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Effectiveness of Home-Based Exercise Program for Improving Quality of Life and Functional Ability in Older Adults

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Abstract

Background: Functional decline and reduced quality of life are common consequences of ageing, often resulting in decreased independence and an increased risk of disability. Home-based exercise programs have emerged as an accessible, cost-effective strategy to improve functional ability and enhance older adults' quality of life by promoting regular physical activity in their home environment.

Objective: To evaluate the effectiveness of a structured home-based exercise program in improving functional ability and quality of life among older adults.

Methods: A quasi-experimental study was conducted among 30 community-dwelling older adults aged 60–80 years. Participants were allocated into two groups: Group A (n = 15) received a structured home-based exercise program, while Group B (n = 15) received an unspecific motor placebo activity. Both interventions were administered for 45 minutes per session, three sessions per week, for six weeks. Functional ability was assessed using the Barthel Index (BI), and quality of life was measured using the Older People's Quality of Life Questionnaire (OPQOL-35). Outcome measures were recorded at baseline, after three weeks, and after six weeks. Statistical analysis used paired and independent t-tests, with statistical significance set at $p < 0.05$.

Results: Both groups demonstrated improvements following the intervention; however, Group A showed significantly greater improvement than Group B. BI scores increased significantly in the exercise group, indicating enhanced functional independence, while OPQOL-35 scores demonstrated significant improvement in quality of life after six weeks of intervention ($p < 0.05$). Between-group analysis also revealed a statistically significant advantage of the structured home-based exercise program over the unspecific motor placebo activity.

Conclusion: A structured home-based exercise program is an effective intervention for improving functional ability and quality of life among community-dwelling older adults. Regular home-based exercise may be considered a practical, safe, and economical approach to promote healthy ageing and maintain independence.

Keywords: Older adults; Home-based exercise; Functional ability; Barthel

Index; OPQOL-35; Quality of life.

Introduction

Ageing is a major global public health challenge, with the number of older adults increasing rapidly due to improvements in healthcare and life expectancy. Ageing is commonly associated with a progressive decline in muscle strength, balance, mobility, and physical function, leading to reduced independence and diminished quality of life (1,2). Functional limitations also increase the risk of falls, hospitalization, disability, and healthcare utilization among older adults (3).

Regular physical activity is recognized as one of the most effective non-pharmacological interventions for maintaining functional ability and promoting healthy ageing. Exercise improves muscle strength, balance, flexibility, mobility, and cardiovascular fitness while reducing the risk of falls and physical frailty (4,5). The World Health Organization recommends regular physical activity as a key strategy to preserve functional capacity and enhance quality of life in older adults (6).

Home-based exercise programs have gained considerable attention because they are safe, convenient, cost-effective, and easily accessible. Unlike centre-based rehabilitation, home-based programs eliminate transportation barriers, reduce financial burden, and improve adherence by allowing older adults to exercise in familiar surroundings (7). Previous studies have demonstrated that structured home-based exercise programs significantly improve functional performance, balance, mobility, and quality of life while reducing fall risk among community-dwelling older adults (8–10).

Functional ability is an important indicator of healthy ageing and is commonly assessed using the BI, which evaluates independence in activities of daily living. Similarly, quality of life is a multidimensional concept that reflects physical, psychological, social, and environmental well-being and can be effectively measured using the OPQOL-35 (11,12). These outcome measures provide reliable information regarding the effectiveness of rehabilitation interventions in older adults.

Although several studies have reported the benefits of home-based exercise, further evidence is needed to support its effectiveness in improving both functional ability and quality of life among community-dwelling older adults. Therefore, the present study aimed to evaluate the effectiveness of a structured home-based exercise program on BI and OPQOL-35 scores in older adults.

Materials and Methods

Ethical Clearance Number:

The study was approved by the Institutional Ethics Committee (IEC-RIPT/DT/21/4518).

Study Design

A quasi-experimental study with two parallel groups was conducted to evaluate the effectiveness of a structured home-based exercise program in improving functional ability and quality of life among older adults.

Study Setting and Duration

The study was conducted among community-dwelling older adults in their homes over a period of three months. The intervention lasted for six weeks, with assessments performed at baseline, three weeks, and six weeks.

Participants

Thirty community-dwelling older adults aged 60–80 years were recruited using purposive sampling. Participants were allocated into two groups: Group A (n = 15) received a structured home-based exercise program, while Group B (n = 15) received an unspecific motor placebo activity.

