

Effectiveness of Physical Activity Programs for Older Adults in Aged Care Homes: A Systematic Review

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Received: 16-02-2026

Revised: 28-02-2026

Accepted: 21-03-2026

Published: 30-03-2026

ABSTRACT

Background: Physical inactivity is a significant concern among older adults living in residential aged care homes. Age-related muscle weakness, frailty, chronic disease, reduced mobility, and dependence on caregivers can contribute to declining physical function and increased fall risk. Structured physical activity programs may help preserve mobility, improve balance and strength, and support independence and wellbeing. However, outcomes vary according to exercise type, intervention duration, supervision, and residents' health status.

Objective: This review examines the effectiveness of physical activity programs for older adults living in aged care homes, focusing on physical function, strength, balance, falls, functional independence, and quality of life. It also considers implementation barriers and evidence from Australian and international research.

Methods: A structured review of published evidence was undertaken, drawing on systematic reviews, meta-analyses, and relevant research concerning physical activity and exercise interventions in residential aged care. Relevant literature was identified through scholarly records, including PubMed and journal publications. Findings were synthesised narratively according to major health and functional outcomes. No new participant data were collected, and no unpublished statistical results were generated.

Results: The reviewed evidence generally supports appropriately designed exercise programs for improving or maintaining physical function among older adults in residential care. Programs combining strength, balance, gait, and functional training appear particularly relevant. Exercise may reduce falls while an intervention is active, although evidence suggests that this benefit may not persist after programs end. Quality-of-life findings are promising but inconsistent. Individualisation, adequate supervision, sustained participation, and organisational support appear important for implementation.

Conclusion: Physical activity programs can contribute to healthy ageing in residential aged care when they are tailored to residents' capabilities and delivered consistently. Australian research provides valuable evidence on falls prevention and outcome measurement. Future research should strengthen methodological transparency, evaluate long-term outcomes, and identify sustainable approaches for residents with different levels of frailty and cognitive impairment.

Keywords: *Physical activity, older adults, aged care homes, residential aged care, exercise interventions, physical function, falls prevention, systematic review.*

INTRODUCTION

Population ageing has increased the need for effective approaches to maintaining health, mobility, independence, and quality of life during later life. Residential aged care homes provide accommodation and support for older adults who can no longer manage all their daily needs independently. Residents may experience frailty, reduced muscle strength, impaired balance, chronic diseases, cognitive

impairment, and limitations in activities of daily living. These conditions can restrict movement and increase dependence on care staff.

Physical activity is bodily movement produced by skeletal muscles that requires energy expenditure, whereas exercise is planned and structured activity intended to improve or maintain physical fitness. In aged care homes, suitable activities may include supervised walking, resistance exercises, balance training, chair-based movement, functional mobility practice, and recreational activities adapted to individual abilities.

Insufficient physical activity can contribute to a cycle of functional decline. Reduced movement may weaken muscles and impair balance, making standing, transferring, and walking more difficult. These difficulties can increase fear of falling and discourage further activity. Structured exercise may interrupt this cycle by providing regular opportunities to practise movement and maintain physical capabilities.

However, older residents are not a uniform population. Some walk independently, while others require mobility aids or assistance with transfers. Pain, fatigue, cardiovascular conditions, dementia, and medication effects may influence the safety and feasibility of exercise. Consequently, interventions must be adapted to residents' clinical circumstances and personal preferences.

Evidence from residential-care research has expanded in recent years. Valenzuela et al. (2023) examined exercise effects on physical function through a systematic review and network meta-analysis of randomised controlled trials. Dyer et al. (2023) investigated exercise for falls prevention in aged care, while Dawson et al. (2024) examined characteristics of potentially effective falls-prevention exercise programs.

Australian research is particularly relevant because residential aged care services operate within specific staffing, clinical, and organisational arrangements. Wootten et al. (2022), for example, examined how outcomes were measured in randomised controlled trials of physical activity interventions involving aged care residents.

Against this background, the present review evaluates the evidence concerning physical activity programs and considers their implications for aged care practice.

Objectives of the Review

The principal objective is to evaluate the effectiveness of physical activity programs for older adults living in residential aged care homes.

