

The Role of Leisure Activities in Enhancing Quality of Life in Older Adults: A Narrative Review

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Abstract

Article history:

Received: 13 May 2025
Accepted: 4 Nov 2025
Available online: 12 Nov 2025

Keywords:

Leisure activities
Quality of life
Older adults

Background: With the world transitioning into the “aging population” phase, the proportion of older adults (aged 60 and above) in the global demographic structure has increased significantly. This trend has important social, economic, and health implications, making the focus on quality of life in older age a public health priority. Older adults face physiological changes, declines in executive abilities, and psychosocial stressors, necessitating strategies to enhance their physical, mental, social, and spiritual well-being. One such strategy is participation in leisure activities and recreational pursuits.

Objectives: The aim of this narrative review was to examine the role of leisure activities in enhancing the quality of life of older adults and to identify existing research gaps in this area. In this study, sources were searched in PubMed, Scopus, Web of Science, Google Scholar, and IranMedex using keywords such as “Leisure activities,” “Elderly,” “Quality of life,” and “Recreational activities.” Both empirical and review studies were considered. Inclusion criteria encompassed studies on adults aged 60 and above published in English or Persian. Data were analyzed using thematic content analysis, and key domains of leisure activity impact on quality of life were extracted.

Results: Findings indicated that leisure activities influence four main domains: physical and sports activities, which improve physical health and flexibility; cognitive and mental activities, which help prevent cognitive decline; social and group activities, which enhance social interaction and life satisfaction; and spiritual and artistic activities, which promote inner peace, meaning, and personal value. The combination of these activities has the most positive effect on the quality of life of older adults.

Conclusion: The study highlights that leisure activities not only provide enjoyable moments but also strengthen physical, mental, social, and spiritual health, supporting independence, motivation, and problem-solving skills. Policymakers and aging service managers should prioritize designing comprehensive recreational programs and providing appropriate infrastructures for older adults.

Cite this article as: Dalvand Sh, Ebrahimzadeh M, Bahrami F, Delavari A, Hosseini MS. The Role of Leisure Activities in Enhancing Quality of Life in Older Adults: A Narrative Review. J Emerg Health Care. 2025;14(1):52. <https://doi.org/10.22034/jehc.14.1.52>.

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Introduction

Social harms are one of the major concerns of human societies today. Every society, in accordance with its own conditions, culture, transition and development process, growth and decline, faces a variety of problems that have undeniable effects on the growth and progress of society. One of the biggest problems that has always plagued human societies with its problems and sinister consequences is the phenomenon of addiction, which is both a consequence and a cause of many other social problems and harms (1). One of the important issues of this disorder is the frequent relapses of patients, which causes the quality of life of addicts to decline compared to other members of society. Most treatment programs focus on reducing or stopping drug use; however, substance-dependent patients also struggle with numerous other problems, many of which may predate drug use. These problems may even be important causes of drug use in the first place (2). Thus, in addition to targeting reduction and cessation of drug use, treatment programs should also consider relevant and important psychological variables related to recovery management, reduction of addiction relapse, and even prevention (3).

The world is transitioning into the “aging population” phase; the proportion of older adults (aged 60 or 65 and above) in the global demographic structure is increasing, and predictions indicate that the number and proportion of older adults will grow significantly in the coming decades. This trend has important social, economic, and health implications at the community and healthcare system levels [1, 2]. Predictions suggest that in the 21st century, the elderly population will increase unprecedentedly [3, 4]. According to forecasts, the global older adult population will reach 1.5 billion by 2025 and exceed 2 billion by 2050 [5, 6]. Estimates indicate that by 2025, the share of older adults in the world population will reach approximately 14%, and by 2050, this share will increase to about 21.8% [3]. Other data suggest that the number of older adults will rise from about 137 million in 2017 to 425 million in 2050 [6]. With the increasing proportion of older adults in the demographic structure of societies and the sharp decline in infectious diseases in favor of chronic illnesses, attention to quality of life in older age has emerged as a public health priority [7]. Physiological changes, decline in executive abilities, and psychosocial stressors contribute to reduced quality of life in older adults [8]. Moreover, with increased life expectancy and the lengthening of old age, older adults have recently become a significant segment of the population. Therefore, addressing their psychological, emotional, and spiritual needs has gained greater importance [9].