Eligibility Criteria

Inclusion Criteria

- Community-dwelling older adults aged 60–80 years.
- Ability to follow verbal instructions and communicate effectively.
- Medically stable and cleared by a physician to participate in light-to-moderate intensity exercise.

- Ability to ambulate independently or with an assistive device.

Exclusion Criteria

- Severe cognitive impairment or dementia.
- Uncontrolled cardiovascular, respiratory, or other medical conditions contraindicating exercise.
- Recent fracture or surgery affecting mobility.
- Participation in another structured physiotherapy or rehabilitation program during the study period.

Intervention

Participants in Group A underwent a structured home-based exercise program consisting of warm-up, balance, coordination, resistance, stretching, and cool-down exercises. Each session lasted 45 minutes, including 10 minutes of warm-up, 25 minutes of exercise, and 10 minutes of cool-down. The intervention was delivered three times per week for six weeks.

Group B received an unspecific motor placebo activity involving non-specific movements that did not target balance, strength, or functional performance. The frequency and duration of sessions were matched with those of Group A.

Outcome Measures

Functional ability was assessed using the BI, a validated instrument for measuring independence in activities of daily living. Quality of life was assessed using the OPQOL-35, a validated questionnaire designed specifically for older adults. Assessments were conducted before the intervention, at three weeks, and at the end of six weeks by the same assessor.

Statistical Analysis

Data were analysed using Statistical Package for the Social Sciences (SPSS) version 24.0. Data normality was evaluated using the Shapiro–Wilk test. Continuous variables were expressed as mean ± standard deviation. Within-group comparisons were performed using the paired t-test, whereas between-group comparisons were analysed using the independent t-test. A p-value <0.05 was considered statistically significant.

Results

A total of 30 community-dwelling older adults completed the study, with 15 participants in each group. No participants were lost to follow-up during the intervention period. Baseline characteristics and outcome measures were comparable between the two groups, with no statistically significant differences observed before the intervention ($p > 0.05$).

The BI scores improved significantly in both groups following the intervention. However, participants who received the structured home-based exercise program (Group A) demonstrated significantly greater improvement than those who received the unspecific motor placebo activity (Group B). At the end of six weeks, the mean BI score increased from 13.06 ± 2.12 to 17.40 ± 2.44 in Group A, whereas Group B showed an increase from 12.06 ± 2.49 to 13.00 ± 2.36. Between-group comparison at six weeks revealed a statistically significant difference in favour of Group A ($p = 0.001$).

Similarly, significant changes were observed in OPQOL-35 scores following the intervention. Group A demonstrated a greater improvement in quality of life compared with Group B. The mean OPQOL-35 score changed from 143.26 ± 4.47 at baseline to 108.13 ± 9.26 after six weeks in Group A, while Group B showed only a minimal change from 140.00 ± 6.27 to 139.13 ± 6.33. The between-group comparison at the end of the intervention was statistically significant ($p = 0.001$).

Within-group analysis demonstrated significant improvements in both BI and OPQOL-35 scores from baseline to the end of the intervention in both groups ($p < 0.05$). However, the magnitude of improvement was substantially greater in participants who received the structured home-based exercise program than in those who received the unspecific motor placebo activity.

Demographic Variables

A total of 30 community-dwelling older adults participated in the study and completed the intervention. Participants were equally allocated into two groups, with 15 participants each in Group A (structured

home-based exercise program) and Group B (unspecific motor placebo activity). All participants were female and aged between 60 and 80 years. Baseline demographic characteristics, including age and ambulatory status, were comparable between the two groups, with no statistically significant differences observed before the intervention ($p > 0.05$), indicating homogeneity of the study population.

Table 1: Within-group comparison of outcome measures in Group A

Outcome measure	Pre-test (mean ± SD)	Post-test 1 (mean ± SD)	Post-test 2 (mean ± SD)	F-value	P-value
BI	13.06 ± 2.12	15.06 ± 1.53	17.40 ± 2.44	1268.87	0.001
OPQOL	143.26 ± 4.47	122.20 ± 9.89	1.8.13 ± 9.26	10.11	0.001

