Primary Health Care Research & Development

cambridge.org/phc

Changes in knowledge, skills, and confidence following a training program for primary care physiotherapists and exercise physiologists in pulmonary rehabilitation: a pre-post study

Jessica A. Walsh, Marita T. Dale, Zoe J. McKeough, Jennifer A. Alison and Sarah M. Dennis

Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia

Short Report

Cite this article: Walsh JA, Dale MT, McKeough ZJ, Alison JA, Dennis SM. (2026) Changes in knowledge, skills, and confidence following a training program for primary care physiotherapists and exercise physiologists in pulmonary rehabilitation: a pre-post study. *Primary Health Care Research & Development* **27**(e74): 1–5. doi: 10.1017/S146342362610139X

Received: 19 September 2025 UTC
Revised: 29 April 2026 UTC
Accepted: 30 May 2026 UTC

Keywords:
chronic obstructive pulmonary disease; education; primary care; rehabilitation

Corresponding author:
Jessica A. Walsh;
Email: jessica.walsh@sydney.edu.au

Abstract

Pulmonary rehabilitation (PR) is recommended for people with chronic respiratory diseases, but access is limited. Delivering PR in primary care may overcome these barriers; however, physiotherapists and Accredited Exercise Physiologists (AEPs) report limited PR experience. Aim: to investigate the changes in knowledge, skills, and confidence following an education program for physiotherapists and AEPs in PR delivery in primary care. Primary care physiotherapists or AEPs undertook an education program of 6–8 hours online training and a half-day face-to-face workshop. 17 clinicians completed the training. Median (IQR) knowledge scores increased from 7 (6,8) at baseline to 10 (9,11) post-training ($p < 0.001$; Hedges' $g = 1.52$, 95% CI 0.81 to 2.21). Improvements in self-rated knowledge, skills, and confidence were observed across all domains and sustained at 3 months. In conclusion, a short education program improved PR knowledge, skills, and confidence in primary care clinicians. Educating primary care clinicians in PR is essential to build the workforce to provide PR in this setting and improve accessibility.

Introduction

Pulmonary rehabilitation (PR), an exercise and education intervention, is strongly recommended for people with chronic respiratory disease (CRD) in international guidelines (Bolton *et al.*, 2013; Alison *et al.*, 2017; Rochester *et al.*, 2023). It leads to improvements in exercise capacity, breathlessness, and health-related quality of life (Mccarthy *et al.*, 2015; Dowman *et al.*, 2021; Lee *et al.*, 2021; Yang *et al.*, 2022; He *et al.*, 2023), as well as a reduction in hospital readmissions (Moore *et al.*, 2016). Despite its effectiveness, approximately 5% of people who would benefit from referral ever access a program, and fewer still complete (Rochester *et al.*, 2015; Spitzer *et al.*, 2019). Physiotherapists and Accredited Exercise Physiologists (AEPs) are suitably qualified health professionals to conduct a PR program. Although suitably trained, many physiotherapists and AEPs report no exposure to PR in their training or on clinical placement (Johnston *et al.*, 2011; Rochester *et al.*, 2015). The majority of PR programs are provided within the hospital setting, with 93% of Australian PR programs run by hospital staff (Johnston *et al.*, 2011). Conversely, 60% of physiotherapists and 57% of AEPs work in private practices (PPs) (Australian Physiotherapy Association, 2023; Exercise & Sports Science Australia, 2023). Highlighting a large potential workforce that could deliver PR in primary care in the PP setting with appropriate upskilling.

There are emerging models of PR such as home-based PR and telerehabilitation which have been shown to be as effective as traditional center-based PR (Holland *et al.*, 2017; Cox *et al.*, 2021; Stafinski *et al.*, 2022; Machado *et al.*, 2024). However, in practice these models are still staffed by the existing hospital-based PR workforce. Many of these services operate with extensive waitlists (Lung Foundation Australia, 2023) and constraints of public hospital workforce challenges and funding cuts (Philip, 2015). In Australia, there have been calls to broaden the utilization of allied health in primary care (Australian Government Department of Health, 2023) and the introduction of funding schemes to support the delivery of PR in the primary care setting (Lung Foundation Australia, 2023; Australian Commission on Safety and Quality in Health Care, 2024). With appropriate upskilling of the existing primary care physiotherapy and AEP workforce, there is scope for PR to be delivered in this setting, complementing, existing services delivered by hospital-based staff and increasing reach.