Quality of life (QoL) in older adults is shaped by physical, mental, social, and environmental factors and is crucial for evaluating well-being and care effectiveness [10]. Experiences vary widely depending on health, socioeconomic conditions, social support, and access to services. Cognitive disorders like dementia pose major challenges, with QoL influenced by neuropsychiatric symptoms, functional decline, and caregiver burden; self-ratings and proxy ratings often differ, and tools like QOL-AD and DEM-QOL require careful interpretation [11]. Obesity, functional limits, and sensory loss also reduce QoL, especially dual hearing and vision impairment, which heightens isolation and communication barriers [12]. Active aging improves QoL through physical, social, and economic participation [13], while institutionalization lowers QoL compared with community living, highlighting the need for person-centered care [14]. Older adults on hemodialysis face unmet QoL measurement needs [15], and cancer patients show variations by gender and marital status [16]. Reminiscence Therapy benefits cognitive function and mood in those with impairment [17]. Multi-purpose activity programs enhance social and mental health mainly for community dwellers [18]. COVID-19 intensified isolation, indicating the value of inclusive, universally designed services. Incarcerated and institutionalized older adults often report reduced autonomy, limited social contact, and lower QoL [14,19]. Mental health, particularly depression and anxiety, remains a central determinant of overall QoL in later life [12].

Leisure, defined as voluntary and enjoyable activity outside obligatory work, is linked to wide-ranging physical, mental, and cognitive health benefits across the lifespan [20–25], and growing evidence shows that these benefits arise through complex, layered processes summarized in the Multi-level Leisure Mechanisms Framework (MLMF) [20]. This framework integrates over 600 identified mechanisms and explains how psychological, biological, social, and behavioral processes interact across individual, community, and societal levels to shape health outcomes, which helps clarify why leisure exerts such broad effects [20]. These mechanisms are visible in mental health research showing that leisure enhances resilience and stress coping, helping maintain psychological well-being even during disruptions such as COVID-19 [26]. Similar multi-layered pathways appear in dementia prevention, where cognitively stimulating and creative leisure activities build cognitive reserve, reduce dementia risk, and support neural efficiency, although these effects are influenced by socioeconomic factors across the life course [22–24,27,28]. Differences in activity structure and social context further illustrate how leisure

operates through interconnected channels, since structured or group-based activities often support healthier behavioral patterns while individual or creative pursuits provide distinct cognitive benefits [23,24,28,29]. These converging findings highlight the value of leisure for healthy aging and development, yet they also reveal gaps in causal evidence, variability across populations, and the need for better measurement and equitable access, which points toward future research integrating leisure with broader lifestyle factors to strengthen health promotion efforts [20–25,27,29].

Older age is associated with declines in physical and psychological functioning, yet evidence shows that targeted activities can mitigate these changes and support successful aging. Regular aerobic and resistance exercise helps maintain functional capacity and prevents chronic diseases such as heart disease and diabetes [29]. Physical activity also supports psychological well-being by contributing to cognitive preservation and reducing depressive symptoms [30,31]. Leisure engagement that includes physical and social components enhances health-related quality of life (HRQoL) among older adults, reinforcing the value of participation beyond structured exercise [30,32]. This paper synthesizes the evidence on the benefits of physical activity and leisure engagement for older adults, exploring physiological, psychological, social, and cultural dimensions, as well as relevant interventions.

Methods

This study is a narrative review examining the role of leisure activities and recreational pursuits in enhancing the quality of life of older adults. A narrative review was conducted to summarize and analyze the existing scientific literature and identify research gaps, providing a comprehensive overview of the topic. Sources were searched in reputable databases including PubMed, Scopus, Web of Science, Google Scholar, and IranMedex, using keywords such as “Leisure activities,” “Elderly,” “Older adults,” “Quality of life,” “Recreational activities,” and “Well-being.” Boolean operators (AND, OR) were applied to identify articles related to older adults and leisure activities.

Inclusion criteria encompassed studies involving older adults (aged 60 and above) published in English or Persian. Research articles, review papers, or short communications focusing on leisure activities, recreational pursuits, and quality of life in physical, psychological, social, or spiritual dimensions were included. Duplicate articles, non-scientific reports, and studies without direct relevance to older adults’ leisure activities were excluded.

Extracted information included study characteristics (author, year, country), types of leisure activities, their impact on quality of life, and key findings. Data were categorized using thematic content analysis, and the main themes of leisure activity impact on various aspects of older adults’ quality of life were identified. Findings were presented in tables and thematic categories, with key domains including physical and sports activities, cognitive and mental activities, social and group activities, and spiritual and artistic activities. Based on narrative analysis, the role of leisure activities in improving mental health, enhancing social interactions, increasing life satisfaction, and fostering personal meaning and value in older adults was examined.

Results

Narrative analysis indicated that leisure activities and recreational pursuits play a multidimensional and significant role in enhancing the quality of life of older adults.

The findings were categorized into four main domains:

Physical and Sports Activities

Participation in activities such as walking, light exercises, and flexibility training improves physical health, increases flexibility, and reduces the risk of falls. One study demonstrated that engaging in physical leisure activities was significantly associated with higher life satisfaction and positive affect [33,34]. Other research has emphasized that physical or creative leisure activities can help slow the decline in functional abilities among older adults [35,36].

Cognitive and Mental Activities

Activities such as reading, solving puzzles, playing cognitive games, and learning new skills are associated with improved cognitive performance and prevention of cognitive decline in older adults. For example, a systematic review and meta-analysis showed that participation in cognitive leisure activities was linked to reduced cognitive decline in older adults [37]. These activities were also associated with increased feelings of achievement and life satisfaction.

