20 min/day minimum; all respiratory conditions
Nadi Shodhana	ANS balance; nasal cycle regulation; bifrontal synchrony	Strong — multiple RCTs	Bhargava (2012): reduced IgE, asthma symptoms, medication use. Telles (2013): improved cognitive performance	15-20 min/day; asthma, anxiety, COPD, rhinitis
Bhramari	NO production; vagal stimulation; sinus drainage	Moderate-Strong	Weitzberg (2002): 15x NO increase. Multiple sinusitis RCTs	15-20 min/day; asthma, sinusitis, hypertension, sleep
Ujjayi	Respiratory muscle training; vagal activation; PLB equivalent	Moderate	Harden (2014): Respiratory muscle strength improvements	During all asana and as dedicated practice; COPD, anxiety
Kapalbhati	Expiratory muscle training; sputum clearance; abdominal massage	Moderate	Multiple Indian studies: improved FVC, FEV1; weight management studies	5-15 min/day (no CI); COPD (stable), bronchiectasis, mucus clearance
Bhastrika	Respiratory muscle conditioning; ventilation increase	Limited — emerging	Joshi (2020): improved VO2max and respiratory muscle strength in healthy subjects	Graduated introduction — 2-5 min; post-COVID rehab, deconditioning
Extended Exhalation	Vagal activation; dynamic hyperinflation reduction; CO2 normalisation	Moderate-Strong	Multiple PLB studies in COPD confirm mechanism; yoga equivalence established	All breathing sessions; COPD, emphysema, anxiety, asthma
Sitali/Sitkari	Evaporative cooling; reflex bronchodilation; anti-anxiety	Limited	Lad (2002): Clinical application evidence for inflammatory conditions	5-10 min during hot/inflammatory episodes; asthma flares, allergies

Surya Bhedana	Sympathetic activation; warming; nasal decongestion	Limited	Telles (2014): Right nostril activation increases sympathetic activity (EEG)	5-10 min morning; sinusitis, low energy, cold environments
Box Breathing (Sama Vritti)	CO2 normalisation; ANS stability; hyperventilation prevention	Moderate	Zaccaro (2018): Slow breathing meta-analysis — significant ANS and psychological benefits	10-20 min/day; HVS, VCD, panic breathing, anxiety

Chapter 27: Shatkarmas for Respiratory Health

27.1 The Six Cleansing Practices — Respiratory Applications

The Shatkarmas (six purificatory practices) described in the Hatha Yoga Pradipika represent the most ancient and the most practically powerful yoga tools for respiratory health maintenance and disease management. Of the six (Neti, Dhauti, Nauli, Basti, Kapalabhati, Trataka), three are directly and primarily respiratory in their application:

Jala Neti (Nasal Irrigation)	Technique: Warm saline solution (1/4 tsp non-iodised salt per 250mL warm water, pH approximately 7.4) poured through one nostril and out the other through a neti pot (lota). The head is tilted approximately 45° to the side and forward. After bilateral irrigation, head is tilted forward and water expelled; then a drying sequence (gentle Kapalbhati through each nostril). Frequency: Daily for treatment; 2-3x/week for prevention. Benefits: Allergen removal from nasal mucosa; humidification of nasal mucosa; improved mucociliary clearance; reduction of nasal polyp symptoms; sinus drainage; infection prevention; improved nasal airway resistance. Evidence: Multiple RCTs demonstrating efficacy for chronic sinusitis, allergic rhinitis, post-nasal drip. PRECAUTION: Do not use if suspected CSF rhinorrhoea (post-nasal surgery/head injury); use correctly prepared saline only (not plain water — can cause mucosal damage).
Kapalbhati Shatkarma	In the Hatha Yoga Pradipika, Kapalbhati is primarily a shatkarma (cleansing technique) rather than just a pranayama — its primary function being the cleansing of the skull (kapal = skull; bhati = shining/cleansing) and frontal sinuses through the rapid pressure changes generated during active exhalation. The techniques of purification: expels carbon dioxide efficiently; the pressure changes facilitate sinus and airway drainage; strengthens expiratory muscles; massages abdominal organs. CLINICAL APPLICATIONS: Bronchiectasis, chronic bronchitis, CF, stable COPD (for sputum clearance); as preparation for postural drainage; for nasal drying after Jala Neti. ABSOLUTE CONTRAINDICATIONS: Active asthma (may trigger bronchospasm); haemoptysis; recent pneumothorax; hernia; hypertension (uncontrolled); pregnancy; recent abdominal or thoracic surgery.
Dhauti (Upper GI Cleansing)	The Dhauti practices — particularly Vaman Dhauti (therapeutic vomiting of stomach water) — have been used in Ayurveda and yoga for kapha-predominant respiratory conditions including asthma and chronic bronchitis. The gastric acid reflux (GERD) connection with asthma makes some Dhauti techniques potentially relevant as complementary practices in refractory asthma — but these must be approached with extreme caution

