

IMPACT OF HOME MODIFICATIONS ON THE PROMOTION OF AGING IN PLACE BY IMPROVING PHYSICAL PERFORMANCE IN OLDER ADULTS: A SYSTEMATIC REVIEW



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OVERVIEW

- ▶ Introduction
- ▶ Purpose
- ▶ Search Terms
- ▶ Inclusion Criteria
- ▶ PRISMA
- ▶ MINORS
- ▶ Results
- ▶ Limitations
- ▶ Conclusion
- ▶ Clinical Relevance
- ▶ Future Research
- ▶ Acknowledgements
- ▶ References

INTRODUCTION

▶ Aging in place¹

- Phenomenon and preference for older adults to remain living in the community for as long as possible and with some level of **independence**
- Enables maintenance of independence, autonomy and connection to social support
- Provides **meaning and security** via familiarity with a place and social connections
- **Goals:** enhance quality of life (QoL) and activity participation, application of necessary home modifications (HM), promotion of a comfortable environment

INTRODUCTION

- ▶ **Home modifications²**
 - Interventions and adaptations to the physical environment that support independent living among older adults
 - **May include:** elimination of slip and trip hazards (e.g. throw rugs); installation of grab bars or handrails, night lights, adaptive bathroom equipment
- ▶ **Physical performance**
 - Performance of activities of daily living (ADL)
 - E.g. bathing, dressing, toileting, transferring, walking, stairs

PURPOSE

To determine the impact of home modifications on aging in place by improving physical performance in older adults

SEARCH TERMS

- ▶ “home modification” **OR** “home modifications” **AND** “aging in place” **AND** “physical performance”

- ▶ **Databases:**
 - ProQuest Journals
 - Health and Medical Complete, Nursing and Allied Health Source, Research Library
 - PubMed
 - ScienceDirect
 - Google Scholar

INCLUSION CRITERIA

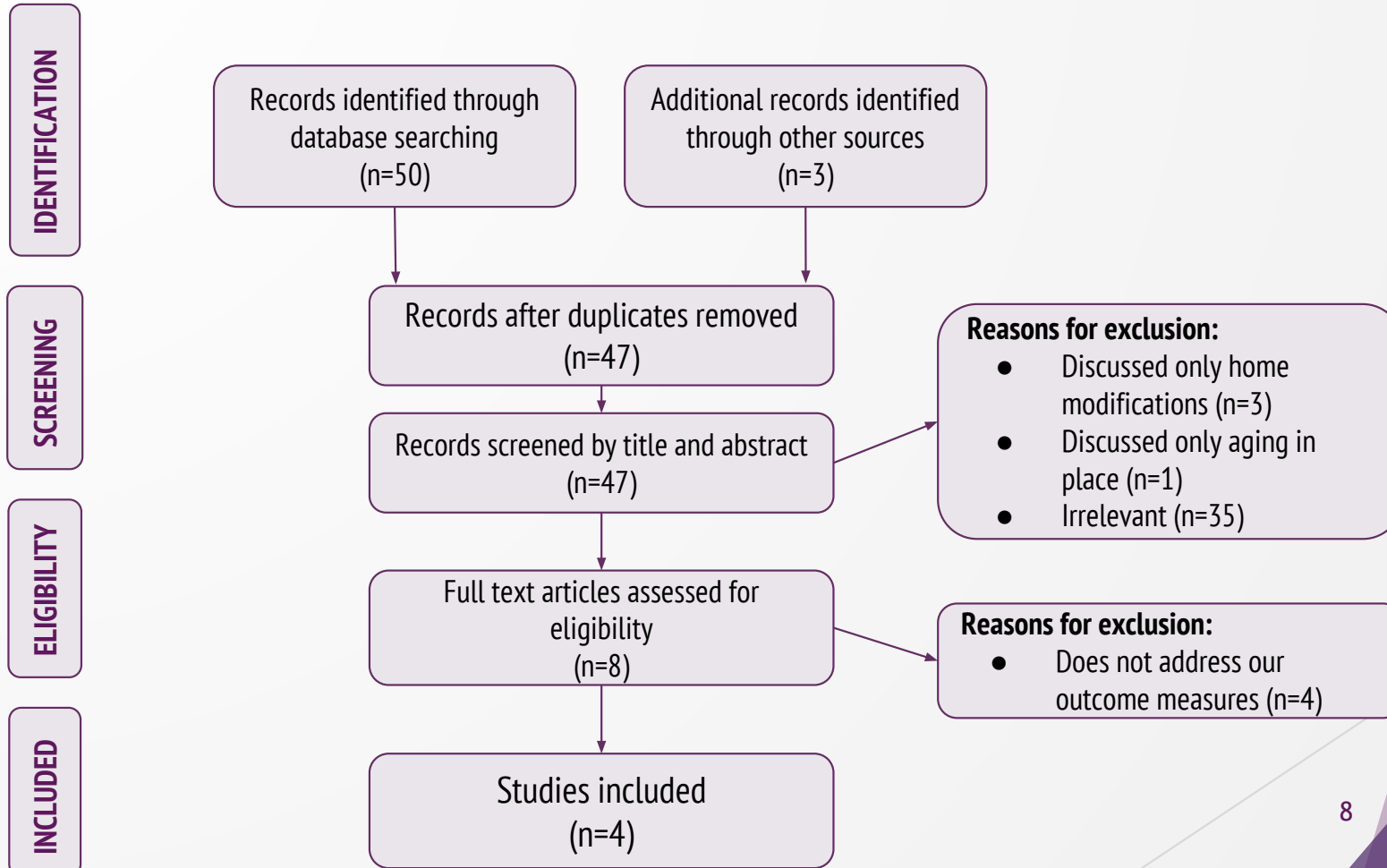
▶ Search Limits:

