



BREATH Project: Training program on physical activity for people with chronic respiratory diseases

Proyecto BREATH: Programa de formación sobre actividad física para personas con enfermedades respiratorias crónicas

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ABSTRACT

Introduction: respiratory diseases are one of the main causes of mortality globally, and physical activity is widely recognized as an essential element in their prevention and treatment. However, health professionals often report training gaps in the promotion of physical exercise in clinical settings. Objective: to describe the implementation of the BREATH Project from the perspective of the Portuguese partner, with a focus on interdisciplinary training to promote physical activity in people with chronic respiratory diseases. Method: experience report on the implementation of a project. The BREATH project, funded by Erasmus+, involves six European institutions. Its implementation is based on activities structured into work packages, including a systematic review, a database of good practices, an e-learning platform and training modules. Results: 20 good practices in Portugal were identified and analyzed, and content was produced for the module on integrated care. The Portuguese team contributed scientific publications and dissertations in line with the project. The e-learning platform promotes flexible, evidence-based learning, facilitating the development of skills. Conclusion: the BREATH Project has made a significant contribution to training professionals in the integrated management of chronic respiratory disease, highlighting the role of physical activity and promoting more effective, person-centered clinical practices and health policies.

Keywords: Exercise; Health Personnel; Professional Training; Respiratory Tract Diseases.

RESUMEN

Introducción: las enfermedades respiratorias son una de las principales causas de mortalidad a nivel mundial, y la actividad física es ampliamente reconocida como un elemento esencial en su prevención y tratamiento. Sin embargo, los profesionales de la salud a menudo informan de carencias formativas en la promoción del ejercicio físico en contextos clínicos. Objetivo: describir la implementación del Proyecto BREATH desde la perspectiva del socio portugués, con un enfoque en la formación interdisciplinaria para la promoción de la actividad física en personas con enfermedades respiratorias crónicas. Método: informe de experiencia sobre la implementación de un proyecto. El Proyecto BREATH, financiado por Erasmus+, involucra a seis instituciones europeas. Su implementación se basa en actividades estructuradas en paquetes de trabajo, que incluyen una revisión sistemática, una base de datos de buenas prácticas, una plataforma de e-learning y módulos formativos. Resultados: se identificaron y analizaron 20 buenas prácticas en Portugal, y se produjeron contenidos para el módulo sobre cuidados integrados. El equipo portugués contribuyó con publicaciones científicas y disertaciones alineadas con el proyecto. La plataforma de e-learning promueve un aprendizaje flexible y basado en evidencia, facilitando el desarrollo de competencias. Conclusión: el Proyecto BREATH contribuyó significativamente a la capacitación de profesionales en la gestión integrada de la enfermedad respiratoria crónica, destacando el papel de la actividad física y promoviendo prácticas clínicas y políticas de salud más efectivas y centradas en la persona.

Palabras clave: Capacitación Profesional; Ejercicio Físico; Enfermedades Respiratorias; Personal de Salud.

INTRODUCTION

Respiratory diseases are currently the third leading cause of death worldwide, accounting for approximately 4,0 million deaths (95 % uncertainty interval: 3,6-4,3 million) and affecting around 454,6 million people (417,4-499,1 million) worldwide.(1) While the age-standardized rates of Chronic Obstructive Pulmonary Disease (COPD), asthma and pneumoconiosis decreased globally between 1990 and 2019, the incidence and prevalence rates of interstitial lung diseases and pulmonary sarcoidosis increased in the same period.(1)

The incidence of upper respiratory infections reached 17,2 billion cases (95 % uncertainty interval: 15,4 to 19,3) in 2019, accounting for 42,83 % (40,01 % to 45,77 %) of the global burden of disease (GBD).(2) These data highlight the high burden that respiratory diseases represent for health systems and society in general.