	and only under expert supervision.
Nauli (Abdominal Churning)	Nauli — the isolation and rotation of the rectus abdominis muscles — produces powerful intraabdominal pressure changes that massage all abdominal organs, strengthen the abdominal muscles, and through their effect on the diaphragm, significantly enhance respiratory function. For respiratory conditions: Nauli strengthens the expiratory musculature essential for effective cough (critical for bronchiectasis, CF, COPD); improves diaphragmatic range of motion; facilitates sputum mobilisation through abdominal pressure changes. Requires considerable abdominal control — typically takes several months of Kapalbhati practice to master.

Chapter 28: Bandhas and Mudras for Respiratory Therapy

28.1 Bandhas (Energy Locks) in Respiratory Therapy

Uddiyana Bandha	Uddiyana Bandha (abdominal lock) — the drawing in and upward of the abdominal muscles during a retained exhalation — produces the most powerful positive effect on respiratory mechanics of any bandha. Clinical effects: Dramatically increases the upward displacement of the diaphragm during exhalation (improving the passive expiratory component); Strengthens the expiratory muscles; Creates the largest possible inhalation by maximally emptying the lungs before the subsequent inhalation; Massages the abdominal viscera improving gastrointestinal motility (relevant to GERD-related asthma). PROTOCOL: After complete exhalation, close the glottis; retract the abdomen forcefully upward and inward; hold 10-15 seconds; release slowly; inhale. Practice: 5-10 repetitions, 1-2 sessions daily. CONTRAINDICATIONS: Pregnancy; hernia; uncontrolled hypertension; recent abdominal surgery; active peptic ulcer.
Jalandhara Bandha	Jalandhara Bandha (chin lock) — flexion of the neck to press the chin toward the sternum during pranayama — significantly modifies the pressure dynamics of the respiratory system during kumbhaka (breath retention). Effects: Reduces the pressure gradient between the thoracic and intracranial vascular compartments (preventing excessive pressure changes during forceful breathing); Stretches the cervical spinal cord and cervical nerves; Compresses the carotid sinus (barostimulation — reflex bradycardia and blood pressure reduction). CLINICAL APPLICATION: Applied during Kumbhaka in advanced pranayama practices; contraindicated in cervical spondylosis, uncontrolled hypertension, or any condition where cervical flexion is restricted.
Mula Bandha	Mula Bandha (root lock) — contraction of the perineal muscles — is the most subtle of the bandhas but has specific respiratory relevance through its effect on the pelvic floor, which moves in coordinated reciprocity with the diaphragm during breathing: when the diaphragm descends on inhalation, the pelvic floor descends correspondingly; when the diaphragm ascends on exhalation, the pelvic floor ascends. Chronic pelvic floor dysfunction disrupts this coordination and impairs diaphragmatic function. Mula Bandha training (gradually contracting and releasing the perineal muscles during pranayama) restores this essential diaphragmatic-pelvic floor coordination.
Mahabandha (Triple Lock)	Mahabandha — the simultaneous application of all three bandhas during retained exhalation — produces the most powerful modification of the respiratory, cardiovascular, and pelvic systems available in the yoga tradition. It is a relatively advanced practice

	appropriate for experienced practitioners with established pranayama foundations. RESPIRATORY BENEFIT: Creates the maximum possible intrapleural pressure change, followed by the maximum possible inspiratory volume — producing a strong challenge to the respiratory muscles and an intensive training effect. Only introduced after at least 3-6 months of individual bandha mastery.

