International Journal of Health Sciences and Research
[Indexed, Peer-Reviewed Journal]
Volume 15; Issue: 2; February 2025
Website: www.ijhsr.org
Original Research Article *ISSN: 2249-9571*

Effect of Physical Activity to Improve Quality of Life Among Geriatric Population: A Randomized Control Trial

Kamlesh[1], Gunjan Kumar [2], Mahesh Alias Vibhav Sanzgiri [3], Saumya Dixit[4]

[1]Department of Occupational Therapy, Santosh Institute of Allied Health Sciences, Ghaziabad, Uttar Pradesh 201009
[2,3]College of Occupational Therapy, National Institute of Speech and Hearing, Trivandrum, Kerala 695017
[4]Neuro-Occupational therapist (SA B), ACNO Project, Department of Surgical Oncology, Tata Memorial Hospital, Parel, Mumbai 500012

Corresponding Author: Mahesh Alias Vibhav Sanzgiri

DOI: https://doi.org/10.52403/ijhsr.20250210

ABSTRACT

BACKGROUND: The ageing population is frequently associated with losses in physical health, mental well-being, and function, thereby diminishing quality of life (QOL). Physical activity is a modifiable behavioral variable that is associated with enhancing QOL and postponing age-related deterioration. The aim of this study was to assess the impact of physical activity on QOL among the elderly.
METHODOLOGY: A randomized control trial was conducted with 70 participants aged 60 years and above, recruited from a community center. Participants were randomly divided into experimental (n=35) and control (n=35) groups. Baseline QOL was assessed using the WHOQOL-BREF questionnaire, which evaluates four domains: physical health, psychological, social relationships, and environment. The experimental group received a 12-week intervention that included individualized physical activity sessions thrice a week, while the control group continued with their usual routines. Paired t-tests were used to analyze post-intervention data, with a significance level set at $p<0.005$.
RESULTS: There was a significant increase in all the domains of QOL among the experimental group post-intervention ($p<0.001$). The mean scores improved from 37.11 to 74 for physical health, 39.29 to 71.91 for psychological, 50.63 to 77.54 for social relationships, and 51.43 to 73.80 for the environment. Meanwhile, the control group showed no improvements with some domains going down.
CONCLUSION: These results suggest that PA significantly improves the QOL in older adults. Structured interventions of PA need to be introduced into geriatric care to promote functional abilities and prevent age-related declines, while promoting healthier aging.

KEYWORDS: Physical activity, Geriatrics, Quality of Life, WHOQOL-BREF

INTRODUCTION

The expansion of the elderly population is likely to be accompanied by declines in physical health, mental well-being and functional ability [(1,2)]. Fortunately, age-related declines can be delayed by engagement in a healthier lifestyle[(1,3,4)]. World Health Organization's (WHO) policy framework of active ageing, accentuates the importance of dignity, self-determination

and influence, participation in working life and society, health-promoting activities, and independent living. Active ageing is defined here as ‘‘the process of optimizing opportunities for health, participation and security in order to enhance Quality of Life (QOL) as people age.’’[5]

QOL refers to individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is an important component in assessing people's health, which commonly focuses on physical and mental health and functional performance of individuals. The World Health Organization Quality of Life: Brief Version (WHOQOL-BREF) assesses QOL in four domains including physical health, psychological, social relationships and environment[6].

In this study we will be focusing more on the physical activity part of the abovementioned list. Physical activity is defined as voluntary body movements which are produced by skeletal muscles and is also known as a modifiable behavioral risk factor related to the quality of life and health in elderly people. It encompasses exercise, sports, and related physical activities performed as part of daily living, occupation, leisure, or active transportation. Physical activity is a known protective factor for non-communicable diseases such as cardiovascular disease, stroke, diabetes, and some types of cancer [7] and is associated with improved mental health [8], delay in the onset of dementia [9].