Various risk factors, including lifestyle - such as smoking, diet and physical activity - directly influence the prognosis of respiratory diseases.(3) Among these factors, physical activity has been highlighted for its preventive and therapeutic role, particularly in chronic respiratory diseases. Studies show that regular physical exercise improves lung function, slows down the progression of the disease and contributes to the psychological well-being of individuals.(4)

The positive impact of physical activity has been observed in several respiratory conditions, including COPD, asthma and lung cancer, promoting improvements in functional capacity, post-operative recovery and quality of life.(4) However, despite the recognized benefits, health professionals identify training gaps in the promotion of physical activity, especially in clinical settings.(5,6)

In a recent study, many health professionals recognize the lack of educational opportunities to deepen their knowledge of physical activity and to develop skills that increase their confidence in promoting physical exercise to patients.(6) This educational weakness compromises the implementation of effective interventions and support for patients in adopting healthy behaviors.

Therefore, health professionals should use clinical judgment to determine which patients should be referred to a multidisciplinary rehabilitation program. A comprehensive patient assessment should be performed to plan an evidence-based and personalized pulmonary rehabilitation intervention that meets the patient's individual goals.(7)

In this context, the BREATH Project has emerged as a response to this need, offering an interprofessional, evidence-based educational approach to train health and exercise professionals. This project, funded by Erasmus+, brings together six European institutions that collaborate to create educational resources, including a database of good practices and an e-learning platform.

The aim of this article is to describe the implementation of the BREATH Project from the perspective of the Portuguese partner, with a focus on interdisciplinary training to promote physical activity in people with chronic respiratory diseases.

METHOD

This study adopts an experience report design, describing the implementation of the BREATH Project from the perspective of the Portuguese partner. An experience report design was adopted to share with the scientific community the planning and implementation process of the BREATH project, as well as the results obtained up to the development of the e-platform. The BREATH Project is a transnational initiative funded by the Erasmus+ program (KA220-VET), with the project code 2022-1-PL01-KA220-HED-000089283. (Start date: 01-11-2022. End date: 30-10-2025). This initiative aims to develop innovative interdisciplinary strategies for the rehabilitation and management of chronic respiratory diseases, with a focus on promoting adapted physical activity.

Project Overview

The BREATH Projecto – Interdisciplinary Approaches and Strategies in Chronic Respiratory Disease Management – is a European initiative involving six partners from different countries: University of Opole, Opole, Poland; University of Zadar, Zadar, Croatia; Pixel, University of Florence, Italy; Klaipeda University, Klaipeda, Lithuania; Escola Superior de Saúde Atlântica, Oeiras, Portugal and University of Cadiz, Cadiz, Spain.

Each of these institutions plays a key role in carrying out the project's activities, ranging from research and development of training content to dissemination and evaluation of the results. The project is coordinated by the University of Klaipėda in Lithuania.

Recipients

The main beneficiaries of the project include: Health professionals; Professionals in the field of physical activity and sport; People with chronic respiratory pathologies; Health and rehabilitation organizations and institutions; Academic and scientific community in the field of health and rehabilitation.

General Objective

The overall aim of the BREATH Project is to develop and disseminate interdisciplinary, evidence-based approaches to promoting physical activity in people with chronic respiratory diseases. This aims to contribute to improving the quality of life, autonomy and functional health of these individuals by strengthening collaboration between health and physical activity professionals.

Main Activities

The implementation of the project is based on Work Packages (WPs), which combine scientific production, dissemination and participatory evaluation. The main activities include:

