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RESEARCH ARTICLE

Inspiratory muscle training reduces diaphragm activation and dyspnea during exercise in COPD

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Among patients with chronic obstructive pulmonary disease (COPD), those with the lowest maximal inspiratory pressures experience greater breathing discomfort (dyspnea) during exercise. In such individuals, inspiratory muscle training (IMT) may be associated with improvement of dyspnea, but the mechanisms for this are poorly understood. Therefore, we aimed to identify physiological mechanisms of improvement in dyspnea and exercise endurance following inspiratory muscle training (IMT) in patients with COPD and low maximal inspiratory pressure ($P_{i_{max}}$). The effects of 8 wk of controlled IMT on respiratory muscle function, dyspnea, respiratory mechanics, and diaphragm electromyography (EMGdi) during con-

are poorly understood. This study showed that 8 wk of home-based, partially supervised IMT improved respiratory muscle strength and endurance, dyspnea, and exercise endurance. Dyspnea relief occurred in conjunction with a reduced activation of the diaphragm relative to maximum in the absence of significant changes in ventilation, breathing pattern, and operating lung volumes.

chronic obstructive pulmonary disease; diaphragm; dyspnea; electromyogram; exercise; inspiratory muscle strength; respiratory mechanics

INTRODUCTION

Prevalence of chronic obstructive pulmonary disease (COPD) is increasing worldwide and is linked to increased mortality and