- English
- Peer-reviewed
- Scholarly journals
- Published between 2007-2017

▶ Selection criteria:

- Older adults (≥ 65 years old)
- Home modification intervention
- Home setting
- Physical performance outcome

PRISMA



MINORS SCORES

Authors	1 Clearly Stated Aim	2 Inclusion of Consecutive Patients	3 Prospective Collection of Data	4 Appropriate Endpoints to Study Aim	5 Unbiased Evaluation of Endpoints	6 Appropriate Follow Up Period	7 Loss to Follow Up Less than 5%	8 Prospective Calculation of Sample Size	9 Adequate Control Group	10 Contemporary Groups	11 Baseline Equivalence of Groups	12 Adequate Statistical Analysis	Total
Sheffield Smith Becker	2	2	2	2	2	2	1	1	2	2	2	1	21/24
Szanton Leff Wolff Roberts Gitlin	2	2	2	2	2	2	2	1	N/A	N/A	N/A	N/A	15/16
Stark Landsbaum Palmer Somerville Morris	2	2	2	2	1	2	1	2	N/A	N/A	N/A	N/A	14/16
Lien Steggell Iwarsonn	2	2	2	1	0	0	0	0	N/A	N/A	N/A	N/A	7/16

RESULTS

- ▶ 53 articles were screened for eligibility, only 4 articles met the inclusion criteria
 - Three cohort studies (2 pre- and post-test, 1 cross-sectional) and 1 RCT
- ▶ **MINORS scores:**
 - One article scored 21/24
 - Remaining 3 articles: scores ranged from 7 to 15/16 (mean = 12/16)
- ▶ Sample sizes ranged from 12 to 234 (total = 373)

RESULTS

- ▶ Three studies implemented HM to improve ADL performance and satisfaction in the home^{3, 4, 5}
 - **HM:** reachers, grab bars, railings, night lights, adaptive bathroom equipment
 - **Perceived barriers in home:** high shelving, lack of handrails, accessibility to shower and toilet
- ▶ One study provided anecdotal information on behaviors and HM older adults used for accommodation of functional limitations²

RESULTS: PHYSICAL PERFORMANCE

- ▶ **ADL difficulty**
 - 75% of participants reduced number of ADL they had difficulty performing from 3.9 ADL to 2³
 - Statistically significant increase in ADL performance following HM ($p < 0.001$)⁴
- ▶ **Physical Performance**
 - 49% of participants improved physical function³
 - Average Functional Independence Measure (FIM) scores increased by 7 points⁴
 - No significant changes in FIM score were reported, possibly due to ceiling effect⁵

RESULTS: QoL

- ▶ Three studies reported improvement of **QoL and satisfaction**
 - **QoL**
 - QoL improved more with HM than in the control group, resulting in an 8% improvement in health-related QoL health status index value⁵
 - 77.6% of participants reduced home hazards from an average of 3.3 hazards to 1.4³
 - **Satisfaction**
 - “The showerhead in the master bathroom was too difficult for me to adjust, so we put in the removable showerhead on a bar where the height can be adjusted. We also remodeled the kitchen. We put in those round revolving shelves (lazy susan) in the pantry closet, they are so useful.”^{2, p11966}

LIMITATIONS

- ▶ Databases searched
- ▶ Study design
- ▶ Small sample size
- ▶ Short study duration
- ▶ Lack of long-term follow-up

CONCLUSION

- ▶ **Moderate preliminary evidence** exists supporting home modification for the promotion of aging in place and improving physical performance in older adults
- ▶ Home modifications have shown to improve:
 - ADL performance
 - Patient QoL
 - Satisfaction and safety in the home

CLINICAL RELEVANCE

- ▶ Aging in place allows older adults to age comfortably in their home by improving QoL, environmental safety, and independence
- ▶ Clinicians should consider HM to promote aging in place and provide referrals when necessary
- ▶ HM are a feasible method to increase physical performance in older adults
 - May prolong admission to higher levels of care

FUTURE RESEARCH

- ▶ More RCTs to **strengthen evidence**
- ▶ Examine the **long-term effects** of HM and aging in place
- ▶ Examine change in physical performance following HM
- ▶ Use **objective measures** to assess QoL following HM (e.g. SF-36)
- ▶ Establish objective measures related to HM

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QUESTIONS?