1. Scientific publication: conducting a systematic search for scientific evidence to support the proposed interventions; publication of a book entitled "BREATH: Interdisciplinary Approaches and Strategies in Chronic Respiratory Disease Management" (Mroczek & Bredelytė [Eds.]), bringing together contributions from various international authors on effective practices in respiratory diseases. The e-books were evaluated by professionals with practical experience and specialized knowledge in the area, considering the following criteria: relevance, accessibility, coherence, clarity, innovativeness and consistency. Three professors, 24 nurses in postgraduate training and nurses specialized in rehabilitation nursing participated, and 12 of the specialists involved were specialists in rehabilitation nursing, contributing with their expert opinions on the applicability of the e-book presented. Participants evaluated literature reviews and e-book publications according to several criteria, with an average score above 9,0 (on a scale of 0-10). With the average score of the criteria being 9,2 (on a scale of 0-10).
2. Transnational Database of Good Practices: creation of a digital database, accessible online, containing examples of good practices in the promotion of physical activity and management of respiratory diseases, developed by the project partners and serving as a model and inspiration for local replication. Good practices were obtained through research in databases such as CINAHL® Plus and MEDLINE®. They were discussed with groups of 5 experts and then posted on the BREATH website. Good practices were evaluated with a questionnaire developed in the project by professionals with practical experience and specialized knowledge in the area, with the following criteria: Adequacy, Consistency with needs, Innovativeness, Usability and Transferability. Four teachers, 31 nurses in postgraduate or master's training, all nurses in the process of specialization or advanced qualification and 13 of the professionals involved were specialists in rehabilitation nursing, contributing with their expert opinions on the applicability of the tools and guidelines presented. Participants evaluated good practices across various criteria with an average score above 8,6 (0-10) And, that the average of the criteria was 8,8 (on a scale of 0-10).
3. E-learning platform: development of a digital educational platform aimed at health and physical activity professionals, offering interactive content on how to organize and adapt physical activities for people with chronic respiratory diseases. This platform allows for flexible learning, based on evidence and adjusted to users' needs.
4. Communication: integrated communication strategy, with various tools: website with project description, associated partners, contacts, events, testimonials and media; social networks to increase visibility and interaction; brochures and newsletters for dissemination in multiple languages; promotion through conferences, press and other institutional platforms.
5. Project management: Multinational coordination and periodic meetings between the partners for monitoring and decision-making, guaranteeing the coherence and quality of the activities carried out. Continuous evaluation of results and impact.
6. Evaluation by Partners and Users: Continuous evaluation of the project's tools and resources by contractual partners and end users (health professionals and patients). The participatory methodology ensures that the resources developed respond to the real needs of the recipients.

The BREATH Project highlights the importance of the interprofessional approach in the management of respiratory diseases, promoting collaboration between health and exercise professionals. This interprofessional approach is key to ensuring integrated, person-centered care, helping to improve quality of life and prevent complications.

This project is a structured, evidence-based response to the training needs of health and exercise professionals, reinforcing the promotion of physical activity as a key intervention in the management of chronic respiratory diseases.

RESULTS

As part of the implementation of the BREATH Project, the Portuguese team carried out various activities that contributed to the fulfillment of the project's objectives. Firstly, 20 good practices were identified, analyzed and documented in Portugal, which were added to a total of 140 good practices collected by the European partners. These good practices were integrated into a transnational database accessible through the project's digital platform, providing access to examples of effective interventions to promote physical activity in people with chronic respiratory diseases.

The Portuguese team also took part in a systematic review of good practices in the context of cystic fibrosis, the results of which were presented at the 6th International Meeting of RACS: Multiple Voices in Defense of Lives, Single Health, Plural Art and Human Formation, held at the Fluminense Federal University, Niterói, Brazil.(8) This review contributed to strengthening the evidence base that underpins the project's educational and interventional strategies.

Ten Master's students associated with the project were involved in the production of a chapter dealing with symptom management in exacerbations of chronic respiratory diseases,(9) reinforcing the formative and scientific nature of the BREATH Project. In addition, the dissertations developed within the scope of the project were oriented towards themes aligned with the promotion of physical activity and integrated management of chronic respiratory disease, resulting in three scientific publications.(10,11,12) These works covered topics such as respiratory rehabilitation programs in Portugal, nursing interventions in adults with cystic fibrosis and a rapid review of the evidence produced by Portuguese researchers in the rehabilitation of people with respiratory diseases.

The participation of ten master's degree students and the production of scientific publications also ensured a significant academic impact, promoting the dissemination of knowledge and the development of new skills in training professionals. The dissertations allowed us to identify the evidence on respiratory rehabilitation programs implemented in Portugal. As well as, understand how rehabilitation nurses contribute to the implementation of these programs.

In addition, the Portuguese teaching team contributed specific scientific publications on physical activity and exercise, addressing the perspective of nurses in general and specialists in particular.(13,14) These publications reinforce the integration of scientific knowledge in the development of training content made available on the e-learning platform.

The e-learning platform, developed as part of the BREATH Project, has been organized into five thematic modules: disease management, communication, diet, emotional and psychological management and integrated care. Each module includes interactive educational materials such as presentations, explanatory videos, discussion questions and quizzes. The module dedicated to integrated care, which is the responsibility of the Portuguese team, covers content related to patient education, health literacy, person- and family-centered care(15) and transitional care.(16) This content was developed based on scientific evidence, guaranteeing the quality and relevance of the learning provided.

