

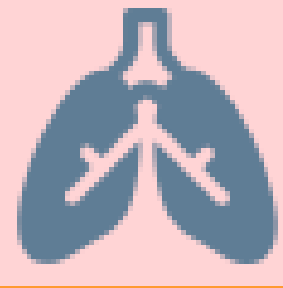


Breathing Beyond Boundaries:

When Immersive Virtual Reality Physiotherapy Training Meets Dyspnea In Next-Gen Cardiopulmonary Rehabilitation

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AIMS



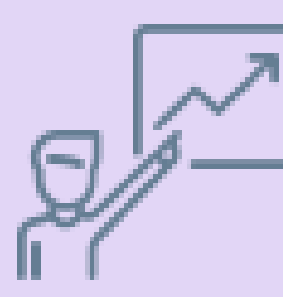
Evaluate effectiveness of integrating Virtual Reality (VR) guided breathing exercises with physical tasks for dyspnea management
Assess improvements in physical performance, mobility, and exercise tolerance



INTRODUCTION



Significant increase in admission in the past 5 years for cardiopulmonary related diseases in Hong Kong¹
Persistent dyspnea leads to activity avoidance, deconditioning, and a vicious cycle of worsening mobility and independence²
VR creates immersive environment to redirect attention, reduce anxiety and enhance exercise tolerance³
VR reduces the perceived breathlessness and improve tolerance to physical exertion through engaging relaxation breathing techniques⁴



METHODOLOGY



Patient with Chronic Obstructive Pulmonary Disease (COPD), Heart Failure, Chest Infections, or presenting with dyspnea which limited physical ability were recruited

Baseline

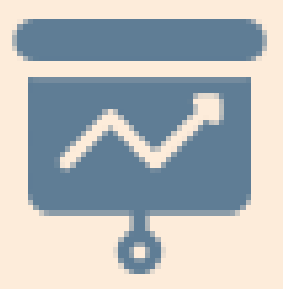
Intervention

Discharge

- Chinese Version of Dyspnea-12 Questionnaire⁵
- Modified Functional Ambulation Category (MFAC)
- Elderly Mobility Scale (EMS)
- 6-Minute Walk Test (6MWT)
- Rating of Perceived Dyspnoea (RPD)

- VR-guided relaxation breathing techniques at rest (5 minutes)
- Engaged physical task with VR-guided relaxation breathing (5 minutes)
 - Standing tolerance training
 - Standing stepping exercise
 - Sit to stand exercise
- 10 minutes in total per session

- Post treatment outcome evaluation upon discharge
- Paired Sample t-Test was utilised to perform the data analysis

