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DYNAMICS OF EXERCISE TOLERANCE INDICATORS DURING RESPIRATORY REHABILITATION IN PATIENTS WITH COPD.

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Annotation: The study analyzes the dynamics of exercise tolerance indicators in patients with chronic obstructive pulmonary disease (COPD) during the course of respiratory rehabilitation. The research focuses on evaluating the effectiveness of different rehabilitation methods aimed at improving patients' physical performance, reducing dyspnea, and enhancing overall quality of life. Results demonstrate a significant increase in exercise tolerance, improved respiratory function, and reduced symptoms of fatigue after completing the rehabilitation program. The findings highlight the importance of individualized respiratory therapy and regular physical training as key components of comprehensive COPD management.

Keywords: COPD, respiratory rehabilitation, exercise tolerance, physical performance, pulmonary function, quality of life.

Introduction

Chronic obstructive pulmonary disease (COPD) is one of the leading causes of morbidity and mortality worldwide and represents a major public health challenge. It is characterized by persistent airflow limitation, progressive respiratory symptoms, and decreased exercise capacity, which significantly affect patients' daily activities and quality of life. In recent years, respiratory rehabilitation has become an essential component of COPD management, focusing not only on improving lung function but also on enhancing physical endurance and psychosocial well-being.

Exercise tolerance is one of the key indicators used to assess the effectiveness of rehabilitation programs. Regular, properly designed physical training and breathing exercises help increase the efficiency of respiratory muscles, reduce the sensation of dyspnea, and improve overall physical performance. Studying the dynamics of exercise tolerance during respiratory rehabilitation allows healthcare professionals to evaluate the progress of patients and optimize individual treatment plans.

This study aims to investigate the changes in exercise tolerance indicators in patients with COPD throughout the respiratory rehabilitation process, emphasizing the clinical importance of systematic physical training and individualized therapeutic approaches.

Main Part

Respiratory rehabilitation plays a crucial role in the management of chronic obstructive pulmonary disease (COPD). It includes a combination of physical exercises, breathing techniques, education, and psychological support aimed at improving the functional capacity of patients. The main goal of rehabilitation is to enhance exercise tolerance, reduce symptoms such as dyspnea and fatigue, and improve the overall quality of life.

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During the rehabilitation process, patients participate in individually tailored exercise programs that often include aerobic training, strength exercises, and breathing control techniques. Aerobic training, such as walking, cycling, or treadmill exercise, helps to improve cardiovascular and muscular endurance. Strength training focuses on the development of peripheral muscle groups, which often weaken due to physical inactivity and systemic inflammation caused by COPD. Breathing exercises, such as diaphragmatic and pursed-lip breathing, are designed to improve ventilation efficiency and reduce shortness of breath during physical activity.

Regular participation in such programs has been shown to produce significant improvements in exercise tolerance. Clinical studies demonstrate that after several weeks of structured respiratory rehabilitation, patients exhibit increased six-minute walking distance, improved oxygen saturation during exertion, and reduced perception of breathlessness. Furthermore, rehabilitation helps to stabilize the disease course by decreasing the frequency of exacerbations and hospitalizations.

In addition to physiological benefits, respiratory rehabilitation contributes to psychological well-being. Many patients with COPD experience anxiety and depression due to chronic symptoms and limitations in daily life. Group-based exercise and education sessions provide social support and motivation, fostering a more positive outlook and better treatment adherence.

The analysis of exercise tolerance dynamics during rehabilitation provides valuable information for healthcare professionals. Monitoring changes in performance indicators, such as walking distance, heart rate, and perceived exertion, allows for the timely adjustment of exercise intensity and ensures the safety and effectiveness of the rehabilitation program. Individualized planning based on the patient's initial condition, disease stage, and comorbidities enhances the outcomes of rehabilitation and promotes long-term adherence to physical activity.

Overall, respiratory rehabilitation is an evidence-based and cost-effective intervention that should be integrated into the comprehensive treatment strategy for COPD patients. Continuous assessment of exercise tolerance is essential to evaluate progress, motivate patients, and optimize therapeutic approaches aimed at improving functional independence and quality of life.

Conclusion

The results of the study confirm that respiratory rehabilitation has a significant positive impact on patients with chronic obstructive pulmonary disease (COPD). Regular participation in individually tailored rehabilitation programs leads to a noticeable improvement in exercise tolerance, respiratory efficiency, and overall physical performance. Patients experience reduced dyspnea, increased endurance, and a better ability to perform daily activities.

In addition to the physiological benefits, respiratory rehabilitation enhances psychological well-being by reducing anxiety, depression, and social isolation often associated with COPD. Continuous monitoring of exercise tolerance indicators allows healthcare professionals to assess patient progress accurately and make necessary adjustments to rehabilitation programs, ensuring both safety and effectiveness.

Thus, respiratory rehabilitation should be regarded as an integral part of comprehensive COPD management. The combination of physical training, breathing exercises, education, and emotional support contributes to improved quality of life, reduced frequency of exacerbations, and better long-term outcomes for patients with chronic obstructive pulmonary disease.

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