

PROMOTING PHYSICAL HEALTH IN OLDER ADULTS WITH ALZHEIMER'S DISEASE: A NARRATIVE REVIEW ON THE IMPACT OF EXERCISE INTERVENTION PROGRAMS

PROMOVENDO SAÚDE FÍSICA EM PESSOAS IDOSAS COM DOENÇA DE ALZHEIMER: REVISÃO NARRATIVA DO IMPACTO DE PROGRAMAS DE INTERVENÇÃO COM EXERCÍCIO FÍSICO

SARA SOUZA SOARES ¹ , GIOVANNA DE CÁSSIA SILVA QUARESMA ¹ , BRUNO FERNANDO DE SOUZA TAVARES ² , ARIANA FERRARI ³ , RENATO AUGUSTO MARIOTTO ³ , TALITA CEZARETI DA SILVA ⁴ , ELAINE CRISTINA COSTA LOPES ³ , EDUARDO QUADROS DA SILVA ³ , DANIEL VICENTINI DE OLIVEIRA ² 

1. Universidade Cesumar. Departamento de Graduação em Fisioterapia. Maringá, Paraná, Brazil.

2. Universidade Estadual de Maringá. Programa de pós-graduação em Educação Física. Maringá, Paraná.

3. Universidade Cesumar. Departamento de Pós-graduação em Promoção da saúde. Maringá, Paraná, Brazil.

4. Instituto Nacional de Cardiologia. Rio de Janeiro, Rio de Janeiro, Brazil.

Revista UNILUS Ensino e Pesquisa (RUEP), v. 23, n. 70, jan./mar. 2026

ABSTRACT

Introduction: Physical exercise has been recognized as a relevant non-pharmacological strategy for promoting physical and functional health in older adults with Alzheimer's disease. **Objective:** To review the scientific literature on the effects of exercise-based interventions on the promotion of physical health in older adults with Alzheimer's disease. **Methods:** This study is a narrative review of the literature. A non-systematic literature search was conducted in the PubMed, SciELO, LILACS, and Google Scholar databases, including studies published in English and Portuguese, with no temporal restriction. Studies addressing the effects of physical exercise programs on physical and functional outcomes in older adults diagnosed with Alzheimer's disease were considered. **Results:** The analyzed evidence indicates that regular, well-structured exercise programs - particularly those combining aerobic, resistance, balance, and flexibility training - promote improvements in muscle strength, balance, mobility, functional capacity, and independence in activities of daily living, as well as reduced fall risk. Additionally, physical exercise is associated with neuroprotective mechanisms, such as modulation of inflammatory processes and increased levels of neurotrophic factors. **Conclusion:** Physical exercise should be considered an essential component of comprehensive care for older adults with Alzheimer's disease, contributing to the maintenance of physical health, functional capacity, and quality of life.

Keywords: Alzheimer's disease. Exercise. Aging.

RESUMO

Introdução: O exercício físico tem sido reconhecido como uma estratégia não farmacológica relevante para a promoção da saúde física e funcional de idosos com doença de Alzheimer. **Objetivo:** Revisar a literatura científica acerca dos efeitos das intervenções baseadas em exercício físico na promoção da saúde física em pessoas idosas com doença de Alzheimer. **Métodos:** Trata-se de uma revisão narrativa da literatura. A busca bibliográfica foi realizada de forma não sistemática nas bases PubMed, SciELO, LILACS e Google Scholar, incluindo estudos publicados em português e inglês, sem delimitação temporal. Foram considerados estudos que abordassem os efeitos de programas de exercício físico sobre desfechos físicos e funcionais em pessoas idosas com diagnóstico de doença de Alzheimer. **Resultados:** As evidências analisadas indicam que programas regulares e bem estruturados, especialmente aqueles que combinam exercícios aeróbicos, resistidos, de equilíbrio e flexibilidade, promovem melhora da força muscular, equilíbrio, mobilidade, capacidade funcional e independência nas atividades de vida diária, além de reduzir o risco de quedas. Ademais, o exercício físico associa-se a mecanismos neuroprotetores, como a modulação de processos inflamatórios e o aumento de fatores neurotróficos. **Conclusão:** O exercício físico deve ser considerado um componente essencial no cuidado integral de pessoas idosas com doença de Alzheimer, contribuindo para a manutenção da saúde física, funcionalidade e qualidade de vida.