Patients often report travel, transport, and timing as barriers to attendance and completion of PR (Keating *et al.*, 2011; Cox *et al.*, 2017). Hospital-based programs are provided in work hours and often operate in shared gym spaces so timing may be relatively inflexible. Comparatively,

© The Author(s), 2026. Published by Cambridge University Press. This is an Open Access article, distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike licence (https://creativecommons.org/licenses/by-nc-sa/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the same Creative Commons licence is used to distribute the re-used or adapted article and the original article is properly cited. The written permission of Cambridge University Press or the rights holder(s) must be obtained prior to any commercial use.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 19 Nov 2026 at 04:07:08, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S146342362610139X

PPs are often open after hours or on weekends, may have their own gym space, and are typically embedded within local communities, offering geographic proximity to patients thereby reducing the travel burden. Therefore, offer both a workforce and infrastructure to provide PR, potentially increasing access.

Limited data exist on upskilling healthcare professionals to provide PR. A 2-day PR training program for healthcare professionals working in rural communities lead to significant improvements in knowledge and confidence and facilitated the establishment of new PR programs (Johnston *et al.*, 2013). A systematic review of education interventions for healthcare professionals managing COPD found only one study targeting either physiotherapists or AEPs (Cross *et al.*, 2022). To our knowledge, no studies have been conducted specifically targeting private practitioners. A recent survey of Australian physiotherapists and AEP working in private practice reported that clinicians were interested in upskilling to provide PR in their practices and that this aligned with their business model (Walsh *et al.*, 2025a). This study aimed to investigate the efficacy of a PR training program for PP physiotherapists and AEPs to develop the knowledge, skills, and confidence necessary to conduct PR.

Methods

Participants

This study is part of a larger feasibility trial, and the detailed methods are available in the published study protocol (Walsh *et al.*, 2025b). The study was conducted in two primary health networks (PHNs) in Sydney, Australia. Participants were recruited from March 2023 to November 2024 through PHNs and professional societies. Participants were registered physiotherapists or AEPs, working in PP where there was: at least two staff members, adequate space for group exercise, a 10-meter straight track for a field walking test, and accessible for people with CRD. Physiotherapists or AEPs with post-graduate PR experience or qualifications were excluded.

Interventions

Participants were given access to the Lung Foundation Australia (LFA) PR Online Training Program (Lung Foundation Australia), a 6–8 hour self-directed online program to increase knowledge and skills of clinicians to deliver evidence-based PR. Modules include: Establishing a pulmonary rehabilitation program; The respiratory system and COPD; Comprehensive patient assessment; Spirometry; Assessing exercise capacity; Assessing quality of life; Exercise training; Patient education; Program evaluation and troubleshooting. Participants then attended a 4-hour small group practical face-to-face module, delivered by experts in PR, which focused on practical aspects of PR including performing exercise capacity tests and exercise prescription.

Participants were required to pass a predefined competency threshold of 80% (i.e., 9 out of 11) for an objective knowledge test embedded within the LFA PR Online Training Program: an 11-item multiple-choice questionnaire based on a clinical case vignette, with items covering the key domains of PR assessment and delivery. A copy of the questionnaire is available as supplementary material in the published protocol (Walsh *et al.*, 2025b). The 80% competency threshold was pre-specified in the study protocol. Competency for the practical skills was to be 'proficient' in practical skills of the six-minute walk test, incremental shuttle walk test, and 1-minute sit-to-stand test. After completing the workshop, each participant was directly observed by an assessor with expertise in PR while performing each skill. Proficiency was determined against a pre-defined competency checklist covering correct setup, standardized instructions, safety monitoring and test termination criteria. The self-rated confidence, knowledge, and skills questionnaire assessed the content domains across both the LFA online training modules and the practical skills workshop.

Outcomes

The primary outcomes were i) change in participant knowledge in the knowledge test (scored 0–11) and ii) change in participant self-rated confidence, knowledge, and skills using a 5-point Likert scale questionnaire before and after the training course. Secondary outcomes included i) proportion of participants meeting 80% in the knowledge test and proficient in practical skills assessment, and ii) maintenance of participant knowledge at 3 months post-training. Participants also completed a survey of their satisfaction with the training using a 5-point Likert scale.