Reduced physical activity impairs the quality of life in elderly people with Alzheimer's Disease [10], Parkinson's Disease [11], and Depressive Disorders [12]. Moreover, musculoskeletal, cardiopulmonary, and cerebrovascular decline are associated with poor physical fitness because of the cumulative effects of illness, multiple drug intake, fatigue, and bed rest [13,14]. The issue of quality of life of older working-age people is highly significant. Results of some earlier studies indicate that decreased quality of life is often associated with the prevalence of psychosomatic and motor function disorders as well as with impaired social performance [15–18].

Hence, this study was carried out with the aim of evaluating effect of physical activity in improving quality of life among geriatric population which may affect their performance in activities of daily living, improve sleep quality and it might helpful to prevent or delayed onset of health conditions.

METHODOLOGY

STUDY DESIGN: Randomized control trial
STUDY POPULATION: Older adults visiting the community center
SAMPLE SIZE: 70
SAMPLING TECHNIQUE: Convenience Random Sample
STUDY DURATION: 3 Months
STUDY SETTING- Tertiary community center, Ghaziabad

INCLUSION CRITERIA

- Age 60 years and above were included in this study.
- Both males and females were included in this study.
- Subjects with Weight loss were included in this study.
- Subjects with Low activity were included in this study.
- Subjects with Slow Walking Speed were included in this study.

EXCLUSION CRITERIA

- Subjects with Severe knee or back pain were excluded from this study.
- Subjects with Severely impaired mobility were excluded from this study.
- Subjects with Unstable cardiac condition were excluded from this study.

OUTCOME MEASURE

World Health Organization Quality of Life-Bref (WHOQOL-Bref)- is a self-administered questionnaire comprising 26 questions on the individual's perceptions of their health and well-being over the previous two weeks. Responses to questions are on a five-point Likert scale where 1 represents "disagree" or "not at

all" and 5 represents "completely agree" or "extremely". The scores are then transformed to a 0–100 scale. The mean score for each domain is calculated, resulting in a score between 4 and 20 for each domain

The WHOQOL-BREF covers four domains:

1. Physical health
2. Psychological
3. Social relationships
4. Environment

There are also two separate questions which ask specifically about the individual's overall perception of their health and quality of life. The raw score is converted into the transferred score which is further used for analysis purpose.

PROCEDURE

On IEC approval and informed consent, appropriate sample size of 70 was selected from community center. The subjects were randomly allocated into two groups, A- experimental and B- control. Baseline data was collected using WHOQOL-BREF questionnaire from both groups, followed by which specific physical activity-based intervention was provided to the experimental group subjects while control group subjects were asked to follow their normal routine pattern, the process is portrayed in figure no.1. The intervention was provided over 12-week period at three sessions per week, one session amounted for 50 minutes of activities. Each session included warm up, activity phase, in which individualized functional activities were given alongside conventional strengthening exercises like squatting, biceps-triceps curls etc. The post intervention data was collected after 12 weeks and completion of intervention. The data was compared using SPSS software version 28.0.0 using appropriate statistical tests.