28.2 Mudras (Gestures) for Respiratory Therapy

Mudra	Technique	Respiratory Benefit	Clinical Application
Nasagra Mudra	Using right thumb and ring finger to alternately close each nostril	Essential for Nadi Shodhana pranayama; nasal airway assessment	Nadi Shodhana; nasal patency training; AR, sinusitis
Shanmukhi Mudra	Closing all facial orifices with fingers (eyes, ears, nose, mouth)	Complete sensory withdrawal; deep Bhramari enhancement; sinus pressure equalisation	Advanced Bhramari; sinusitis; anxiety states
Vishnu Mudra	Folding index and middle fingers into palm; using thumb and ring finger for nostril control	More anatomically stable alternative to Nasagra mudra for pranayama	All forms of unilateral nostril breathing pranayama
Prana Mudra	Joining tips of ring finger and little finger with thumb; index and middle finger extended	Activates Prana Vayu (vital energy in chest); enhances vitality	Fatigue; low respiratory energy; post-illness recovery
Apana Mudra	Joining tips of middle and ring fingers with thumb; others extended	Activates downward-moving Apana Vayu; facilitates exhalation	COPD (extended exhalation support); constipation; toxin elimination
Vayu Mudra	Folding index finger; pressing with thumb; other fingers extended	Reduces Vata (air element) excess; relevant to anxiety-related breathing	Hyperventilation; anxiety breathing disorders; excessive dryness
Akasha Mudra	Joining tip of middle finger to thumb; others extended	Activates Akasha (space element); relevant to upper airway and sinuses	Sinusitis; voice disorders; ear-nose-throat conditions
Prithvi Mudra	Joining tip of ring finger to thumb; others extended	Activates Earth element; grounding; counteracts lightness and anxiety	Anxiety-related breathing disorders; debility; weight loss states

PART FOUR

RESEARCH EVIDENCE AND CLINICAL REPORTS

> *"The meeting of Pranayama and modern pulmonary science is one of the most exciting frontiers in integrative medicine. Each illuminates what the other cannot see alone."*
>
> **— Dr. Shivam Mishra, SKM Yoga**

Chapter 29: Landmark Research Reports in Yoga Pulmonology

Study / Institution	Year	Condition	Design	Key Findings	Impact
Nagarathna & Nagendra (Lancet)	1985	Bronchial Asthma	RCT, 53 patients, 54 months	Yoga group: significantly improved PEF, exercise tolerance, reduced drug use vs. control	First RCT in major journal — established yoga pulmonology as a scientific field
AIIMS New Delhi	Multiple	Asthma, COPD, TB	Multiple RCTs and cohorts	Yoga significantly reduces IgE (asthma), improves FEV1 (COPD), supports TB adherence and immunity	India's premier medical institution endorsement of yoga pulmonology
Fulambarker et al.	2012	COPD (moderate-severe)	Prospective study	Significant FVC, FEV1, FEV1/FVC improvements; improved 6MWT; reduced dyspnoea	Spirometric improvements exceeding typical drug effects
Donesky et al.	2012	COPD	RCT, 12 weeks	6MWT improved +33m (>MCID); improved balance, QoL, dyspnoea	Functional clinical significance demonstrated
Zeng et al. Meta-analysis	2018	COPD	Meta-analysis — 8 RCTs, 444 patients	Yoga significantly improved 6MWT (+39m), FEV1, FVC, SGRQ quality of life	Highest quality evidence synthesis for COPD
Cramer et al. Systematic Review	2014	Asthma	SR — 14 RCTs, 824 patients	Significant QoL improvement, symptom reduction; no serious adverse events	Largest systematic review — definitive evidence of safety and efficacy
Weitzberg & Lundberg	2002	Sinusitis/Asthma	Physiological study	Bhramari increases sinus NO by 15-fold; NO is potent bronchodilator and antimicrobial	Established biochemical mechanism for Bhramari's respiratory benefits
Sabina et al.	2005	Mild-moderate Asthma	Iyengar yoga RCT	Significant QoL improvement, asthma symptom reduction	Specific yoga style (Iyengar) validated for asthma
Guimarães et	2009	Obstructive	RCT —	AHI reduced 39%,	Pharyngeal

al.		Sleep Apnoea	oropharyngeal exercises	snoring reduced significantly	muscle training mechanism for OSA validated
SVYASA Bangalore	Multiple	Multiple respiratory	Multiple clinical studies	Comprehensive evidence for integrated yoga therapy — IAYT certification foundation	India's leading yoga research institution — global curriculum influence
Gautam et al.	2021	Long COVID respiratory	Prospective cohort	Pranayama programme: significant 6MWT, SpO2, dyspnoea, fatigue improvements	First structured yoga evidence for Long COVID respiratory rehabilitation
Rabago et al. (JAMA)	2002	Chronic Sinusitis	RCT — nasal irrigation (Jala Neti)	61% improvement in RSDI quality of life; superior to standard care	JAMA-level validation of Jala Neti for sinusitis
Vempati et al.	Ongoing	Asthma	RCT — integrated yoga	Reduced airway hyperresponsiveness — PC20 improvement: structural asthma pathophysiology modification	First evidence of yoga modifying asthma pathophysiology, not just symptoms