Statistical methods

Fifteen participants were needed to detect a mean (SD) change of 4.6 (2.5) points change in participant knowledge ($\alpha = 0.05, \beta = 0.8$), accounting for 20% attrition (Johnston *et al.*, 2013). This calculation assumed a normal distribution, which may not hold for a small cohort; it was used as an approximate planning estimate rather than a formal guarantee of power. Data were summarized using descriptive statistics. Likert scales were analyzed as ordinal scales, with 5-point scales assigned values from −2 to +2, except satisfaction scores which were assigned values 1–5. Change data were analyzed over all timepoints using the Friedman test, with pairwise comparisons using the Wilcoxon signed-rank test and Bonferroni correction applied, with alpha $p < 0.05$. Analysis was conducted on participants with available data at these timepoints. Hedges' g was calculated for the primary knowledge outcome to quantify effect size. All continuous data are reported as median (interquartile range).

Results

Invitations were sent to 332 email addresses; 32 replies (10%) were received. Of those, 12 were excluded (8 = out of area, 4 = duplicate contact from same PP), leaving 22 eligible clinicians. 17 clinicians (8 physiotherapists, 9 AEPs), 11 (65%) males, completed the training program and post-training measures, 13 (76%) completed the 3-month follow-up. Median (IQR) years working in their profession was 3.5 (1.75, 9) years and median (IQR) number of clinical staff working in the practices was 4 (4,6).

The median (IQR) knowledge score pre-training was 7 (6,8) points, compared to 10 (9,11) points at post-training ($z = -3.43$, $p < 0.001$)). The effect size for the primary knowledge outcome was large (Hedges' $g = 1.52$, 95% CI 0.81 to 2.21). Post training, 82% of participants met the competency threshold for the knowledge test (i.e., score ≥ 80%), compared to only 18% pre-training. Almost all (94%) of participants met the pre-defined practical competencies. Practical skills competency was assessed post-training only so improvement in this domain cannot be quantified.

At 3-month follow-up, the median (IQR) knowledge score was 9 (7.75, 10), which was lower than post-training ($z = -2.05$, $p = 0.04$). The Friedman test showed a significant difference across the three timepoints ($X^2 = 20.42$, $p < 0.001$), with pairwise comparisons (Bonferroni-correction $\alpha = 0.02$) showing significant

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 19 Nov 2026 at 04:07:08, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S146342362610139X