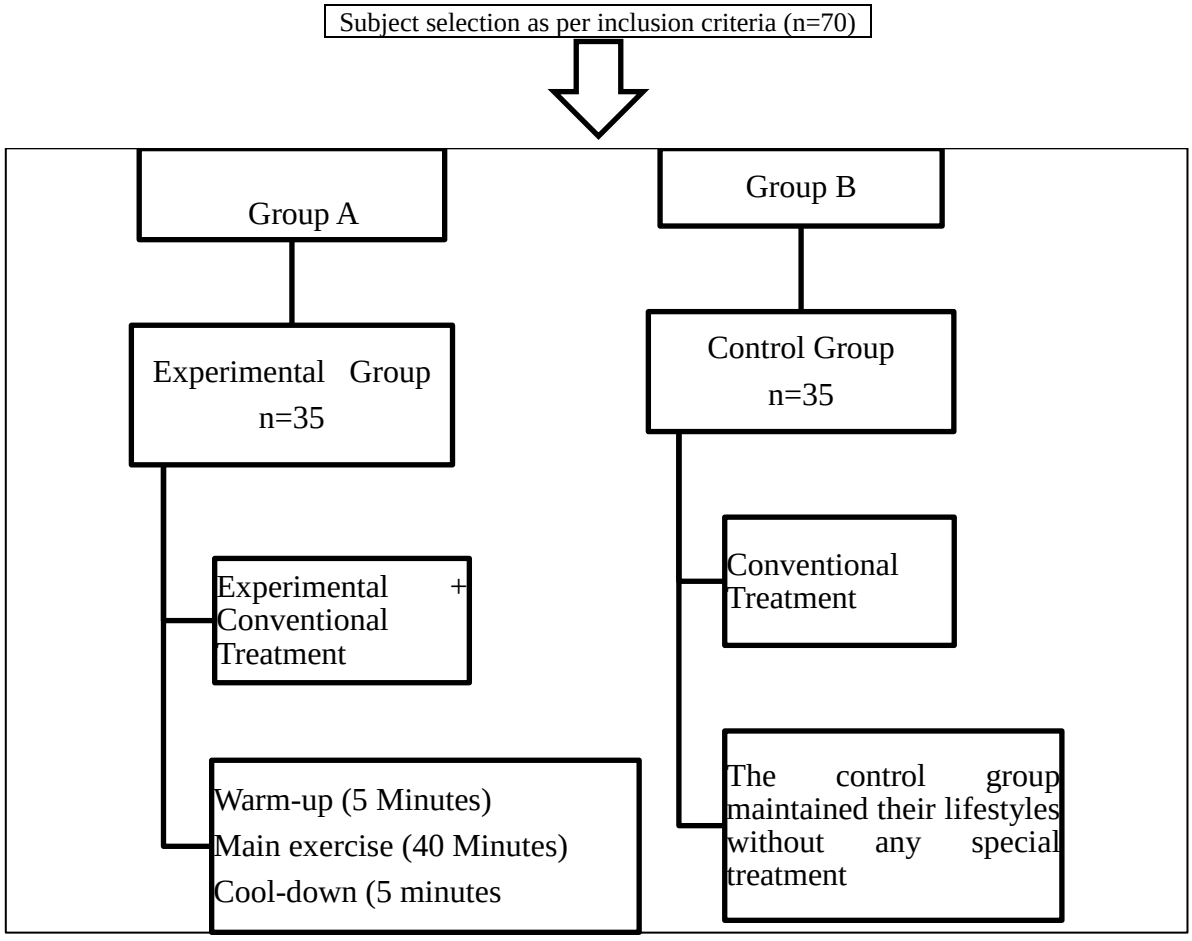


FIGURE 1: PROVIDES A FLOW DIAGRAM OF PROCESS OF STUDY

RESULT

A total of 70 subjects were enrolled in the trial, characteristics of sample is described in table number 1.

TABLE 1: GENDER AND AGE DITRIBUTION OF SAMPLE

GENDER	GROUP (n=35)		Total (%)
	EXPERIMENT (%)	CONTROL (%)	
MALE	22 (62.9%)	15 (52.9%)	37 (52.9%)
FEMALE	13 (37.1%)	20 (57.1%)	33 (47.1%)
MEAN AGE	67.5	66.2	
LIVING ALONE	3 (8.6%)	2 (5.7%)	5 (7.1%)

Analysis amongst the data of the two groups was carried out using paired-T test and the confidence interval was set at 95% with level of significance of <0.005. Mean (standard deviation) was compared to concluded the level of significance. Comparisons were made amongst experimental group alone, control group alone and both experimental and control group data as represented in below tables and graphs.

The comparison between pre-intervention and post- intervention amongst experimental group is depicted in table no. 2, while that of control group is presented in table no.3.