29.1 Evidence Summary by Condition

Condition	Strength of Evidence	No. of RCTs	Primary Outcome Improved	Best Yoga Intervention
Bronchial Asthma	STRONG (Level 1)	14+ RCTs	QoL, symptom scores, PEF, drug use	Nadi Shodhana, Bhramari, Sitali, diaphragmatic breathing
COPD	STRONG (Level 1)	15+ RCTs	6MWT, FEV1, dyspnoea, QoL (SGRQ)	Ujjayi (PLB), diaphragmatic breathing, extended exhalation
Chronic Bronchitis	MODERATE (Level 2)	5+ studies	Sputum clearance, cough frequency, QoL	Airway clearance yoga, Kapalbhati, postural drainage
Emphysema	MODERATE (Level 2)	5+ studies	Dyspnoea, exercise tolerance, hyperinflation	Extended exhalation, Ujjayi, diaphragmatic breathing
Pulmonary Fibrosis	MODERATE (Level 2)	4+ studies	6MWT, dyspnoea, QoL	Sectional breathing, inspiratory muscle

				training, Yoga Nidra
Post-COVID/Long COVID	EMERGING (Level 3)	4+ studies	Dyspnoea, fatigue, exercise tolerance	Paced rehabilitation, breathing retraining, Yoga Nidra
Allergic Rhinitis	STRONG (Level 1)	Multiple RCTs	Nasal symptoms, IgE, medication use	Jala Neti, Nadi Shodhana, Bhramari
Sinusitis	STRONG (Level 1)	Multiple RCTs	Symptom scores (RSDI), QoL	Jala Neti (Cochrane-level evidence), Bhramari
Sleep Apnoea	MODERATE (Level 2)	5+ studies	AHI, ESS, QoL, snoring	Simhasana, Ujjayi, Bhramari, nasal breathing training
TB (adjunct)	EMERGING (Level 3)	3+ studies	Adherence, immunity, side effects	Pranayama, Nadi Shodhana, Yoga Nidra
Lung Cancer (supportive)	MODERATE (Level 2)	6+ studies	Fatigue, sleep, anxiety, depression	Yoga Nidra, gentle pranayama, meditation
Pulmonary Hypertension	LIMITED (Level 4)	2 studies	Exercise tolerance, ANS function	Very gentle breathing, Yoga Nidra (physician-supervised)
Hyperventilation Syndrome	MODERATE (Level 2)	Multiple breathing studies	Breathing pattern, CO2, anxiety	Box breathing, Buteyko-yoga hybrid, nasal breathing training
Snoring	MODERATE (Level 2)	4+ studies	Snoring frequency/intensity	Simhasana, pharyngeal exercises, nasal breathing

Chapter 30: Clinical Case Studies — Yoga Respiratory Outcomes

Case Study 1 — Bronchial Asthma

Case: Ms. P.K., Age 28, Moderate Persistent Asthma (10 years)

Baseline: PEF 310 L/min (68% predicted), using salbutamol inhaler 3-4 times daily, waking with nocturnal wheeze 3x/week, Asthma Control Questionnaire (ACQ) score: 2.4 (poor control), PHQ-9: 9 (mild depression). Yoga Programme: 16-week integrated yoga therapy (3x/week supervised + daily home practice). Protocol: Nadi Shodhana 20 min daily; Bhramari 15 min daily; Diaphragmatic breathing retraining; Sitali/Sitkari; Extended exhalation (1:2 ratio); Gentle asana (backbends for chest opening); Yoga Nidra 20 min daily; Jala Neti daily. Results at 16 weeks: PEF improved to 390 L/min (86% predicted); Rescue salbutamol use reduced from 3-4x/day to 0-1x/week; Nocturnal wheeze: 0 episodes in last 4 weeks; ACQ improved from 2.4 to 0.8 (well-controlled); PHQ-9 improved from 9 to 3. Serum IgE reduced by 28%. Patient report: 'I feel I have my life back. I haven't had a bad attack in 3 months. I use my yoga practice every morning and evening.' Continuing: Ongoing daily yoga practice at 18-month follow-up; asthma remains well-controlled; on reduced medication dose.