Descritores: Doença de Alzheimer. Exercício. Envelhecimento.

Citation: SOARES SS, QUARESMA G DE CS, TAVARES BF DE S, FERRARI A, MARIOTTO RA, SILVA TC DA, et al. PROMOTING PHYSICAL HEALTH IN OLDER ADULTS WITH ALZHEIMER'S DISEASE: A NARRATIVE REVIEW ON THE IMPACT OF EXERCISE INTERVENTION PROGRAMS. Revista UNILUS Ensino e Pesquisa [Internet]. 2026 Aug;23(70):11-4. Available from: <http://revista.lusiada.br/index.php/ruep/article/view/23262/u2026v23n70e2326>

Todos os autores declaram não haver nenhum conflito de interesses potencial relacionado com este artigo.

Correspondência: Daniel Vicentini de Oliveira. d.vicentini@hotmail.com

INTRODUCTION

Alzheimer's disease (AD) is a progressive, chronic, and irreversible neurodegenerative disorder characterized by a continuous decline in memory and other cognitive functions, and it is recognized as the leading cause of dementia worldwide. Age is the most relevant risk factor for the development of AD, with an estimated prevalence of approximately 10% among individuals aged 65 years and older, increasing substantially with advancing age¹. As the disease progresses, it leads to a gradual loss of autonomy, impairing activities of daily living (ADLs) and frequently accompanied by behavioral and neuropsychiatric changes².

Beyond the classical cognitive impairments, growing evidence indicates that older adults with AD also experience significant motor deficits, which may be present even in the early stages of the disease. These impairments include reduced gait speed, shorter step length, muscle weakness in both upper and lower limbs, and alterations in postural control³. Such motor limitations contribute to increased instability and balance deficits, leading to reduced levels of physical activity and a higher risk of falls, injuries, and fractures. It is estimated that approximately 60% of older adults with AD experience falls, with a frequency nearly twice that observed in cognitively healthy older individuals⁵.

Motor impairments associated with AD add to cognitive decline and play a central role in the early loss of functional independence⁶. This impact is evident in both basic ADLs, such as feeding and personal hygiene, and instrumental activities of daily living, including meal preparation and financial management⁷. The progressive loss of functional capacity significantly compromises quality of life and imposes substantial physical and emotional burden on caregivers, thereby characterizing AD as a significant clinical, social, and familial challenge².

Another relevant and commonly observed aspect in older adults with AD is the fear of falling, particularly following initial episodes of postural instability. This fear may lead to voluntary restriction of daily activities, promoting physical inactivity, sarcopenia, and increased physical frailty⁸. Consequently, a vicious cycle of inactivity and functional decline is established, which further increases the risk of recurrent falls and fractures, and the likelihood of institutionalization⁸.

Although pharmacological therapy is widely used in the management of AD, its effects on functional progression remain limited⁹. In this context, non-pharmacological strategies have gained increasing importance, with particular emphasis on regular physical exercise². Evidence suggests that exercise programs, when systematically implemented and tailored to individual capacities, contribute to the maintenance of functional independence, reduction of caregiver burden, and decreased need for institutional care¹⁰.

In addition to functional benefits, physical exercise has been associated with relevant neuroprotective effects, including increased cerebral blood flow, antioxidant activity, modulation of pro-inflammatory cytokines, and stimulation of angiogenesis and neurogenesis¹¹. These physiological mechanisms support the role of exercise as a complementary therapeutic strategy, with potential to attenuate physical decline and delay the progression of functional disability in older adults with AD¹⁰.

Therefore, the present study aimed to review the scientific literature through a narrative review regarding the effects of exercise-based interventions on physical health, functional capacity, and the prevention of motor decline in older adults with Alzheimer's disease.

METHODS

This study was designed as a narrative review of the literature, aiming to gather, discuss, and critically interpret scientific evidence on the effects of physical exercise programs on physical health in older adults with Alzheimer's disease. This

methodological approach was chosen because it allows for a broad, flexible, and interpretative synthesis of findings from heterogeneous study designs, supporting theoretical reflections and practical applications without the constraints of systematic review protocols.