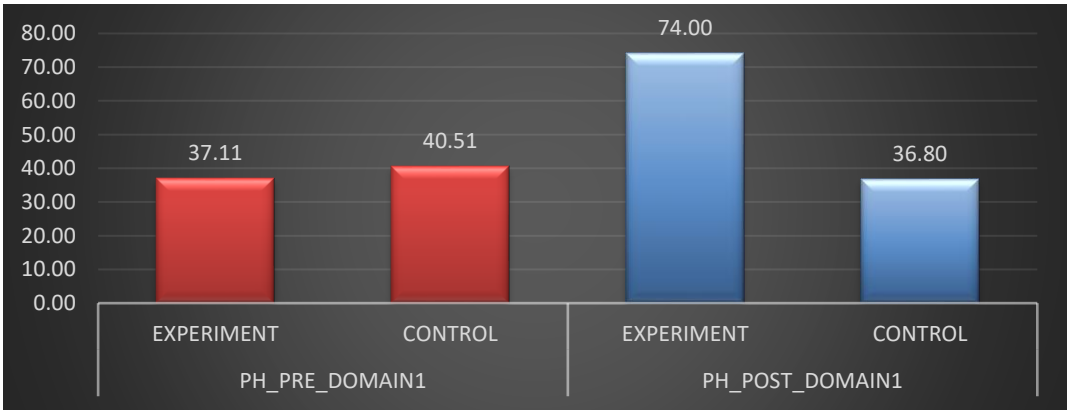
TABLE 2: COMPARISON BETWEEN PRE AND POST-INTERVENTION SCORE OF DIFFERENT DOMAINS IN EXPERIMENTAL GROUP IN GERIATRIC POPULATION

Experiment Domain	Pre	Post	P-value
	Mean ± SD	Mean ± SD	
Physical health	37.11±11.473	74±10.10	0.001
Psychological	39.29±11.105	71.91±8.354	0.001
Social relationship	50.63±7.886	77.54±8.158	0.001
Environment	51.43±8.396	73.80±7.537	0.001

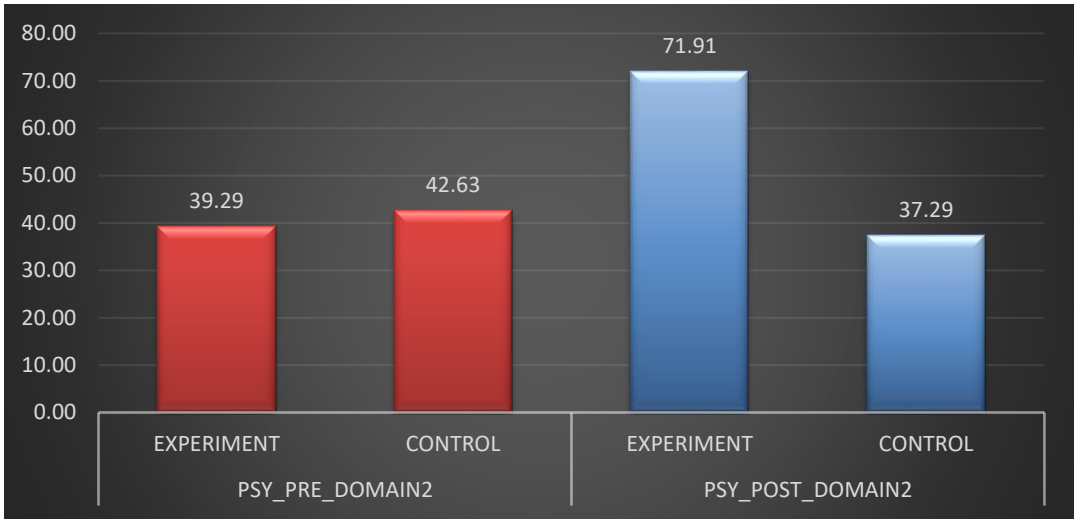
TABLE 3: COMPARISON BETWEEN PRE AND POST-INTERVENTION SCORE OF DIFFERENT DOMAINS IN CONTROL GROUP IN GERIATRIC POPULATION

Control Domain	Pre	Post	P-value
	Mean ± SD	Mean ± SD	
Physical health	40.51±10.193	36.80±9.132	0.004
Psychological	42.63±9.564	37.29±8.621	0.002
Social relationship	49.86±6.674	47.54±5.663	0.054
Environment	50.43±7.675	46.34±6.983	0.001