The specific objectives are to:

1. Examine effects on physical function, muscle strength, balance, and mobility.
2. Assess the evidence concerning falls prevention and functional independence.
3. Explore potential effects on quality of life and psychological wellbeing.
4. Identify program characteristics that may support effective implementation.
5. Discuss barriers and facilitators, including evidence from Australia.
6. Identify limitations in existing research and priorities for future investigation.

METHODOLOGY

Review design

This paper uses a structured literature-based synthesis of published research on physical activity and exercise among older adults living in residential aged care. Systematic reviews and meta-analyses were prioritised because they consolidate evidence across multiple intervention studies. Relevant individual studies were considered where they helped explain program implementation or outcomes.

The synthesis is narrative because the available publications examine different exercise interventions, participant characteristics, follow-up periods, and outcome measures. The present manuscript should not be interpreted as a newly completed, prospectively registered systematic review with independently verified PRISMA screening records.

LITERATURE IDENTIFICATION

Relevant publications were identified through scholarly records and journal literature, including PubMed-indexed articles and published systematic reviews. Search concepts included combinations of the terms physical activity, exercise, older adults, residential aged care, nursing homes, physical function, falls prevention, balance, mobility, and quality of life.

Particular attention was given to research involving residential-care populations rather than studies exclusively involving healthy, community-dwelling older adults. Australian research and internationally published reviews were considered where their findings directly addressed the objectives.

Eligibility considerations

Publications were considered relevant when they examined exercise or physical activity among older adults living in residential care and reported findings related to physical function, muscle strength, balance, mobility, falls, activities of daily living, quality of life, or implementation.

Systematic reviews and meta-analyses were prioritised. Research on barriers, facilitators, and outcome measurement was also considered to understand how programs operate in real-world care settings. Studies from other populations were not treated as direct evidence for residential aged care unless their relevance was explicitly qualified.

Evidence synthesis

Findings were organised into five themes: physical function and mobility; strength and balance; falls prevention; functional independence and quality of life; and implementation in aged care facilities.

Published quantitative results are attributed to their original studies. No new pooled effect estimates, participant numbers, or statistical analyses were calculated for this manuscript. Because a complete reproducible database search and independent screening process have not been documented here, the paper does not claim exhaustive study identification or a PRISMA-compliant selection process.

RESULTS

Physical function and mobility

Physical function is a fundamental outcome in residential aged care. It influences whether residents can stand from a chair, transfer between surfaces, walk short distances, and participate in everyday

activities. Exercise programs may target these capabilities through resistance training, walking, balance exercises, and repeated practice of functional movements.

Valenzuela et al. (2023) conducted a systematic review and network meta-analysis of randomised controlled trials involving older adults in residential care. Their review included 147 studies involving 11,609 participants, while the network meta-analysis included 105 studies involving 7,759 participants. The authors reported a small but statistically significant improvement in overall physical function associated with exercise compared with usual care, with a standardised mean difference of 0.13 (95% credible interval 0.04–0.21).

This finding suggests that exercise can produce measurable benefits, although the average effect is modest. Even relatively small improvements may matter in aged care when they help residents maintain the ability to stand, walk, or participate in self-care.

Responses are nevertheless likely to vary according to baseline mobility, frailty, cognitive status, medical conditions, and intervention design. An exercise routine appropriate for a resident who walks independently may not be suitable for someone who needs assistance with transfers.

Programs should therefore begin with an assessment of mobility, health status, functional goals, and exercise tolerance. Regular reassessment can help staff adjust the difficulty of activities and identify whether residents are improving, maintaining function, or experiencing new limitations.

Muscle strength and balance

Muscle strength and balance are important determinants of mobility and fall risk. Reduced lower-limb strength can make standing and transferring more difficult, while impaired balance may affect walking and postural stability

Resistance exercises can be adapted to residents' abilities through supported standing, repeated chair rises, elastic resistance, light weights, or other clinically appropriate activities. Balance training may involve supported weight shifting, controlled stepping, and supervised standing activities. Walking and functional exercises can complement these approaches by practising movements relevant to daily life.

Dawson et al. (2024) analysed components of exercise programs used in randomised controlled trials involving residential aged care residents. Their review included 32 trials involving 3,960 residents. The intervention component analysis suggested that potentially effective programs targeted strength and balance, were individualised, and were delivered in a structured and adequately resourced manner. Moderate-intensity exercise was common among the included interventions, although the appropriate intensity for an individual resident depends on clinical assessment and ability.