The literature search was not restricted to a specific publication period, thereby including both seminal studies and more recent investigations and providing a comprehensive overview of the topic. Articles published in English and Portuguese were considered, provided that they were available in full text through academic databases or repositories.

The bibliographic search was conducted non-systematically across multiple databases, including PubMed, SciELO, LILACS, and Google Scholar. Additional relevant studies were identified through manual screening of reference lists from selected articles, using a snowballing strategy to expand the scope of the review.

Eligible studies included original research articles, clinical trials, and review papers that directly addressed the effects of physical exercise programs or interventions on physical health outcomes in older adults diagnosed with Alzheimer's disease. Physical health outcomes of interest included muscle strength, balance, mobility, fall risk, functional capacity, and performance in activities of daily living. Studies were excluded if they: (a) focused exclusively on cognitive outcomes without relation to physical health; (b) involved mixed populations without specific analysis of individuals with Alzheimer's disease; or (c) were not available in full text.

Study identification was initially based on title and abstract screening, followed by full-text reading of potentially relevant articles. Data were analyzed using a qualitative, descriptive, and interpretative approach. The synthesis followed a narrative framework, emphasizing key findings, methodological limitations, and clinical implications of the included studies. Convergences and divergences among results were highlighted to provide a critical overview that may inform professional practice and guide future research. No formal assessment of methodological quality or risk of bias was performed, as this review did not aim to provide a quantitative or systematic synthesis of evidence.

RESULTS AND DISCUSSION

The evidence gathered in this narrative review indicates that exercise-based interventions play a relevant role in attenuating physical and functional decline in older adults with AD. More than a complementary strategy, physical exercise constitutes a central non-pharmacological intervention capable of positively influencing the trajectory of motor and functional deterioration characteristic of the disease.

Overall, the analyzed studies demonstrate that regular participation in structured physical exercise programs contributes to the preservation of motor abilities, with direct impacts on balance, mobility, coordination, and functional capacity. These components are critical for maintaining autonomy in activities of daily living (ADLs) and for reducing the risk of falls - an aspect particularly relevant in individuals with AD, in whom motor decline tends to accelerate functional dependence and increase caregiver burden.

Hernandez et al.¹² observed that older adults with Alzheimer's disease who participated in a supervised exercise program showed significant improvements in balance and agility, without an increased risk of falls. In contrast, the control group exhibited a significant decline across all evaluated variables. These findings suggest that physical exercise may contribute to

the stabilization of functional performance when compared with the absence of structured intervention.

Similar results were reported by Vreugdenhil et al.¹³ in a randomized controlled trial involving community-dwelling older adults with AD. After four months of a home-based program consisting of daily exercises and walking supervised by caregivers, the intervention group demonstrated significant improvements in mobility - evidenced by reduced time on the Timed Up and Go test - as well as increased independence in instrumental activities of daily living, compared with the control group. These findings reinforce that exercise-based interventions, even when delivered in the home environment and supported by caregivers, can produce clinically relevant physical and functional benefits in individuals with AD.

About functional capacity, multimodal exercise programs - combining aerobic, resistance, balance, and flexibility training - are particularly effective¹⁴. Such interventions have been associated with increased muscle strength, improved mobility, and reductions in symptoms of pain, anxiety, and depression, in addition to favoring a decrease in medication use and its potential side effects, consolidating exercise as a non-pharmacological strategy of high clinical relevance.

Ferretti et al.¹⁵ further support these findings by reporting that a six-week protocol of progressive strength and balance exercises promoted significant gains in mobility and postural stability in older adults with AD, whereas the control group showed deterioration in these parameters.

The intervention protocols described in the literature exhibit considerable heterogeneity in terms of composition, duration, frequency, and intensity. Hernandez et al.¹² implemented supervised sessions three times per week, lasting approximately 60 minutes, including stretching, resistance exercises, functional circuits, pre-sport games, dance, and recreational activities. In contrast, the protocol described by Ferretti et al.¹⁵ prioritized balance and strength circuits with progressive intensity, incorporating walking on unstable surfaces, ankle-weight exercises, step training, and mini-squats, and demonstrated consistent functional gains even in the short term. These findings suggest that different intervention models may be effective, provided that principles of individualization, progression, and adequate supervision are respected.

