

Integration of the Role of Pranayama in Pulmonary Rehabilitation for COPD Patients

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DESCRIPTION

Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory condition characterized by airflow limitation, breathlessness, chronic cough, and reduced exercise tolerance. It is a leading cause of morbidity and mortality worldwide, often accompanied by significant physical and psychological impairments. Pulmonary rehabilitation is a cornerstone of COPD management, offering multidisciplinary interventions that include exercise training, education, nutritional support, and psychological counseling. In recent years, there has been growing interest in incorporating complementary practices into pulmonary rehabilitation, with pranayama—a yogic breathing technique—emerging as a particularly promising intervention.

Pranayama refers to the conscious regulation of breath through specific techniques that involve inhalation, exhalation, and breath retention. Rooted in ancient Indian traditions, pranayama is known to influence respiratory mechanics, autonomic function, and mental well-being. For individuals with COPD, who often experience hyperinflation, dyspnea, and reduced ventilatory efficiency, pranayama offers a low-cost, accessible, and non-pharmacological strategy to support lung function and symptom control.

Several clinical studies have explored the integration of pranayama into pulmonary rehabilitation programs for COPD patients, reporting significant improvements in respiratory parameters, exercise capacity, and quality of life. Techniques such as nadi shodhana (alternate nostril breathing), bhramari (humming bee breath), ujjayi (victorious breath), and diaphragmatic breathing have been shown to enhance oxygen saturation, reduce respiratory rate, and increase tidal volume. These outcomes are particularly relevant for COPD patients, many of whom struggle with shallow, rapid breathing and inefficient gas exchange.

The physiological benefits of pranayama are believed to stem from its ability to promote parasympathetic activation, improve thoracoabdominal coordination, and reduce the work of breathing. Slow, controlled breathing exercises help to strengthen respiratory muscles, especially the diaphragm, which

is often weakened in COPD. In addition, pranayama encourages mindful awareness of breath, which may reduce the perception of dyspnea—a common and distressing symptom in advanced COPD. By slowing the breathing rate and prolonging exhalation, patients may also be able to reduce air trapping and dynamic hyperinflation, key contributors to their discomfort.

Beyond respiratory mechanics, pranayama also addresses the psychological burden associated with COPD. Depression, anxiety, and fear of breathlessness are prevalent among patients and can severely affect rehabilitation outcomes. The meditative aspect of pranayama fosters mental calmness, emotional balance, and stress reduction. Some studies have found significant reductions in anxiety and depressive symptoms in COPD patients practicing pranayama regularly, contributing to better adherence to rehabilitation programs and improved overall well-being.

In terms of clinical application, integrating pranayama into existing pulmonary rehabilitation programs requires careful planning and supervision. Sessions should be tailored to individual patient needs, taking into account disease severity, baseline lung function, and comorbidities. Typically, sessions begin with simple breath awareness and progress to more structured pranayama techniques over time. Instruction should be provided by certified yoga therapists or physiotherapists trained in respiratory care and mind-body practices to ensure safety and effectiveness.

The integration of pranayama into pulmonary rehabilitation has already shown promising results in several pilot and controlled studies. For example, a randomized trial involving 60 COPD patients compared conventional rehabilitation with a combined program including pranayama. The group practicing pranayama showed significant improvements in six-minute walk distance, Borg dyspnea scores, and spirometric indices compared to the control group. These findings suggest that pranayama can enhance functional outcomes when used alongside standard pulmonary rehabilitation components.

Despite the growing evidence base, challenges remain in standardizing pranayama protocols, ensuring instructor

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competency, and integrating these practices into clinical settings. Larger, multicenter randomized controlled trials are needed to establish definitive efficacy, optimal duration, and long-term benefits. However, the current data support the feasibility, safety, and multidimensional benefits of pranayama as a valuable addition to COPD management.

CONCLUSION

The integration of pranayama into pulmonary rehabilitation offers a holistic and effective approach to enhancing respiratory

function, reducing symptoms, and improving the quality of life for COPD patients. By combining ancient wisdom with modern medical care, pranayama represents a low-cost, patient-centered strategy that aligns with the evolving goals of comprehensive, integrative respiratory therapy.