These findings support a tailored approach rather than a single standard routine for every resident. Exercise should be challenging enough to address the intended physical capacity while remaining appropriate to the individual's symptoms, balance, and medical needs.

Falls prevention

Falls can cause injuries, fear of movement, reduced confidence, and further restrictions in activity. Falls prevention is therefore a major concern for residential aged care providers.

Dyer et al. (2023) conducted a systematic review and meta-analysis examining exercise as a falls-prevention intervention in residential aged care. Their analysis included 12 trials from an earlier Cochrane review and seven additional trials. At the end of the intervention period, exercise probably reduced the rate of falls: the pooled rate ratio was 0.68 (95% confidence interval 0.49–0.95), based on 13 trials.

The review also found that the risk of experiencing a fall was lower at the end of the intervention period. However, after exercise programs had ended, there was little or no evidence of a sustained reduction in falls. The pooled post-intervention rate ratio was 1.01 (95% confidence interval 0.80–1.28).

These findings have an important practical implication: exercise should be treated as an ongoing component of care rather than a short-term intervention. When residents stop participating, the protective benefits may decline. Continued participation, appropriate supervision, and integration into routine care are therefore important.

Exercise is not a substitute for other falls-prevention measures. Environmental hazards, medication effects, footwear, vision, transfer techniques, and underlying health conditions may also require attention. A comprehensive approach should combine physical activity with clinical assessment and environmental safety.

Functional independence

Functional independence refers to the ability to perform everyday activities with limited assistance. In aged care homes, these activities may include standing up, moving between a bed and chair, walking to communal areas, and participating in personal care.

Exercise may support independence by maintaining the physical capacities required for these tasks. However, improvements in strength or balance do not automatically result in reduced dependence. A resident may improve in a mobility test but still need assistance because of cognitive impairment, pain, environmental barriers, or other health conditions.

Facilities should therefore evaluate functional outcomes directly. Relevant measures may include mobility tests, chair-rise performance, walking ability, transfer assistance requirements, and participation in activities of daily living.

Care staff can reinforce the benefits of formal exercise by creating safe opportunities for movement throughout the day. Depending on individual assessment, this may include supported walking, supervised standing, or practising transfers. These activities should complement formal exercise rather than replace professional rehabilitation when it is needed.

Quality of life and psychological wellbeing

Quality of life includes physical comfort, emotional wellbeing, social relationships, autonomy, and satisfaction with everyday activities. Physical activity may support these dimensions by encouraging meaningful engagement, maintaining mobility, and providing opportunities for social interaction.

Group exercise can also create a routine that residents anticipate and enjoy. Activities adapted to residents' interests may encourage participation and provide a sense of achievement. For some individuals, the social value of a program may be as important as measurable physical improvement.

However, quality-of-life outcomes are not uniform across studies. Different researchers use different questionnaires, intervention formats, and follow-up periods. Furthermore, quality of life is affected by pain, relationships, living conditions, cognitive status, and health problems that may not change in response to exercise.

Facilities should therefore avoid assuming that improvements in physical performance necessarily indicate improved wellbeing. Evaluations should include validated quality-of-life measures where feasible and consider residents' own views about the usefulness and enjoyment of activities.

Evidence from Australian research

Australian research contributes important evidence concerning exercise delivery, falls prevention, and outcome measurement in residential aged care.

Wootten, Wiseman, and Harris (2022) published a systematic review examining how outcomes were measured in randomised controlled trials of physical activity interventions involving aged care residents. Their work highlights the importance of choosing suitable and consistent outcome measures.

This issue matters because studies may assess different outcomes, such as walking speed, muscle strength, functional independence, falls, or quality of life. Differences in measurement make it difficult to compare results directly and determine which interventions are most beneficial. Standardised reporting can improve the usefulness of evidence for practitioners and researchers.

Dyer et al. (2023) also provide important Australian-associated evidence. The research team included investigators affiliated with Flinders University and the University of Sydney. Their systematic review supports continuing exercise as a falls-prevention strategy for residents who are able and willing to participate.

Similarly, Dawson et al. (2024) included Australian researchers and examined characteristics of exercise interventions associated with falls prevention. Their findings suggest that strength and balance training, individualisation, supervision, and adequate resources are important considerations.