Despite the observed benefits, the implementation of physical exercise programs for older adults with AD still faces significant challenges. Among the main limiting factors are cognitive and functional symptoms themselves, which hinder task comprehension and reduce adherence to interventions¹⁶. Additionally, the lack of systematic medical referral, transportation difficulties, limited caregiver availability, and scarcity of specialized services constitute frequent barriers¹². In this context, caregiver training plays a central role, both in supporting adherence and in the clinical and emotional management of patients, reinforcing the need for health education strategies and structured family support¹⁷.

Considering the progressive nature of AD - marked by cognitive decline, loss of muscle strength, increased risk of falls, and early institutionalization - the relevance of exercise-based interventions becomes evident as a strategy capable of delaying functional decline, reducing secondary complications, and

improving quality of life for both patients and their families^{17,18}. In this regard, understanding individual characteristics, respecting prior habits and functional limitations, and adapting programs to specific needs are fundamental to the success of the proposed interventions.

Finally, this study presents limitations inherent to the narrative review design. The absence of rigorous systematization criteria may have introduced selection bias, as study inclusion depended on availability in the consulted databases and the authors' interpretative analysis. The lack of temporal restriction allowed for a comprehensive overview of the topic, but also included studies with heterogeneous methodologies, in some cases, potentially outdated. Furthermore, the diversity of intervention protocols analyzed - varying in duration, intensity, frequency, and exercise modalities - limits direct comparison of results. Additionally, some studies included small sample sizes, limiting the generalizability of their findings and underscoring the need for future research with more robust, controlled, and multicenter designs to consolidate evidence on the effectiveness of physical exercise in older adults with AD.

CONCLUSION

This narrative review highlights that regular physical exercise plays a fundamental role in promoting physical and functional health in older adults with Alzheimer's disease. The evidence analyzed indicates that well-structured exercise programs combining aerobic, resistance, balance, and flexibility training contribute to the preservation of functional capacity, reduction in fall risk, improvements in muscle strength, and greater independence in activities of daily living, all of which are directly related to quality of life.

Beyond functional outcomes, physical exercise stands out as a relevant non-pharmacological strategy, being associated with neuroprotective mechanisms such as modulation of inflammatory processes and increased levels of neurotrophic factors, which may attenuate the physical and functional decline inherent to disease progression. These benefits also extend to psychological and social well-being, with positive implications for reducing caregiver burden.

Despite the favorable findings, essential challenges remain in implementing exercise programs for older adults with Alzheimer's disease, including adherence difficulties, logistical barriers to access and transportation, and limited availability of specialized services. In this context, investing in public policies that expand access to adapted physical activity programs, along with caregiver and multidisciplinary team training, is essential to support integrated, continuous care.

Therefore, physical exercise should be considered an essential component of the comprehensive management of Alzheimer's disease, acting in conjunction with pharmacological treatment and social support strategies. Finally, future research should focus on developing more standardized exercise protocols, conducting larger-scale interventions, and adopting more robust methodological designs to strengthen the evidence base and enhance the clinical applicability of exercise-based interventions in this population.

CONTRIBUIÇÕES DOS AUTORES: Conceituação: Sara Souza Soares e Giovanna de Cássia Silva Quaresma. Metodologia: Renato Augusto Mariotto. Validação: Ariana Ferrari. Redação – Rascunho original: Talita Cezareti da Silva, Bruno Fernando de Souza Tavares e Elaine Cristina Costa Lopes. Redação – Revisão e edição: Eduardo Quadros da Silva. Supervisão: Eduardo Quadros da Silva. Administração do projeto: Daniel Vicentini de Oliveira.