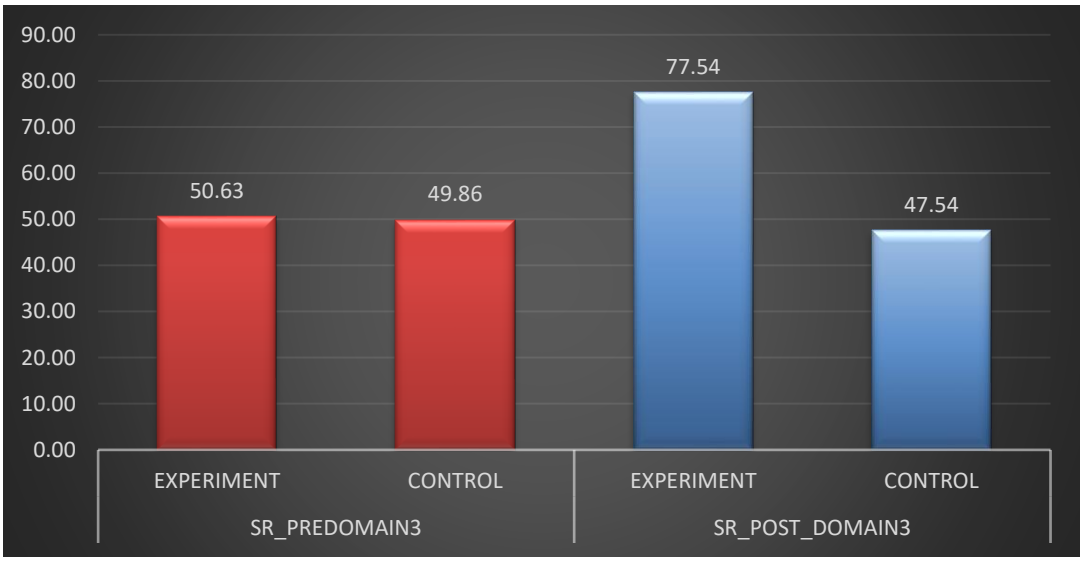
The comparison of each domain [physical health (PH), psychological (PSY), social relationships (SR) and environment (ENV)] between experimental and control group is represented in graphs number 1 to 4.



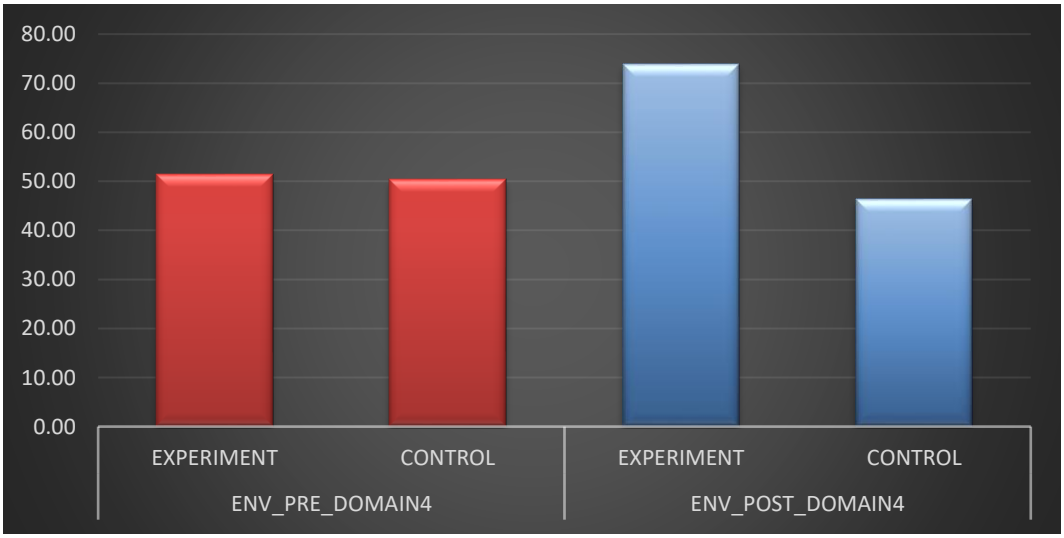
GRAPH-1: COMPARISON OF PHYSICAL HEALTH IN EXPERIMENTAL AND CONTROL GROUP PRE- AND POST INTERVENTION