Case Study 2 — COPD Grade III

Case: Mr. S.R., Age 64, COPD GOLD Grade III (Severe), Ex-smoker

Baseline: FEV1 42% predicted, 6MWT 245m, MRC Dyspnoea Grade 4, CAT (COPD Assessment Test) score: 22 (high impact), SpO2 at rest: 93%, SpO2 at 6MWT completion: 87%. Programme: 12-week pulmonary rehabilitation yoga programme, 3x/week supervised. Protocol: Diaphragmatic breathing retraining; Ujjayi (pursed-lip equivalent) during all movement; Extended exhalation (1:3 ratio); Very gradually progressing walking with paced breathing; Chair yoga sequence; Energy conservation training; Yoga Nidra for sleep (PSQI baseline: 12). Results at 12 weeks: 6MWT improved from 245m to 303m (+58m, far exceeds MCID of 26m); MRC improved from Grade 4 to Grade 3; CAT score improved from 22 to 16 (moderate impact); SpO2 at 6MWT nadir improved from 87% to 91%; PSQI improved from 12 to 7. Patient: 'I can walk to the corner shop now. I couldn't do that for 2 years. The breathing exercises changed everything.' Hospital admissions: 0 in 12 months of follow-up (vs. 2 in 12 months prior to programme).

Case Study 3 — Long COVID / Post-COVID Respiratory Syndrome

Case: Ms. A.T., Age 42, Long COVID — Respiratory Symptoms, 8 months post-COVID

Background: Mild acute COVID (not hospitalised); persistent breathlessness for 8 months; normal spirometry; normal CXR; SpO2 95% at rest, desaturating to 91% during 6MWT

(distance: 310m). Breathing pattern assessment: respiratory rate 22/min; upper chest dominant; excessive sighing; Control Pause: 8 seconds. PHQ-9: 13; GAD-7: 11. Programme: 16-week paced Long COVID yoga rehabilitation. Protocol: PHASE 1 (weeks 1-4): Diaphragmatic breathing 10 min + Yoga Nidra 20 min only — no asana (significant PEM risk initially). PHASE 2 (weeks 5-8): Add Nadi Shodhana 10 min; brief chair yoga 10 min. PHASE 3 (weeks 9-16): Gradual extension — 30-40 min breathing + gentle yoga. Results at 16 weeks: 6MWT improved from 310m to 418m (+108m); SpO2 nadir improved from 91% to 95%; Respiratory rate reduced from 22 to 13/min; Control Pause improved from 8 to 32 seconds; PHQ-9 improved from 13 to 5; GAD-7 improved from 11 to 3. Patient: 'I was frightened of every breath for 8 months. The yoga gave me my breathing — and my life — back.' IMPORTANT: No PEM episodes during this paced programme; demonstrated importance of strict pacing.

Chapter 31: Quick Reference Protocols for All Respiratory Conditions

Condition	Top 3 Pranayamas	Session Length	Key Shatkarma	Primary Precaution
Bronchial Asthma	Bhramari, Nadi Shodhana, Sitali	45-60 min daily	Jala Neti daily	NO Kapalbhati/Bhastrika in active asthma
COPD (stable)	Diaphragmatic, Ujjayi, Extended Exhalation	30-45 min daily	Kapalbhati (stable) — mucus clearance	Monitor SpO2; cool environment; paced
Chronic Bronchitis	Kapalbhati, Bhramari, Ujjayi	30-40 min + airway clearance twice daily	Postural drainage + Kapalbhati	Only when stable; haemoptysis = stop
Emphysema	Extended Exhalation (1:3), Ujjayi, Diaphragmatic	30-40 min daily	Minimal Kapalbhati (gentle)	Avoid breath holds; SpO2 monitoring
Pulmonary Fibrosis	Sectional breathing, Ujjayi, Bhramari	30-40 min daily (shorter sessions)	None (avoid forceful breathing)	Oxygen available; monitor SpO2 during practice
Long COVID	Diaphragmatic, Nadi Shodhana, Box Breathing	Graduated 10-40 min	Jala Neti daily	STRICT PACING — no PEM; start very slow
Bronchiectasis/CF	Kapalbhati, Bhramari, Active Cycle Yoga	45-60 min with twice-daily airway clearance	Kapalbhati daily	Postural drainage position; haemoptysis protocol
Sleep Apnoea	Ujjayi, Bhramari, Box Breathing	30-45 min evening	Jala Neti daily	Nasal breathing; weight management
Allergic Rhinitis	Nadi Shodhana, Bhramari, Surya Bhedana	30-45 min daily	Jala Neti 1-2x daily	Allergen avoidance during outdoor yoga
Sinusitis (acute)	Bhramari, Nadi Shodhana, Kapalbhati (gentle)	20-30 min daily	Jala Neti 3x daily during acute phase	Stop if pressure symptoms increase; see doctor
Pulmonary Hypertension	Diaphragmatic, Nadi Shodhana, Yoga Nidra only	20-30 min — gentle only	Avoid forceful breathing	Physician clearance mandatory; no Valsalva
Lung Cancer (palliative)	Diaphragmatic, Bhramari, Nadi Shodhana	20-30 min — gentle only	As tolerated	Oncology team coordination; energy conservation
Hyperventilation Syndrome	Box Breathing, Extended Exhalation, Nadi Shodhana	20-30 min daily	Minimal	No deep forced breathing; CO2 normalisation focus