REFERÊNCIAS

1. Machado APR, Carvalho IO, Sobrinho HMR. Neuroinflamação na doença de Alzheimer. *Rev Bras Mil Cienc.* 2020;6(14).
2. Santos GC, Rodrigues GMM, Monteiro EMO. Influência da fisioterapia em pacientes com Alzheimer. *Rev. Liberum Accessum.* 2020;4(1):46-53.
3. Buchman AS, Bennett DA. Loss of motor function in preclinical Alzheimer's disease. *Expert Rev Neurother.* 2011;11(5):665-676.
4. Montero-Odasso M, Verghese J, Beauchet O, Hausdorff JM. Gait and cognition: a complementary approach to understanding brain function and the risk of falling. *J Am Geriatr Soc.* 2012;60(11):2127-2136.
5. Zidan M, Arcoverde C, Araújo NB, Vasques P, Rios A, Laks J, Deslandes A. Motor and functional changes in different stages of Alzheimer's disease. *Rev Psiquiatr Clin.* 2012;39(5):161-165.
6. Buchman AS, Wilson RS, Yu L, Boyle PA, Bennett DA, Barnes LL. Motor function is associated with incident disability in older African Americans. *J Gerontol A Biol Sci Med Sci.* 2016;71(5):696-702.
7. Tabira T, Hotta M, Murata M, Yoshiura K, Han G, Ishikawa T, Koyama A, Ogawa N, Maruta M, Ikeda Y, Mori T, Yoshida T, Hashimoto M, Ikeda M. Age-related changes in instrumental and basic activities of daily living impairment in older adults with very mild Alzheimer's disease. *Dement Geriatr Cogn Dis Extra.* 2020;10(1):27-37.
8. Borges SM, Radanovic M, Forlenza OV. Fear of falling and falls in older adults with mild cognitive impairment and Alzheimer's disease. *Neuropsychol Dev Cogn B Aging Neuropsychol Cogn.* 2015;22(3):312-321.
9. Birks JS, Harvey RJ. Donepezil for dementia due to Alzheimer's disease. *Cochrane Database Syst Rev.* 2018;6:CD001190.
10. Kamada M, Shimizu Y, Kumagai S, et al. Correlação entre exercício físico e qualidade de vida em pacientes com doença de Alzheimer. *Rev Soc Bras Clin Med.* 2018;16(2).
11. De la Rosa A, Olaso-Gonzalez G, Arc-Chagnaud C, Millan F, Salvador-Pascual A, García-Lucerga C, Blasco-Lafarga C, Garcia-Dominguez E, Carretero A, Correias AG, Viña J, Gomez-Cabrera MC. Physical exercise in the prevention and treatment of Alzheimer's disease. *J Sport Health Sci.* 2020;9(5):394-404.
12. Hernandez SSS, Coelho FG, Gobbi S, Stella F. Effects of a physical activity program on cognitive functions, balance and risk of falls in elderly with Alzheimer's dementia. *Rev Bras Fisioter.* 2010;14(1):68-74.
13. Vreugdenhil A, Cannell J, Davies A, Razay G. A community-based exercise programme to improve functional ability in people with Alzheimer's disease: a randomized controlled trial. *Scand J Caring Sci.* 2012;26(1):12-19.
14. Yan J, Li X, Guo X, Lin Y, Wang S, Cao Y, Lin H, Dai Y, Ding Y, Liu W. Effect of multicomponent exercise on cognition, physical function and activities of daily life in older adults with dementia or mild cognitive impairment: a systematic review and meta-analysis. *Arch Phys Med Rehabil.* 2023;104(12):2092-2108.
15. Ferretti F, Gobbi S, Coelho FG, et al. Effects of an exercise program on mobility, balance and cognition in older adults with Alzheimer's disease. *Fisioter Bras.* 2014;15(2).
16. Roller LDF, et al. Diagnóstico precoce da doença de Alzheimer: importância e desafios. *Braz J Implantol Health Sci.* 2024;26(3):2778-2786.
17. Silva MRD, et al. Doença de Alzheimer: estratégias de cuidado diante das dificuldades ao portador e cuidador. *Braz J Implantol Health Sci.* 2023;5(3):164-191.
18. Ilha S, Backes DS, Backes MS, et al. Alzheimer's disease in older adults and their families: experienced difficulties and care strategies. *Esc Anna Nery.* 2016;20(1).