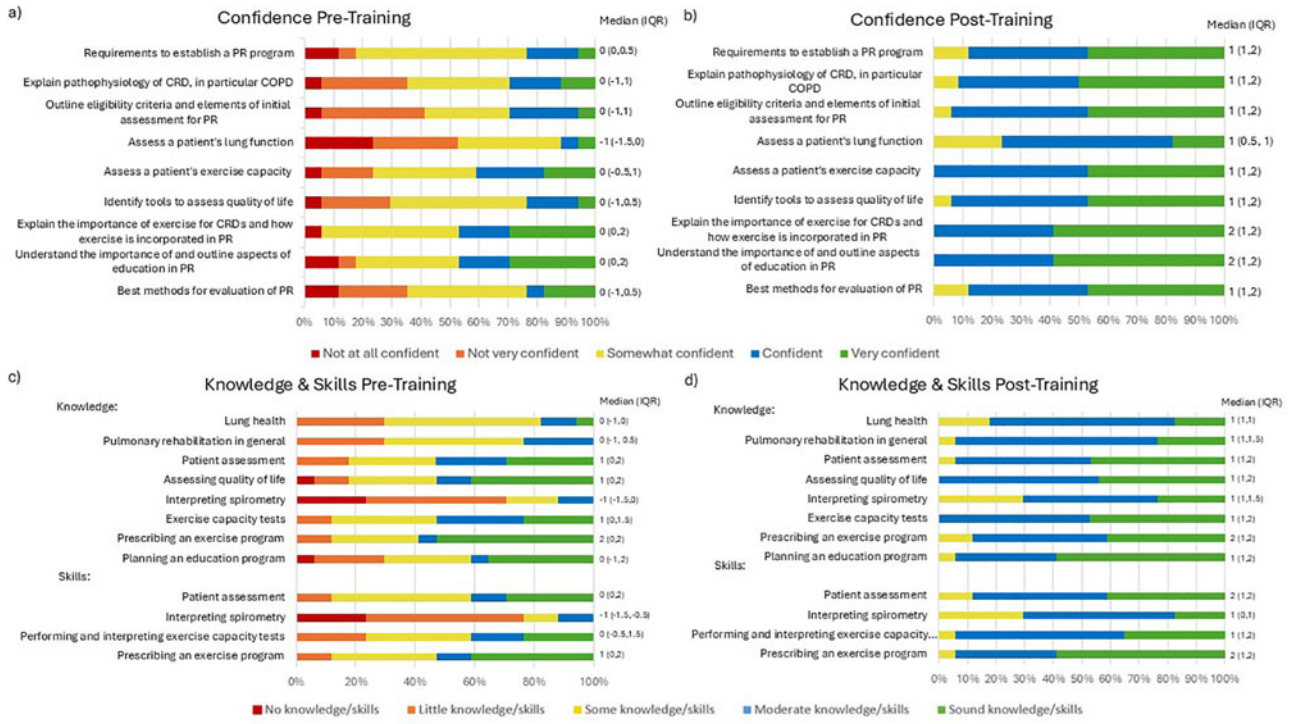


Figure 1. Likert scales of participant's self-rated: a) confidence pre-training b) confidence post-training c) knowledge and skills pre-training d) knowledge and skills post-training. Median (IQR) scores of participants' responses to 5-point Likert scales with values assigned −2 to +2. IRQ, interquartile range.

improvement pre-training to post-training ($p < 0.001$) and pre-training to 3 months ($p = 0.01$) but a non-significant decline post-training to 3 months ($p = 0.04$). Self-rated confidence, knowledge, and skills pre- and post-training are displayed in Figure 1. There was a statistically significant change in median scores for each component pre- to post-training. The median (IQR) satisfaction score for the online training was 5 (4, 5) and for the practical module was 4 (4, 5) (out of 5).

Discussion

In this study, a short training program was associated with improvements in PR knowledge, skills, and confidence among primary care physiotherapists and AEPs, and these findings provide early-stage evidence to support workforce development as a strategy for expanding access to PR. Baseline knowledge was below the competency threshold, aligning with reports on lack of exposure to education and training in this area of practice (Johnston *et al.*, 2011; Rochester *et al.*, 2015; Rochester *et al.*, 2021). This is unsurprising given that only 2% of Australian physiotherapists report they work in cardiorespiratory, compared to 37% working in musculoskeletal (Australian Physiotherapy Association, 2023).

Assessment and interpretation of spirometry was the area of practice that participants rated themselves as having the least amount of knowledge, skills, and confidence at baseline. Although improvements were observed across the three domains post-training, it remained the area of practice with the lowest score. The LFA training module on spirometry focuses on interpretation of existing spirometry results (e.g., understanding FEV_1 and FVC values to identify obstructive or restrictive patterns) rather than on the performance of spirometry testing itself. Primary care physiotherapists and AEPs are unlikely to have access to a spirometer and perform spirometry so the relevant skill is interpreting any spirometry results provided by the referring doctor. Therefore, the scope of skills required to perform PR for these clinicians may need to be adapted, compared to those of hospital-based clinicians where spirometry is a key component of the pre-program respiratory assessment, used to confirm diagnosis and classify disease severity, rather than an ongoing measurement within the PR exercise program itself. Importantly, this adaptation relates to the assessment phase rather than exercise training delivery, which can be conducted effectively with minimal equipment and without compromising clinical outcomes (Cheng *et al.*, 2023). However, there may be implications for referral pathways, with patients requiring spirometry to be performed prior to referral to PR.

Among the self-rated domains, exercise capacity assessment, exercise prescription, and patient education showed the most clinically meaningful shifts pre- to post-training and are the competencies most directly required for day-to-day PR delivery in private practice. Sustained competency in these domains at 3 months is encouraging for the prospects of translation to practice, while acknowledging that actual clinical application in a patient-facing program is required to confirm whether training-acquired competency translates to safe and effective delivery.