Users of the e-learning platform can create accounts and access the content flexibly and autonomously, enabling evidence-based learning adapted to individual needs (). This approach promotes the continuous training of health and physical activity professionals, reinforcing the development of essential skills in the management of chronic respiratory disease. It is necessary to evaluate the usability of the platform before starting the training course.

The impact of the BREATH Project is also reflected in the scientific production and dissemination of knowledge. In addition to the scientific publications already mentioned, the Portuguese team produced audiovisual content illustrating good practices in the field of cystic fibrosis, including detailed descriptions of interventions and practical demonstrations through educational videos. This strategy has helped to make the content more accessible and better understood by professionals and patients alike.

Overall, the results achieved by the BREATH Project show its contribution to developing the skills of health and exercise professionals in promoting physical activity in people with chronic respiratory diseases. The integration of an interprofessional approach and the use of evidence-based digital resources ensure the quality of learning and its applicability in clinical practice.

DISCUSSION

The implementation of the BREATH Project, through the creation of an e-learning platform, represents an innovative approach to training health and exercise professionals in the integrated management of chronic respiratory diseases. This educational strategy is based on scientific evidence and aims to promote the development of essential skills in promoting physical activity in people with chronic respiratory diseases.

Pulmonary rehabilitation programs that integrate aerobic, resistance and breathing exercises have shown significant health benefits for respiratory patients,(4)including improved functional capacity, reduced symptoms and increased quality of life. These programs are widely recommended as an integral part of the management of chronic respiratory diseases, and are recognized by international associations such as the European Respiratory Society and the American Thoracic Society.(5,6) However, their implementation remains limited by several factors, including the lack of specific training for health professionals.

In this context, the BREATH Project has emerged as a structured response to overcome these limitations, providing a flexible and interactive learning platform that allows professionals to access up-to-date, evidence-based content. The organization of the content into thematic modules (disease management, communication, diet, emotional and psychological management and integrated care) guarantees a comprehensive and multidimensional approach that reflects the real needs of patients with chronic respiratory pathologies.

The inclusion of a specific module on integrated care, developed by the Portuguese team, highlights the importance of a person- and family-centered approach(15), promoting health literacy and reinforcing the role of transitional care.(16)This approach is particularly relevant, as it highlights the need to support patients not only in the clinical management of their condition, but also in adapting to the challenges of everyday life and making informed decisions about their health.

The e-learning platform developed as part of the BREATH Project enables autonomous learning adapted to the pace of each user, offering flexibility and accessibility. This teaching method has proved to be effective in promoting knowledge retention and improving professionals' self-confidence in the practical application of the content acquired.(5,6)

The possibility of continuous access to educational materials also allows for constant updating of skills, ensuring that professionals are able to respond to the emerging needs of patients.

The results of the BREATH Project highlight the relevance of evidence-based educational strategies for training health professionals. The collection and dissemination of good practices, combined with the development of interactive educational materials, has contributed to strengthening the skills of the professionals involved, promoting a more effective and integrated approach to the management of chronic respiratory diseases.

However, it is important to note that patient adherence to therapeutic recommendations, including regular physical activity, remains a significant challenge. Studies indicate that non-adherence to therapy is one of the most prevalent problems in all chronic diseases, including respiratory diseases, and is associated with unfavorable clinical outcomes, reduced quality of life and increased costs for the health system.(17,18)

To overcome this challenge, it is essential that professionals acquire skills not only in prescribing physical activity, but also in effective communication, supporting health literacy and promoting patient motivation.

Clinical communication is an essential skill for promoting adherence to therapeutic recommendations and for establishing a relationship of trust between the professional and the patient.(19)In the context of the BREATH Project, this skill is reinforced through specific educational content, which addresses communication strategies centered on the person, taking into account their culture, preferences and individual needs.