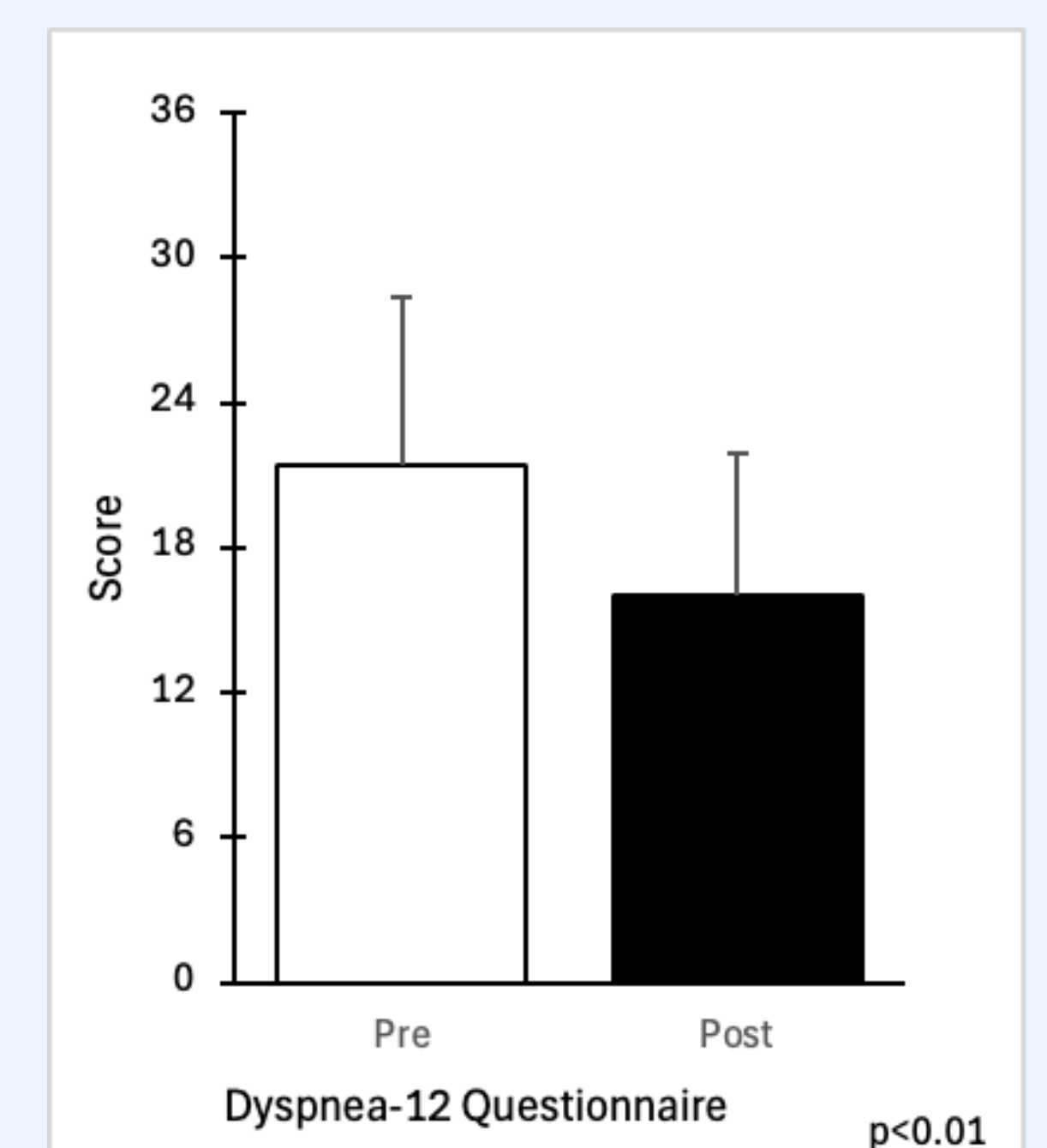
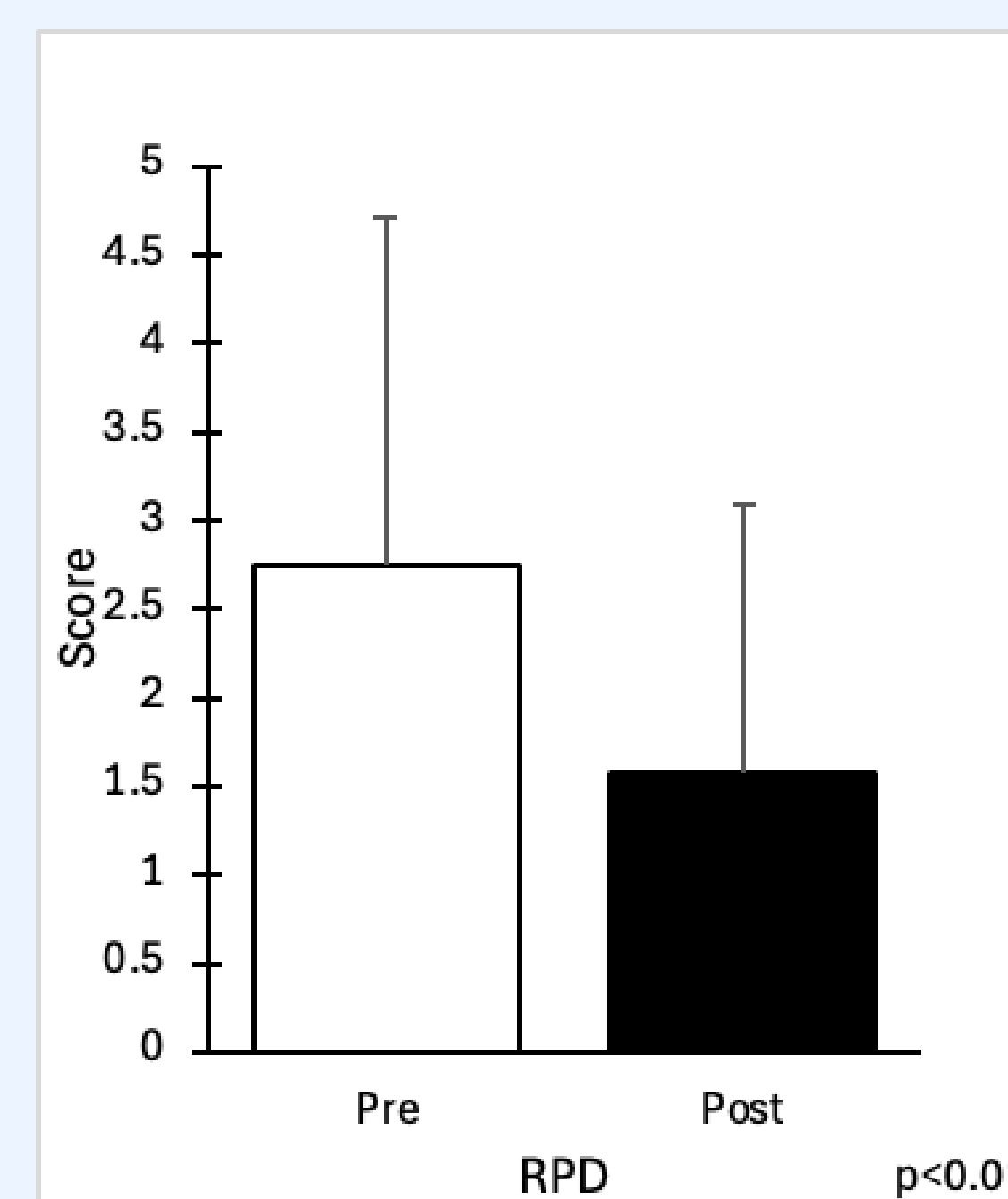
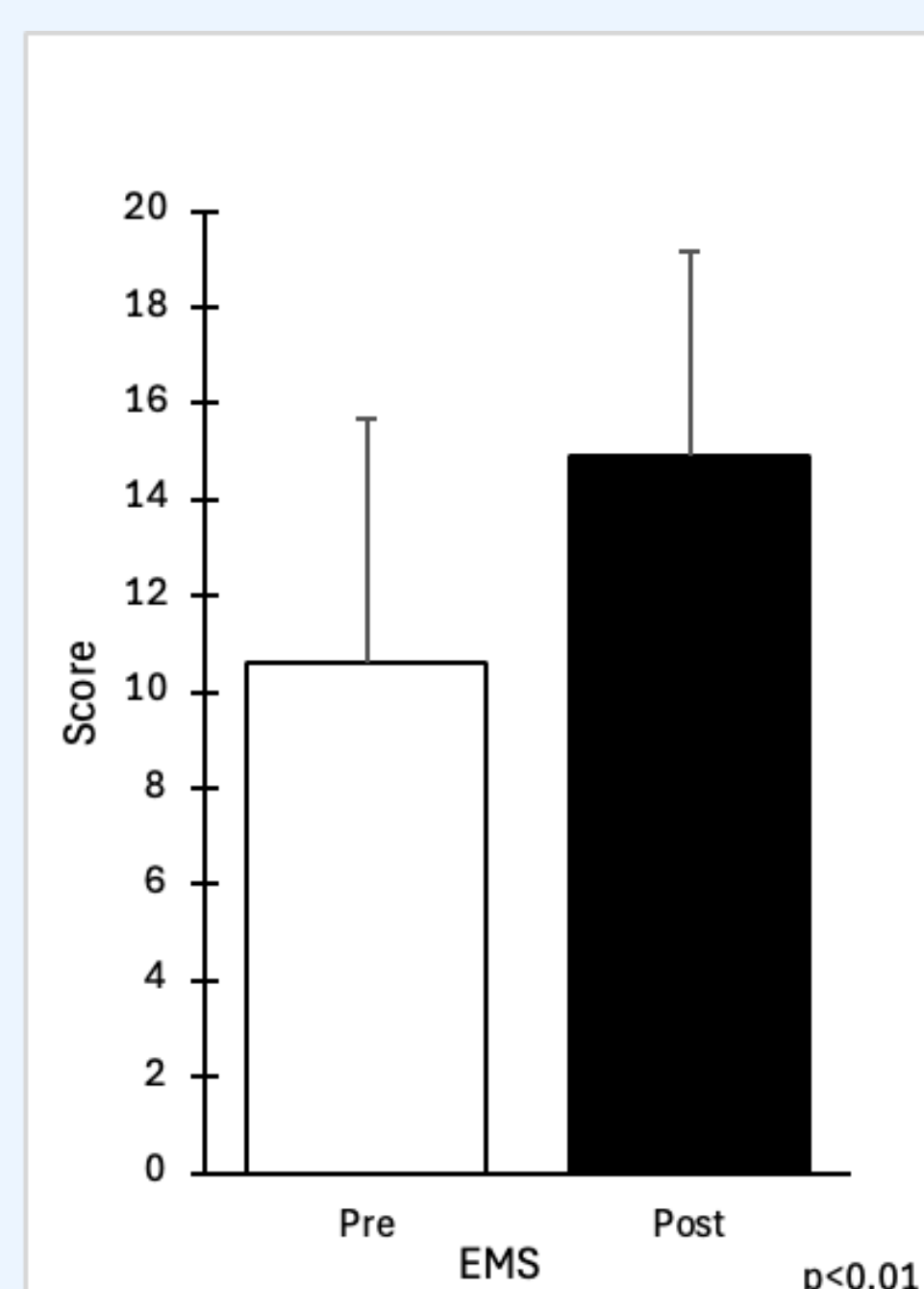
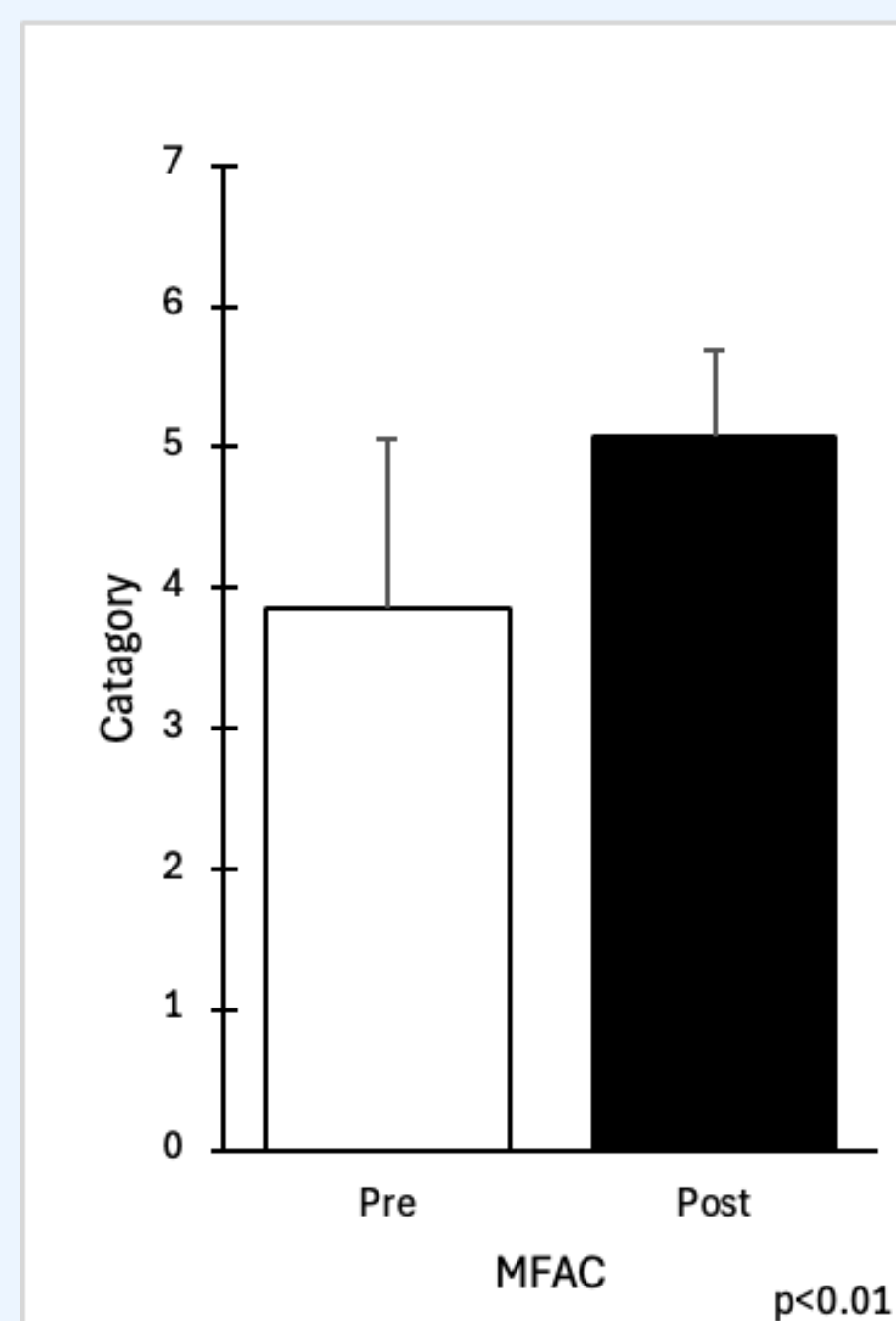
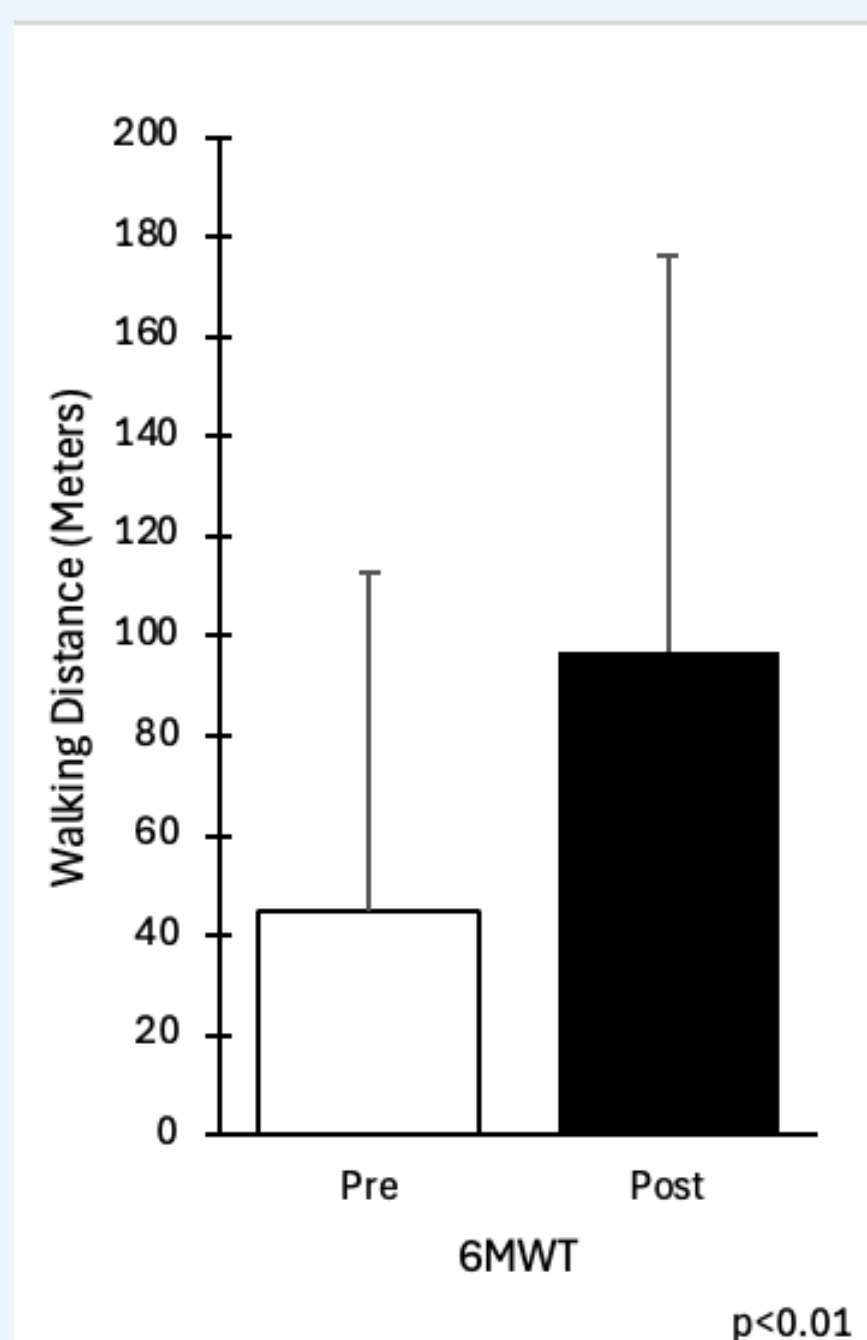


RESULTS

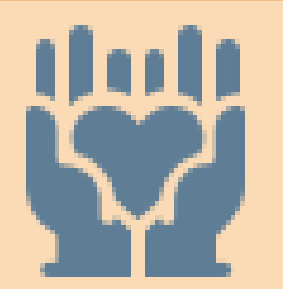


28 male participants were recruited, aged 79.04 ± 6.78.

On average, each patient received 5.28 sessions of VR guided relaxation breathing training



Significant improvement in all outcome measures.



DISCUSSION & IMPLICATIONS



Enhances psychological readiness and physical recovery. Reduced dyspnea perception
Redirected attention from breathlessness, promote better breathing control and relaxation

Small sample size, large standard deviation in results
Lack control group to confirm treatment effect origin

Integrating VR-guided relaxation breathing with physiotherapy training is a promising, patient-centred approach to dyspnea management

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