Poor accessibility to PR has long been recognized since most PR programs are only available through secondary care hospital-funded programs in Australia (Johnston *et al.*, 2011). Primary care provides an alternative setting and workforce to increase provision of PR beyond hospital-based programs. It is also recognized that primary care allied health professionals do not utilize their full skill set (Dennis *et al.*, 2021). Private practices provide a potential alternative PR workforce and infrastructure (Australian Physiotherapy Association, 2023; Exercise & Sports Science Australia, 2023). However, given the lack of appropriately trained

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 19 Nov 2026 at 04:07:08, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S146342362610139X

clinicians (Rochester *et al.*, 2021), education programs to build knowledge and skills of primary care physiotherapists and AEPs in PR may improve access to PR. There are other barriers to the provision of PR in the primary care setting. In Australia for example, there is no funding model for primary care practitioners to provide PR, meaning as little as 6% of PR programs are conducted in PPs nationally (Lung Foundation Australia, 2022). However, the fact that a short training course can improve knowledge and skills of physiotherapists and AEPs to provide PR, without the need for formal post-graduate training, may mean that PR can be delivered in the primary care setting in a scalable and feasible way, increasing the provision of PR which is a greatly underutilized intervention.

There are some limitations to the study. The single-arm, pre-post design without a control group precludes causal inference, and self-selection bias among motivated early-adopters cannot be excluded. The 10% response rate from initial invitations, combined with eligibility exclusions, resulted in a final sample of 17 clinicians from two Sydney PHNs, limiting generalization to the broader private practice physiotherapy and AEP workforce, so replication across geographically diverse settings is important. It should be noted that clinicians recruited to this study had to commit to both training and a feasibility RCT, an offer of standalone training may have achieved higher uptake. A recent national survey of 245 PP physiotherapists and AEPs in Australia reported that 91% would be interested in providing PR in their practice, especially if funding was available, suggesting that there would likely be uptake of training (Walsh *et al.*, 2025a). Formal psychometric validation data are not available for the knowledge test, and the 80% competency threshold, while consistent with medical education literature, was not derived through formal procedures.

For widespread workforce scale-up, cost, time, and perceived relevance of the training program to everyday private practice may all influence uptake. For participants enrolled in the study, training was provided at no cost; however, the LFA online training program is commercially available at AUD $175. Encouragingly, in a parallel national workforce survey conducted as part of this research program, 90% of 221 private practice clinicians indicated they would pay the AUD $175 training fee if it were required to access a Medicare funding rebate for PR delivery, suggesting that financial motivation aligned with sustainable funding models may be a powerful lever for engagement. The translation of skills and knowledge from the training program also should be tested in a practical way, with participants going on to conduct a PR program in the practices in which they work. This study is currently underway, and the protocol has been published (Walsh *et al.*, 2025b).

In conclusion, this study showed that a short training program improved knowledge, skills and confidence in primary care physiotherapists and AEPs. This study reports the training component of the PURE PRIME study (Walsh *et al.*, 2025b). While these findings demonstrate that primary care clinicians can acquire foundational PR knowledge and skills through a brief training program, the translation of this capacity into sustained, patient-facing PR delivery requires evaluation of the implementation component, which is currently underway.

Data availability statement. The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author contributions. All authors: concept and design of the study. JAW: data collection. JAW: data analysis. All authors: drafted the manuscript. All authors reviewed the final draft of the manuscript.

Funding statement. This study is funded by Lung Foundation Australia/Better Breathing Foundation PhD Scholarship in Chronic Respiratory Disease, awarded to JAW.

Competing interests. ZJM is the managing director of the Better Breathing Foundation. JAW is supported by a Lung Foundation Australia/Better Breathing Foundation PhD Scholarship in Chronic Respiratory Disease. MTD, JAA and SMD have no relevant disclosures.

Ethical standards. Ethical approval from Sydney Local Health District (RPAH Zone) Human Research Ethics Committee (2022/ETH02324). Australian and New Zealand Clinical Trials Registry number: ACTRN12622001501730.

References

Alison JA, Mckeough ZJ, Johnston K, Mcnamara RJ, Spencer LM, Jenkins SC, Hill CJ, Mcdonald VM, Frith P, Cafarella P, Brooke M, Cameron-Tucker HL, Candy S, Cecins N, Chan AS, Dale MT, Dowman LM, Granger C, Halloran S, Jung P, Lee AL, Leung R, Matulick T, Osadnik C, Roberts M, Walsh J, Wootton S and Holland AE (2017) Australian and New Zealand pulmonary rehabilitation guidelines. *Respirology* **22**, 800–819.

Australian Commission on Safety and Quality in Health Care (2024) Chronic Obstructive Pulmonary Disease Clinical Care Standard. Sydney: Australian Commission on Safety and Quality in Health Care.