In addition, the integration of nutritional components and emotional and psychological management in the training modules reflects a holistic view of health, which goes beyond the management of physical symptoms. Evidence shows that interdisciplinary programs that combine nutritional counseling and psychological support produce significant benefits in the functional health, body composition and quality of life of people with respiratory disease.(20)

On the other hand, integrated disease management programs, which include respiratory rehabilitation interventions, psychological support and physical activity promotion, have been shown to improve quality of life, reduce hospitalizations and reduce unscheduled use of health services.(21)These results reinforce the relevance of the BREATH Project, which is in line with international best practices in the management of chronic respiratory diseases.

The experience of the Portuguese team in implementing the BREATH Project highlights the

importance of interdisciplinary collaboration and the sharing of good practices between European partners. This cooperation has enabled the development of high-quality educational content based on practical experience and scientific evidence. In addition, the participation of master's students and the production of scientific publications reinforce the academic impact of the project, promoting the dissemination of knowledge and the development of new skills in training professionals.

In summary, the BREATH Project demonstrates that e-learning platforms are an effective strategy for training health and exercise professionals, promoting the continuous updating of knowledge and the development of practical skills. However, the sustainability and long-term impact of these initiatives depend on their integration into continuing education policies and the strategic planning of healthcare organizations.

As examples of similar programs, the I-PHAN study was designed to develop an e-learning program to promote physical activity (PA) and well-being among nurses.

The MEGA e-learning resource addressed a gap in their knowledge about physical activity, but noted that e-learning should not replace face-to-face teaching and suggested that physical activity education would be best delivered through a blended learning approach.

Implications for Health Practice and Policy

The implementation of the BREATH Project, using an e-learning platform aimed at health and exercise professionals, represents a strategic advance in technical training and the promotion of care centered on people with chronic respiratory disease. This educational approach not only meets the training needs of these professionals but also reinforces the integration of physical activity as a central element in the management of respiratory diseases, in line with scientific evidence.

In clinical practice, health professionals trained through the BREATH Project acquire skills that enable them to more effectively promote physical activity among people with chronic respiratory diseases. This skill is essential, since regular physical activity has shown significant benefits in improving functional capacity, reducing symptoms and quality of life.⁽⁴⁾ In addition, the e-learning platform provides flexible learning adapted to individual needs, allowing professionals to access the content at their own pace and availability, which facilitates the retention and practical application of the knowledge acquired.

The integration of physical activity into clinical practice is not limited to its prescription, requiring professionals to be able to promote health education about the importance of physical exercise, adapt activity programs to individual needs and promote patient adherence to recommendations.

The BREATH Project addresses this need by providing training modules that cover essential areas such as disease management, effective communication, emotional and psychological management, and integrated care. This multidimensional approach promotes a holistic view of health, which goes beyond the treatment of physical symptoms and includes psychological support and nutritional counseling.⁽¹⁸⁾

As far as health policies are concerned, the adoption of e-learning platforms as continuing training tools contributes to democratizing access to health education, particularly in geographical contexts with less training on offer. This strategy is especially relevant in regions with limited resources, where there is little access to face-to-face training programs. The use of the e-learning platform allows professionals to acquire essential skills in an autonomous and flexible way, promoting equity in access to knowledge and the continuous updating of clinical practices. The e-learning platform allows you to reach a large number of professionals who are in remote areas. It requires internet access. The platform is translated into the partner languages (Portuguese, English, Spanish, Lithuanian, Croatian, Italian and Polish.)

In addition, the BREATH Project highlights the importance of an interprofessional approach in the management of chronic respiratory diseases. Collaboration between health and exercise professionals is key to ensuring that patients receive integrated, evidence-based care. This interprofessional approach promotes knowledge sharing and coordination between different disciplines, which translates into better outcomes for patients.

The social and economic implications of poor adherence to therapy and inadequate management of respiratory diseases justify the adoption of structured professional training measures as a public health priority. The promotion of physical activity and exercise should be implemented not only as a therapeutic component, but as a transversal intervention in policies for the prevention and treatment of chronic respiratory diseases. This approach is consistent with the recommendations of the World Health Organization (WHO), which highlights the importance of promoting physical activity as a key strategy for improving overall health.

Finally, the BREATH Project highlights the positive impact of continuing education on clinical practice and the quality of care provided to patients. The integration of an evidence-based e-learning platform ensures that professionals have access to up-to-date and scientifically validated content, strengthening their ability to promote health and prevent complications in people with chronic respiratory diseases.