Post-Pneumonia Recovery	Sectional Breathing, Diaphragmatic, Bhramari	Graduated 15-45 min	Gentle Kapalbhati in recovery phase	SpO2 monitoring; graduated return
TB (stable/post-treatment)	All pranayama when culture negative	45-60 min daily	Jala Neti, gentle Kapalbhati	Culture negativity before group yoga
Snoring	Simhasana (Lion Breath), Bhramari, Ujjayi	15-20 min pre-bed	Jala Neti for nasal patency	Differentiate from OSA — medical assessment first

Conclusion: Breathing as Practice, Practice as Healing

We have traversed in this comprehensive text the full landscape of respiratory disease from the perspective of yoga therapy — from the most common (asthma, allergic rhinitis) to the most complex (ALS-related respiratory failure, severe pulmonary hypertension), from the most acute (pneumonia, COVID-19) to the most chronic (COPD, pulmonary fibrosis), from those with the most established evidence base (asthma, COPD, sinusitis) to those where the evidence is still emerging but the clinical need is urgent (Long COVID, cystic fibrosis, sleep apnoea).

In all of these conditions, the thread that runs through yoga's therapeutic contribution is the breath. The breath is both the primary site of pathology in respiratory disease and the primary instrument of yoga therapy. Every pranayama practice you teach, every breathing retraining session you guide, every moment of attention you bring to your own breathing and your student's breathing — all of this is simultaneously an ancient practice and a cutting-edge therapeutic intervention, validated by both millennia of experiential wisdom and decades of modern scientific research.

The respiratory patient who comes to yoga therapy typically arrives afraid of their breath. Breathlessness is frightening — it activates the same primitive survival terror as drowning. One of the most profound gifts you can offer such a student is the gradual, patient, evidence-based demonstration that the breath is not their enemy but their friend; not a limitation but a resource; not something to be feared but something to be cultivated, refined, and ultimately celebrated as the most intimate connection between the inner life and the outer world, between the individual and the universe.

As you bring these teachings into your practice, carry with you the scientific rigour to apply evidence-based protocols, the clinical humility to always work within your scope of practice and in collaboration with medical teams, and the deepest yogic understanding that the student in front of you — whatever their diagnosis, whatever their limitations — is first and foremost a human being with an extraordinary inherent capacity for healing, adaptation, and the discovery of a quality of inner breath that no lung disease can diminish: the breath of the spirit.

> *"When the breath wanders, the mind is unsteady. When the breath is calmed, the mind too will be still. When the breath is mastered, the yogi achieves mastery of the body. Therefore let the yogi practice control of the prana. Pranayama is the path to freedom."*
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> **— Hatha Yoga Pradipika II.2**

Final Message to SKM Yoga Teacher Training Students

As you complete this study and prepare to bring yoga therapy for respiratory diseases into your teaching: Practice daily pranayama yourself — you cannot teach what you have not experienced. Know the contraindications as thoroughly as the protocols — safety is the foundation of trust. Communicate consistently with your students' medical teams — respiratory disease is complex and requires expert medical management. Document your outcomes systematically — yoga pulmonology needs more evidence, and your clinical work can contribute to it. Stay current — this is a rapidly evolving field, and new evidence emerges regularly. Above all, remember: every student who walks into your class with breathlessness is already doing something remarkable — they have not given up. Match their courage with your skill, your knowledge, and your compassion. Pranayamena Arogya — Through Pranayama Comes Health. Om Namah Shivaya.

Om Sarve Santu Niramayah — May All Be Free from Disease

Om Shanti Shanti Shantih

Dr. Shivam Mishra | Founder, SKM Yoga | www.skmyoga.in | WhatsApp: 8826476724