Australian Government Department of Health (2023) Strengthening Medicare Taskforce Report. Canberra: Australian Government Department of Health.

Australian Physiotherapy Association (2023) APA 2023 Workforce Census. Australian Physiotherapy Association.

Bolton CE, Bevan-Smith EF, Blakey JD, Crowe P, Elkin SL, Garrod R, Greening NJ, Heslop K, Hull JH, Man WD-C, Morgan MD, Proud D, Roberts CM, Sewell L, Singh SJ, Walker PP, Walmsley S and British Thoracic Society Pulmonary Rehabilitation Guideline Development Group, on behalf of the British Thoracic Society Standards of Care Committee (2013) British Thoracic Society guideline on pulmonary rehabilitation in adults: Accredited by NICE. *Thorax* **68**, ii1–ii30.

Cheng SWM, Mckeough ZJ, McNamara RJ and Alison JA (2023) Pulmonary rehabilitation using minimal equipment for people with chronic obstructive pulmonary disease: A systematic review and meta-analysis. *Physical Therapy* **103**, pzad013.

Cox NS, Dal Corso S, Hansen H, Mcdonald CF, Hill CJ, Zanaboni P, Alison JA, O'halloran P, Macdonald H and Holland AE (2021) Telerehabilitation for chronic respiratory disease. *Cochrane Database of Systematic Reviews* **1**, Cd013040.

Cox NS, Oliveira CC, Lahham A and Holland AE (2017) Pulmonary rehabilitation referral and participation are commonly influenced by environment, knowledge, and beliefs about consequences: A systematic review using the theoretical domains framework. *Journal of Physiotherapy* **63**, 84–93.

Cross AJ, Thomas D, Liang J, Abramson MJ, George J and Zairina E (2022) Educational interventions for health professionals managing chronic obstructive pulmonary disease in primary care. *Cochrane Database of Systematic Reviews* **5**, Cd012652.

Dennis S, Ball L, Harris M and Refshauge K (2021) Allied health are key to improving health for people with chronic disease: But where are the outcomes and where is the strategy? *Australian Journal of Primary Health* **27**, 437–441.

Dowman L, Hill CJ, May A and Holland AE (2021) Pulmonary rehabilitation for interstitial lung disease. *Cochrane Database of Systematic Reviews* **2**, Cd006322.

Exercise & Sports Science Australia (2023) 2021/22 ESSA National Workforce Profile Report. Exercise & Sports Science Australia.

He W, Wang J, Feng Z, Li J and Xie Y (2023) Effects of exercise-based pulmonary rehabilitation on severe/very severe COPD: A systematic review and meta-analysis. *Therapeutic Advances in Respiratory Disease* **17**, 17534666231162250.

Holland AE, Mahal A, Hill CJ, Lee AL, Burge AT, Cox NS, Moore R, Nicolson C, Ohalloran P, Lahham A, Gillies R and Mcdonald CF (2017) Home-based rehabilitation for COPD using minimal resources: A randomised, controlled equivalence trial. *Thorax* **72**, 57–65.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 19 Nov 2026 at 04:07:08, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S146342362610139X

Johnston CL, Maxwell LJ and Alison JA (2011) Pulmonary rehabilitation in Australia: A national survey. *Physiotherapy* **97**, 284–290.

Johnston CL, Maxwell LJ, Boyle E, Maguire GP and Alison JA (2013) Improving chronic lung disease management in rural and remote Australia: The breathe easy walk easy programme. *Respirology* **18**, 161–169.

Keating A, Lee A and Holland AE (2011) What prevents people with chronic obstructive pulmonary disease from attending pulmonary rehabilitation? A systematic review. *Chron Respir Dis* **8**, 89–99.

Lee AL, Gordon CS and Osadnik CR (2021) Exercise training for bronchiectasis. *Cochrane Database of Systematic Reviews* **4**, Cd013110.

Lung Foundation Australia. *Pulmonary Rehabilitation Online Training* [Online]. Available at https://lungfoundation.com.au/events/pulmonary-rehabilitation-online-training/ (accessed 08 March 2023)

Lung Foundation Australia (2022) Lung Foundation Australia 2022 Pulmonary Rehabilitation Survey. https://pulmonaryrehab.com.au/wp-content/uploads/2022/11/Lung-Foundation-PR-Audit-2022.pdf (accessed 28 April 2026).