Table 2: Within group comparison of outcome measures in Group B

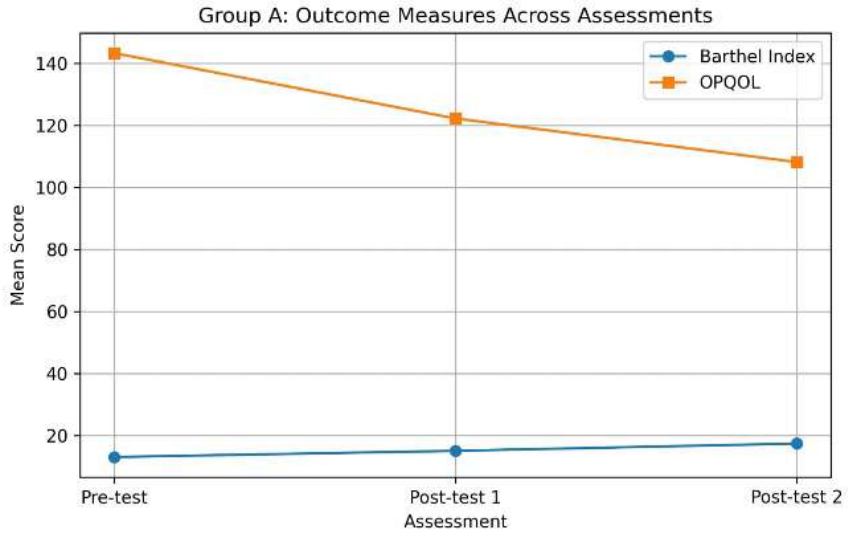
Outcome measure	Pre-test (mean ± SD)	Post-test 1 (mean ± SD)	Post-test 2 (mean ± SD)	F-value	P-value
BI	12.06 ± 2.49	12.66 ± 2.58	13.00 ± 2.36	74.05	0.001
OPQOL	140.00 ± 6.27	139.46 ± 6.44	139.13 ± 6.33	14.33	0.001

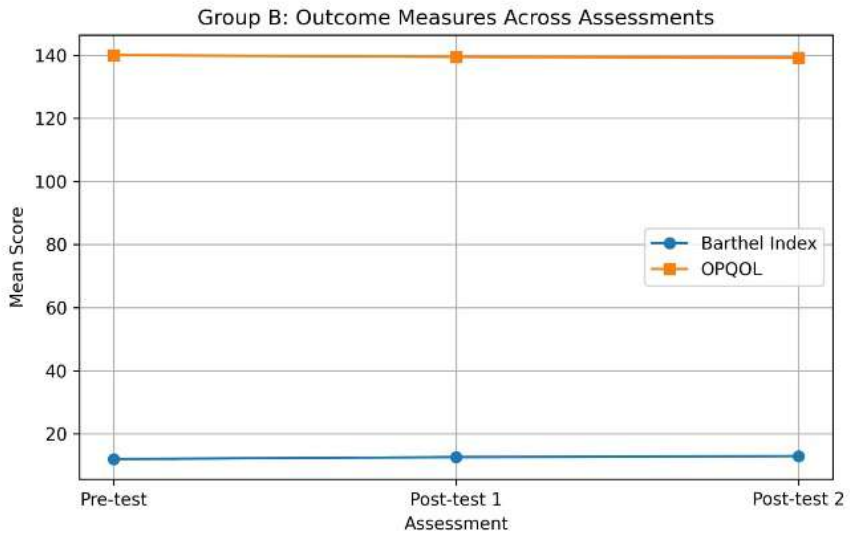
Discussion

The present study evaluated the effectiveness of a home-based exercise program in improving functional ability and quality of life among older adults. Both groups showed improvement after the 6-week intervention; however, the home-based exercise group demonstrated significantly greater improvement in the Barthel Index and OPQOL-35 scores compared with the control group ($p < 0.05$). These findings suggest that structured home-based exercise is more effective in enhancing functional independence and overall quality of life in older adults.

The observed improvements may be attributed to the positive effects of regular exercise on muscle strength, balance, mobility, and performance of activities of daily living. The findings are consistent with previous studies reporting that home-based exercise programs improve functional ability, reduce disability, and enhance quality of life among older adults.

Overall, the results support the effectiveness of home-based exercise as a safe, practical, and cost-effective intervention for improving functional ability and quality of life in older adults.





Conclusion

The findings of the present study demonstrate that a structured home-based exercise program is effective in improving functional ability and quality of life among community-dwelling older adults. Participants who received the exercise program showed significantly greater improvements in BI and OPQOL-35 scores compared with those who received the unspecific motor placebo activity. These findings suggest that a structured home-based exercise program is a safe, practical, and cost-effective intervention that can enhance independence and promote healthy ageing. Incorporating home-based exercise into routine physiotherapy practice may help improve physical function, maintain autonomy, and enhance the overall well-being of older adults. Further studies with larger sample sizes, longer follow-up periods, and diverse populations are recommended to confirm these findings and evaluate the long-term effectiveness of the intervention.