The continuity and sustainability of this type of initiative depends, however, on the commitment of health organizations and training providers to promote continuous training and to integrate the use of digital platforms into their professional development plans. In this sense, it is recommended that health and education institutions consider the use of e-learning platforms as a complementary strategy to face-to-face training programs, ensuring that all professionals have access to continuous development opportunities.

Potential limitations in the implementation of the project may arise from the fact that only 20 good practices were identified by the Portuguese team, despite a total of 140 good practices being submitted to the platform in the context of chronic respiratory diseases. Another limitation relates to the evaluation of the five course modules, which is still pending and will be conducted by the project partners.

CONCLUSIONS

The implementation of the BREATH Project has proved to be an innovative and effective initiative in training health and exercise professionals to promote physical activity in people with chronic respiratory diseases.

The results achieved show that the BREATH Project contributed to the development of essential skills in the participating professionals, enabling them to promote physical activity as a fundamental component of the integrated management of chronic respiratory diseases. The organization of the content into thematic modules - disease management, communication, diet, emotional and psychological management and integrated care - ensured a holistic and multidimensional approach that reflects the real needs of patients.

The next step consists of making the training modules available and evaluating their usability.

REFERENCES

1. Momtazmanesh S, Moghaddam SS, Ghamari SH, Rad EM, Rezaei N, Shobeiri P, et al. Global burden of chronic respiratory diseases and risk factors, 1990–2019: an update from the Global Burden of Disease Study 2019. *EClinicalMedicine*. 2023;59:101936. <https://doi.org/10.1016/j.eclinm.2023.101936>
2. Jin X, Ren J, Li R, Gao Y, Zhang H, Li J, et al. Global burden of upper respiratory infections in 204 countries and territories, from 1990 to 2019. *EClinicalMedicine*. 2021;37:100986. <https://doi.org/10.1016/j.eclinm.2021.100986>
3. Murano H, Inoue S, Sato K, Sato M, Igarashi A, Fujimoto S, et al. The effect of lifestyle on the mortality associated with respiratory diseases in the general population. *Sci Rep*. 2023;13(1):8272. <https://doi.org/10.1038/s41598-023-34929-8>
4. Pawełczyk W, Rutkowski S. Impact of physical activity on respiratory diseases. *Slovak J Sport Sci*. 2024;9(2):94–114. <https://doi.org/10.24040/sjss.2024.9.2.94-114>
5. Netherway J, Smith B, Monforte J. Training healthcare professionals on how to promote physical activity in the UK: A scoping review of current trends and future opportunities. *Int J Environ Res Public Health*. 2021;18(13):6701. <https://doi.org/10.3390/ijerph18136701>
6. Pellerine LP, O'Brien MW, Shields CA, Crowell SJ, Strang R, Fowles JR. Health care providers' perspectives on promoting physical activity and exercise in health care. *Int J Environ Res Public Health*. 2022;19(15):9466. <https://doi.org/10.3390/ijerph19159466>
7. Holland AE, Cox NS, Houchen-Wolloff L, Rochester CL, Garvey C, ZuWallack R, et al. Defining modern pulmonary rehabilitation. An official American Thoracic Society workshop report. *Ann Am Thorac Soc*. 2021;18(5):e12–29. <https://doi.org/10.1513/AnnalsATS.202102-146ST>
8. Sousa L, Severino S, Seixas P, Valido S, Santos MJ, Oliveira H, et al. Programas de reabilitação respiratória na pessoa com fibrose quística: revisão sistemática da literatura. In: 6.ª Reunião Internacional da RACS; 2024 Aug; Niterói, Brasil. Universidade Federal Fluminense.
9. Sousa L, Silva S, Seixas P, José H. Acute and chronic respiratory symptoms management. In: Mroczek A, Bredelytė A, editors. *BREATH: Interdisciplinary approaches and strategies in chronic respiratory disease management*. Opole: University of Opole; 2025. p. 79–97.
