



# Pulmonary Rehabilitation: Reclaiming Respiratory Health through Multidimensional Care

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Pulmonary rehabilitation (PR), once a niche supportive therapy, has rapidly emerged as a central pillar in the management of chronic respiratory diseases. From COPD to interstitial lung disease (ILD), asthma to post-tuberculosis lung impairment, the evidence base for PR is growing—and evolving<sup>1</sup>. In 2025, a suite of new studies has underscored not only its clinical efficacy but also its role in enhancing quality of life, reducing hospitalizations, and even modifying the trajectory of disease progression.

A 2024 meta-analysis published in *The Lancet Respiratory Medicine* reviewed over 50 randomized controlled trials and concluded that PR significantly improves dyspnea scores, exercise tolerance (as measured by the 6-minute walk test), and health-related quality of life across various chronic lung conditions<sup>1</sup>. The most important aspect is that the benefit persisted even in advanced disease stages. This finding reinforces the idea that PR is not merely supportive but therapeutic.

## Mechanisms Beyond the Lungs

Pulmonary rehabilitation offers a structured, multidisciplinary approach—encompassing exercise training, education, nutritional support, and psychosocial counseling. It addresses systemic consequences of chronic lung disease, including skeletal muscle dysfunction, deconditioning, and anxiety. In essence, it treats the “whole patient,” not just the lungs.

Emerging research highlights the systemic benefits. A 2023 study in *Chest* demonstrated that participation in PR programs led to a statistically significant reduction in systemic inflammatory markers (CRP and IL-6) among COPD patients, indicating a broader anti-inflammatory role<sup>2</sup>. Additionally, digital health integration through tele-rehabilitation has opened doors for remote, accessible programs that maintain efficacy, particularly in low-resource and rural settings.

## PR in Post-COVID and Post-TB Lung Disease

In the aftermath of the COVID-19 pandemic, PR has found a new frontier. A 2023 prospective study in *ERJ Open Research* showed that post-COVID patients with lingering dyspnea and exercise intolerance experienced substantial functional and psychological improvement following a 12-week rehabilitation program<sup>3</sup>. Likewise, post-tuberculosis

lung disease, often overlooked in public health narratives, has responded favorably to PR, as highlighted in a 2024 study from South Asia, suggesting improvements in spirometric values and quality of life metrics<sup>4</sup>.

## Challenges in Implementation

Despite robust evidence, PR remains underutilized. Barriers include limited program availability, lack of trained personnel, and insufficient awareness among primary care providers. In Nepal and other LMICs, these challenges are exacerbated by health system constraints. Innovative models—such as community-based PR, tele-rehabilitation, and integration into primary care—may offer scalable solutions. The Nepalese Respiratory Society can play a pivotal role in advocating for and guiding such programs.

## Looking Ahead

As the field of respiratory medicine advances, the role of pulmonary rehabilitation is not ancillary—it is foundational. The latest research challenges us to think of PR not as an add-on, but as an essential component of chronic respiratory care. It is time to invest in its widespread implementation, research local adaptations, and ensure access for all who stand to benefit.

Pulmonary rehabilitation is more than a program; it is a promise—a promise that people with chronic lung disease can reclaim their breath, their mobility, and their lives.

## REFERENCES

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