GRAPH-2: COMPARISON OF PSYCHOLOGICAL FACTOR IN EXPERIMENTAL AND CONTROL GROUP PRE- AND POST INTERVENTION



GRAPH-3: COMPARISON OF SOCIAL RELATIONSHIP IN EXPERIMENTAL AND CONTROL GROUP PRE- AND POST INTERVENTION



GRAPH-4: COMPARISON OF ENVIRONMENTAL FACTOR IN EXPERIMENTAL AND CONTROL GROUP PRE- AND POST INTERVENTION

DISCUSSION

The purpose of the study was to investigate the effect of physical activity to improve quality of life among geriatric population. Findings support the investigation that physical activity participants reported benefits compared to those were not enrolled in the intervention, the intervention group showed greater increase in quality of life as per WHOQOL-BREF questionnaire. There was statistically significant difference in the post intervention scores as compare to the pre test scores, and this study concluded that physical activity has vast scope in the improvement of quality of life among geriatric population. The result confirms that maximum subjects in experimental group were benefitted. The result does not show any effect in given WHOQOL-BREF questionnaire domains in control group, mean of different domains even had decreased in post-test.

Previous studies were conducted to determine the effect of physical activity on physical health and effect applied on lifestyle intervention on older adults. Johansson, A., Björklund, had investigated "The impact of occupational therapy and lifestyle intervention on older person's health, well beings and occupational adaptation." He had a quasi-experimental design, with a non-equivalent control group combined with semi-structured interviews. His Content analysis was based on concepts from the Model of Occupational Adaptation, was used to analyze the interviews. The Result showed that the intervention group showed statistically significant improvements in general health variables such as vitality and mental health, and positive trends for psychological well-being. Conclusions of this study showed that Participating in meaningful, challenging activities in different environments stimulates the occupational adaptation process; this is something occupational therapists could use to empower older persons to find their optimal occupational lives to enhance the quality of life of geriatric population but this study statistically evaluates the effect on physical activity to improve quality of life within three months of intervention in geriatric population.

Marcia G. Ory (2015) conducted a study "Effectiveness of Lifestyle Intervention on Social Support, Self Efficacy, And Physical Activity among Older Adults: Evaluation Of exercise Select. Conclusion of study showed that findings were encouraging because they indicate the positive effects of exercise Select on physical activity and related outcomes for older adults. This study confirms the effectiveness of exercise Select to reduce sedentary behavior and improve physicality, supporting the intervention's robustness as a scalable and sustainable evidence-based program. It also counters negative stereotypes that older adults are not interested in attending multi-modal lifestyle intervention programs nor able to make health behavior changes that can improve health and overall functioning

Jeeyoung Hong (2016) conducted a study "Effects of home-based tele-exercise on sarcopenia among community dwelling elderly adults: Body composition and functional fitness". Conclusion of study showed that tele-exercise can be a new and effective intervention method for increasing skeletal muscle mass and the physical functioning of the lower limbs from the perspective of sarcopenia improvement among the elderly.

All these studies supported our hypothesis and provided evidence backed affirmation.

CONCLUSION

Physical activity participants reported benefits after comparison. The intervention showed increase in quality of life and there was statistically significant difference in the post intervention scores as compare to the pre test scores.