10. Vigia CDBR, Ferreira ARG, Ferreira RMF, José HMG, Sousa LMM. Programas de reabilitação respiratória: Análise portuguesa. In: Sousa LMM, José HMG, Guerra NEH, Severino SSP, organizadores. *Enfermagem de reabilitação: Fundamentos, intervenção e resultados*. Guarujá, SP: Científica Digital; 2025. p. 10–25. <https://doi.org/10.37885/250419159>
11. Gomes AMC, Margato DCL, Ribeiro SPPD, Barreiros SFG, José HMG, Guerra NEH, et al. Intervenções de enfermagem no adulto com fibrose quística. In: Sousa LMM, José HMG, Guerra NEH, Severino SSP, organizadores. *Enfermagem de reabilitação: Fundamentos, intervenção e resultados*. Guarujá, SP: Científica Digital; 2025. p. 62–77. <https://doi.org/10.37885/250419162>
12. Ferreira A, Vigia C, Ferreira R, Severino S, Guerra N, José H, et al. Respiratory Rehabilitation Programs in Portugal: Rapid Review. *Interdiscip Rehabil*. 2025;5:117. <https://doi.org/10.56294/ri2025117>
13. Tomás J, Severino S, Valido S, Albuquerque G, José H, Sousa L. Prática regular de atividade física: Estratégias de motivação para a mudança de comportamento. In: *Atividade física – Um conceito central da enfermagem de reabilitação*. Coimbra: UICISA: E / ESEnFC; 2025. p. 43–55.
14. Sousa L, Baixinho C, Ferreira R, Severino S, Faleiros F, José H. Enfermagem e promoção da atividade física – Referenciais teóricos. In: *Atividade física – Um conceito central da enfermagem de reabilitação*. Coimbra: UICISA: E / ESEnFC; 2025. p. 57–69.
15. Registered Nurses' Association of Ontario. Person- and family-centred care. Toronto (ON): Registered Nurses' Association of Ontario; 2015. Available from: <https://rnao.ca/media/3244/download>
16. Registered Nurses' Association of Ontario. Care transitions. Toronto (ON): Registered Nurses' Association of Ontario; 2014. Available from: <https://rnao.ca/sites/rnao-ca/files/care-transitions.pdf>
17. Holmes J, Heaney LG. Measuring adherence to therapy in airways disease. *Breathe (Sheff)*. 2021;17(2):210037. <https://doi.org/10.1183/20734735.0037-2021>
18. Jansen EM, van de Hei SJ, Dierick BJ, Kerstjens HA, Kocks JW, van Boven JF. Global burden of medication non-adherence in chronic obstructive pulmonary disease (COPD) and asthma: a narrative review of the clinical and economic case for smart inhalers. *J Thorac Dis*. 2021;13(6):3846–59. <https://doi.org/10.21037/jtd-20-2360>
19. Zhang X, Buttery SC, Sterniczuk K, Brownrigg A, Kennington E, Quint JK. Patient experiences of communication with healthcare professionals on their healthcare management around chronic respiratory diseases. *Healthcare (Basel)*. 2023;11(15):2171. <https://doi.org/10.3390/healthcare11152171>
20. Bell K, Lawson J, Penz E, Cammer A. Systematic review of tailored dietary advice and dietitian involvement in the treatment of chronic obstructive pulmonary disease (COPD). *Respir Med*. 2024;107584. <https://doi.org/10.1016/j.rmed.2024.107584>
21. Poot CC, Meijer E, Kruis AL, Smidt N, Chavannes NH, Honkoop PJ. Integrated disease management interventions for patients with chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2021;(9):CD009437. <https://doi.org/10.1002/14651858.CD009437.pub3>
22. Okechukwu CE, Gholamalishahi S, Ganjali H, Marte M, Minorenti M, Filomeno L, et al. I-PHAN Study-Use of E-learning modules to Promote Physical activity and wellness among Nurses in order to improve mental and physical health: A research protocol for a randomized controlled trial. *Clin Ter*. 2021;172(6). <https://doi.org/10.7417/CT.2021.2378>

23. Carter-Roberts H, Antbring R, Angioi M, Pugh G. Usability testing of an e-learning resource designed to improve medical students' physical activity prescription skills: a qualitative think-aloud study. *BMJ Open*. 2021;11(7):e042983. <https://doi.org/10.1136/bmjopen-2020-042983>
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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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