Lung Foundation Australia (2023) National Pulmonary Rehabilitation Strategy Framework 2023 – 2026: Ensuring Pulmonary Rehabilitation Is Accessible, Affordable, Impactful. Lung Foundation Australia. https://lungfoundation.com.au/wp-content/uploads/2025/06/National-Pulmonary-Rehabilitation-Strategy-Framework-2023-%E2%80%93-2026.pdf (accessed 28 April 2026).

Machado A, Burtin C and Spruit MA (2024) Alternative modes of delivery in pulmonary rehabilitation: A critical appraisal of the literature. *Journal of Cardiopulmonary Rehabilitation and Prevention* **44**, 399–408.

Mccarthy B, Casey D, Devane D, Murphy K, Murphy E and Lacasse Y (2015) Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews*, **2015**, Cd003793.

Moore E, Palmer T, Newson R, Majeed A, Quint JK and Soljak MA (2016) Pulmonary rehabilitation as a mechanism to reduce hospitalizations for acute exacerbations of COPD: A systematic review and meta-analysis. *Chest* **150**, 837–859.

Philip K (2015) Allied health: Untapped potential in the Australian health system. *Australian Health Review* **39**, 244–247.

Rochester CL, Langer D and Singh SJ (2021) What does the future hold? In Holland AE, Dal Corso S and Spruit MA (eds) *Pulmonary Rehabilitation. (ERS Monograph)*. Sheffield: European Respiratory Society, pp. 311–325.

Rochester CL, Alison JA, Carlin B, Jenkins AR, Cox NS, Bauldoff G, Bhatt SP, Bourbeau J, Burtin C, Camp PG, Cascino TM, Koppel GAD, Garvey C, Goldstein R, Harris D, Houchen-Wolloff L, Limberg T, Lindenauer PK, Moy ML, Ryerson CJ, Singh SJ, Steiner M, Tappan RS, Yohannes AM and Holland AE (2023) Pulmonary rehabilitation for adults with chronic respiratory disease: An official American Thoracic Society clinical practice guideline. *American Journal of Respiratory and Critical Care Medicine* **208**, e7–e26.

Rochester CL, Vogiatzis I, Holland AE, Lareau SC, Marciniuk DD, Puhan MA, Spruit MA, Masefield S, Casaburi R, Clini EM, Crouch R, Garcia-Aymerich J, Garvey C, Goldstein RS, Hill K, Morgan M, Nici L, Pitta F, Ries AL, Singh SJ, Troosters T, Wijkstra PJ, Yawn BP and Zuwallack RL (2015) An official American Thoracic Society/European Respiratory Society policy statement: Enhancing implementation, use, and delivery of pulmonary rehabilitation. *American Journal of Respiratory and Critical Care Medicine* **192**, 1373–1386.

Spitzer KA, Stefan MS, Priya A, Pack QR, Pekow PS, Lagu T, Pinto-Plata VM, Zuwallack RL and Lindenauer PK (2019) Participation in pulmonary rehabilitation after hospitalization for chronic obstructive pulmonary disease among medicare beneficiaries. *Annals of the American Thoracic Society* **16**, 99–106.

Stafinski T, Nagase FI, Avdagovska M, Stickland MK and Menon D (2022) Effectiveness of home-based pulmonary rehabilitation programs for patients with chronic obstructive pulmonary disease (COPD): Systematic review. *BMC Health Services Research* **22**, 557.

Walsh JA, Dennis SM, Alison JA, Thom JM, Herrmann K, Fisher H, McKeough ZJ and Dale MT (2025a) Are Australian physiotherapists and exercise physiologists interested in providing pulmonary rehabilitation in primary care? A national survey. *Australian Journal of Primary Health* **31**, PY25175.

Walsh JA, Mckeough ZJ, Dale MT, Alison JA and Dennis SM (2025b) PURE PRIME: Implementing PUlmonary REhabilitation in PRIMary carE: A protocol for a randomized controlled feasibility trial. *Primary Health Care Research & Development* **26**, e71.

Yang F, Gao L, Wang Q, Deng W and Gao W (2022) Effect of exercise-based pulmonary rehabilitation in patients with bronchiectasis: A meta-analysis. *Respiratory Medicine and Research* **81**, 100910.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 19 Nov 2026 at 04:07:08, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/S146342362610139X