Hence it can be concluded that physical activity along with conventional therapy will be helpful for geriatric population in improving quality of life.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Low G, Molzahn AE. Predictors of quality of life in old age: a cross-validation study. Res Nurs Health. 2007 Apr;30(2):141–50.
2. Smith J, Borchelt M, Maier H, Jopp D. Health and Well–Being in the Young Old and Oldest Old. J Soc Issues. 2002 Jan;58(4):715–32.
3. Rowe JW, Kahn RL. Successful aging. The Gerontologist. 1997 Aug;37(4):433–40.
4. Bengtson VL, Dr. P, Settersten R, Jr D, PhD. Handbook of Theories of Aging, Third Edition.
5. Active ageing: a policy framework [Internet]. [cited 2025 Jan 9]. Available from: https://iris.who.int/handle/10665/67215
6. WHOQOL-BREF: introduction, administration, scoring and generic version of the assessment : field trial version, December 1996 [Internet]. [cited 2025 Jan 9]. Available from: https://www.who.int/publications/i/item/WHOQOL-BREF
7. Global action plan on physical activity 2018–2030: more active people for a healthier world [Internet]. [cited 2025 Jan 9]. Available from: https://www.who.int/publications/i/item/9789241514187
8. Schuch FB, Vancampfort D, Richards J, Rosenbaum S, Ward PB, Stubbs B. Exercise as a treatment for depression: A meta-analysis adjusting for publication bias. J Psychiatr Res. 2016 Jun 1; 77:42–51.
9. Livingston G, Sommerlad A, Orgeta V, Costafreda SG, Huntley J, Ames D, et al. Dementia prevention, intervention, and care. Lancet Lond Engl. 2017 Dec 16;390(10113):2673–734.
10. Serdà I Ferrer BC, Ortiz Collado A, Avila-Castells P. [Impact of a psychomotor re-education guide on the quality of life of patients with Alzheimer's disease]. Rev Med Chil. 2013 Jun;141(6):735–42.
11. Advocat J, Enticott J, Vandenberg B, Hassed C, Hester J, Russell G. The effects of a mindfulness-based lifestyle program for adults with Parkinson's disease: a mixed method, wait list controlled randomised control study. BMC Neurol. 2016 Sep 8;16(1):166.
12. Tocco F, Crisafulli A, Milia R, Marongiu E, Mura R, Roberto S, et al. Nervous Facilitation in Cardiodynamic Response of Exercising Athletes to Superimposed Mental Tasks: Implications in Depressive Disorder. [cited 2025 Jan 9]; Available from: https://clinical-practice-and-epidemiology-in-mental-health.com/VOLUME/11/PAGE/166/FULLTEXT/
13. Brovold T, Skelton DA, Bergland A. Older adults recently discharged from the hospital: effect of aerobic interval exercise on health-related quality of life, physical fitness, and physical activity. J Am Geriatr Soc. 2013 Sep;61(9):1580–5.
14. Cress ME, Buchner DM, Prohaska T, Rimmer J, Brown M, Macera C, et al. Best practices for physical activity programs and behavior counseling in older adult populations. J Aging Phys Act. 2005 Jan;13(1):61–74.
15. Bączkowicz D, Majorczyk E, Kręcisz K. Age-related impairment of quality of joint motion in vibroarthrographic signal analysis. BioMed Res Int. 2015; 2015:591707.
16. Chen Y, Hicks A, While AE. Quality of life and related factors: a questionnaire survey of older people living alone in Mainland China. Qual Life Res Int J Qual Life Asp Treat Care Rehabil. 2014 Jun;23(5):1593–602.
17. Fassino S, Leombruni P, Abbate Daga G, Brustolin A, Rovera GG, Fabris F. Quality of life in dependent older adults living at home. Arch Gerontol Geriatr. 2002;35(1):9–20.
18. Groessl EJ, Kaplan RM, Barrett-Connor E, Ganiats TG. Body mass index and quality of well-being in a community of older adults. Am J Prev Med. 2004 Feb;26(2):126–9.

How to cite this article: Kamlesh, Gunjan Kumar, Mahesh alias Vibhav Sanzgiri, Saumya Dixit. Effect of physical activity to improve quality of life among geriatric population: a randomized control trial. *Int J Health Sci Res.* 2025; 15(2):78-84. DOI: *10.52403/ijhsr.20250210*

******