These publications should be understood as Australian-associated or international studies involving Australian research teams, not necessarily as trials conducted exclusively in Australian facilities. Their findings are relevant to Australian aged care, but additional studies conducted across different Australian settings would help establish how well the interventions translate into routine practice.

DISCUSSION

The reviewed evidence indicates that physical activity programs can improve or help maintain physical function among older adults living in residential aged care. The findings are especially relevant to interventions targeting strength, balance, gait, and functional movement.

The evidence concerning falls is encouraging but requires careful interpretation. Exercise probably reduces falls during active intervention periods, yet the available meta-analysis indicates that this benefit may not persist after programs stop. Facilities should consequently plan for sustained participation rather than relying on brief courses of exercise.

The relationship between physical function and independence is also complex. Improved strength and balance can support everyday movement, but dependence may remain because of cognitive impairment, chronic disease, environmental restrictions, or other support needs. Programs should measure functional outcomes directly and consider the resident's broader circumstances.

Quality-of-life findings are promising, but more consistent measurement is required. Physical activity may provide social engagement and a sense of achievement, even when changes in clinical measures are limited. Programs should therefore balance physical objectives with enjoyment, choice, dignity, and meaningful participation.

Implementation is another central issue. Limited staffing, insufficient training, unsuitable spaces, and competing care responsibilities can restrict the frequency and quality of exercise. A program that works under closely supervised research conditions may produce different results when delivered inconsistently in routine care.

The practical conclusion is that exercise effectiveness depends not only on the selected activities but also on delivery. Individual assessment, appropriate supervision, regular participation, and organisational commitment are essential considerations.

Practical Implications

Aged care facilities should consider integrating structured physical activity into person-centred care plans. Programs may include strength training, balance exercises, supervised walking, and functional movements, adapted to residents' abilities and preferences.

Initial assessment should identify mobility limitations, relevant medical conditions, fall risk, and individual goals. Exercise intensity and complexity should be adjusted when a resident's health or functional status changes. Qualified health professionals should guide exercise prescription when clinical complexity or rehabilitation needs warrant it.

Facilities should also support continuity. Regular sessions, suitable scheduling, accessible equipment, and trained staff may help maintain participation. Residents should be offered appropriate choices and should not be pressured to perform activities that conflict with their clinical needs or preferences.

Monitoring can include attendance, functional performance, falls, adverse events, and resident feedback. Consistent measurement can help facilities identify whether programs are practical, acceptable, and associated with meaningful outcomes.

Limitations

This manuscript synthesises published evidence but does not report a newly completed, prospectively registered systematic review. A full submission-ready systematic review would require reproducible searches across databases, documented search dates, duplicate screening, formal risk-of-bias assessment, a PRISMA flow diagram, and a complete record of included and excluded studies.

The literature also varies in intervention type, intensity, duration, supervision, and outcome measurement. These differences restrict direct comparison. Residents with severe frailty or cognitive impairment may respond differently from those with greater mobility, and findings from international research may not transfer equally to every aged care setting.

RECOMMENDATIONS FOR FUTURE RESEARCH

Future studies should compare different combinations of strength, balance, gait, and functional training to determine which approaches best support residents with different levels of frailty. Researchers should report intervention frequency, intensity, duration, supervision, adherence, and adverse events clearly.

Australian research should examine how staffing, access to allied health professionals, facility resources, and resident preferences influence program delivery. Longer follow-up is needed to determine whether benefits can be maintained and what support is required to sustain participation.

Consistent outcome measures would improve comparisons between studies. Research should also include residents with cognitive impairment and higher care needs, while ensuring appropriate ethical safeguards. Economic evaluations could help facilities assess the resources required for sustainable programs.

CONCLUSION

Physical activity programs can contribute to improved or maintained physical function among older adults living in residential aged care homes. Evidence supports appropriately tailored exercise that

addresses strength, balance, gait, and functional movement. Exercise may also reduce falls while a program is active, although sustained participation appears important for maintaining benefits. Evidence concerning quality of life is promising but less consistent.

Effective implementation requires individual assessment, appropriate supervision, resident-centred planning, and organisational support. Australian-associated research highlights the importance of ongoing exercise and consistent outcome measurement. Physical activity should therefore be incorporated into continuing, person-centred aged care, while future research strengthens evidence about long-term effectiveness, implementation, and the needs of residents with different levels of physical and cognitive ability.

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