Limitations and Recommendations

This study was limited by a small sample size, the inclusion of only female community-dwelling older adults, and a short intervention period without long-term follow-up. In addition, only functional ability and quality of life were evaluated. Future studies should include larger and more diverse populations, extend the duration of follow-up, and assess additional outcomes such as balance, gait, muscle strength, and fall risk to further establish the long-term effectiveness of structured home-based exercise programs.

Informed Consent

Written informed consent was obtained from all participants before enrolment in the study. The purpose, procedures, potential benefits, and possible risks of the study were explained in a language understandable to the participants. They were informed that participation was voluntary and that they could withdraw from the study at any time without affecting their routine care. Confidentiality and anonymity of all participant information were maintained throughout the study, and all data were used exclusively for research purposes.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this study.

Author Contributions

Krishna Priya K.S.: Conceptualization, methodology, participant recruitment, data collection, intervention administration, data analysis, interpretation of results, manuscript drafting, and manuscript revision.

Soundharya M & Dr. P. Nithya: Supervision, methodology, critical review of the manuscript, interpretation of results, and final approval of the manuscript.

P. Bright Alwin Victor: Study supervision, methodology, validation, critical review of the manuscript, and final approval of the version to be published.

Dharshini K: Data collection, investigation, literature review, assistance with data analysis, manuscript review, and final approval of the manuscript.

Data Availability Statement

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

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Reference

1. Ullrich P, Werner C, Schönstein A, et al. Effects of a Home-Based Physical Training and Activity Promotion Program in Community-Dwelling Older Persons with Cognitive Impairment after Discharge from Rehabilitation: A Randomized Controlled Trial. J Gerontol A Biol Sci Med Sci. 2022;77(12):2435-2444. doi:10.1093/gerona/glac005.
2. Cyarto EV, Brown WJ, Marshall AL, et al. Comparison of the effects of a home-based and group-based resistance training program on functional ability in older adults. Am J Health Promot. 2008;23(1):13-17. doi:10.4278/ajhp.07030120.
3. Nelson ME, Layne JE, Bernstein MJ, et al. The effects of multidimensional home-based exercise on functional performance in elderly people. J Gerontol A Biol Sci Med Sci. 2004;59(2):154-160. doi:10.1093/gerona/59.2.m154.
4. Franco MR, Howard K, Sherrington C, et al. Eliciting older people's preferences for exercise programs: a best-worst scaling choice experiment. J Physiother. 2015;61(1):34-41. doi:10.1016/j.jphys.2014.11.001.
5. Brandão GS, Oliveira LVF, Brandão GS, et al. Effect of a home-based exercise program on functional mobility and quality of life in elderly people: protocol of a single-blind, randomized controlled trial. Trials. 2018;19(1):684. doi:10.1186/s13063-018-3061-1.
6. Donat H, Ozcan A. Comparison of the effectiveness of two programmes on older adults at risk of falling: unsupervised home exercise and supervised group exercise. Clin Rehabil. 2007;21(3):273-283. doi:10.1177/0269215506069486.
7. Hallal PC, Andersen LB, Bull FC, et al. Global physical activity levels: surveillance progress, pitfalls, and prospects. Lancet. 2012;380(9838):247-257. doi:10.1016/S0140-6736(12)60646-1.
8. American Geriatrics Society, British Geriatrics Society, American Academy of Orthopaedic Surgeons Panel on Falls Prevention. Guideline for the prevention of falls in older persons. J Am Geriatr Soc. 2001;49(5):664-672.
9. Lohne-Seiler H, Hansen BH, Kolle E, et al. Accelerometer-determined physical activity and self-reported health in a population of older adults (65-85 years): a cross-sectional study. BMC Public Health. 2014;14:284. doi:10.1186/1471-2458-14-284.
10. Wang G, Pratt M, Macera CA, et al. Physical activity, cardiovascular disease, and medical expenditures in U.S. adults. Ann Behav Med. 2004;28(2):88-94. doi:10.1207/s15324796abm2802_3.
11. Vagetti GC, Barbosa Filho VC, Moreira NB, et al. Association between physical activity and quality of life in the elderly: a systematic review, 2000-2012. Braz J Psychiatry. 2014;36(1):76-88. doi:10.1590/1516-4446-2012-0895.
12. Paterson DH, Jones GR, RiCe CL. Ageing and physical activity: evidence to develop exercise recommendations for older adults. Can J Public Health. 2007;98(Suppl 2):S69-S108.