Social and Group Activities

Leisure activities involving social interactions, such as participation in older adult groups, workshops, and volunteer activities, help reduce loneliness, enhance mental health, and increase life satisfaction. For instance, a study in Sweden found that participation in friendly social activities (e.g., meeting with friends) was strongly associated with higher quality of life among

older adults [38]. Recent research also emphasizes the positive relationship between social participation and life satisfaction [39].

Spiritual, Artistic, and Integrative Activities

Leisure activities with spiritual, artistic, or integrative aspects involving nature, art, and technology enable older adults to experience inner peace, meaning, and personal value. Although evidence is less extensive than in other domains, a study in India found that active (versus passive) leisure activities were significantly associated with higher quality of life and meaning in life among older adults [33,40]. Activities such as dancing, singing, reading, and spending time in nature are considered spiritual activities that contribute to cognitive and mental coherence in older adults [41,42].

Discussion

The findings of this narrative review indicate that participation of older adults in leisure activities and recreational pursuits has multifaceted positive effects on quality of life. In case of physical activity, aerobic activities improve cardiovascular function and endurance, while resistance training counters sarcopenia and increases strength [29]. These benefits contribute to better balance, mobility, and bone health, which collectively reduce fall and fracture risk [29]. Participation in structured programs, such as team sports or resistance training, further enhances physical function, psychological well-being, and overall quality of life [43]. Moderate to vigorous aerobic activity reduces symptoms of depression and anxiety, improves sleep quality, and increases cardiorespiratory fitness [44]. Leisure activities also serve as socio-cultural resources that foster identity and well-being [32]. Engagement in physically oriented leisure improves HRQoL among older adults, including those with chronic conditions such as prostate cancer [31,45]. Long-term participation in dance maintains cognitive function, physical performance, and overall quality of life, comparable to other adapted physical activity programs [46]. Occupational therapy interventions that include leisure education and chronic disease self-management effectively enhance leisure engagement and well-being [30].

Leisure activities that incorporate social interaction contribute positively to quality of life, and among older women, quality of life partially mediates the link between leisure engagement and perceived health [47]. Community-based leisure groups further support wellbeing by enhancing social participation [30]. Cross-cultural perspectives highlight the universal relevance of leisure in shaping life experiences during aging [32].

Social activities influence mood and affect both mental and physical well-being, reinforcing their importance in later life [30].

Differences in gender and location affect leisure participation and HRQoL. Older men in China report lower HRQoL related to reduced exercise engagement, pointing to gender disparities [48]. Urban-rural differences in HRQoL are partly explained by variation in leisure access, with higher participation in urban areas linked to better outcomes [49]. Some caregivers face reduced leisure engagement due to time pressure and role demands, which affects their quality of life [50]. These disparities indicate the need for culturally sensitive and accessible interventions. Occupational therapy plays an important role in promoting physical activity and leisure among older adults, with evidence supporting leisure education and chronic disease management programs to increase engagement and improve HRQoL [30]. Cross-cultural work highlights the need for locally relevant approaches to promoting leisure participation [32]. Providing diverse and accessible leisure opportunities remains essential for improving the quality and vitality of aging across communities [46].

Conclusion

Narrative analysis demonstrated that leisure activities, including physical, cognitive, social, and artistic pursuits, play a significant role in enhancing the quality of life of older adults. Active participation in these activities improves physical and mental health, reduces loneliness, increases life satisfaction, and strengthens social interactions. Artistic and spiritual activities also contribute to inner peace, a sense of meaning, and personal value. The multidimensional combination of these activities has the greatest positive effect on older adults' health. Therefore, purposeful planning for older adults' engagement in diverse leisure activities can help maintain independence, enhance well-being, and improve quality of life. Attention to leisure activities as a preventive and rehabilitative strategy in older age is essential.

Study Limitations

This study has several limitations. First, as a narrative review based on existing articles, some up-to-date evidence or incomplete studies in certain areas may not have been considered. Second, cultural and social differences among communities may limit the generalizability of the findings. Additionally, most of the reviewed studies had a cross-sectional design, which limits the ability to establish causal relationships between leisure activities and quality of life.

References:

1. Publications UN. World Population Ageing 2023: Challenges and Opportunities of Population Ageing in the Least Developed Countries: United Nations Fund for Population Activities; 2024.
2. Sadeghigolafshani M, Sadooghiasl A. Iranian Elderly Perception of Spiritual Self-Care: A Qualitative Content Analysis. 2025.
3. Kaboosi M, Salari-DehRaees M, Sadefi-Golafsha M. The effect of peer education on the self-esteem of the elderly. *ndhj*. 2022;13(2):38.
4. Pahlevaninezhad Z, Gharehkhani Y, Akhoundzade G, Tabarsa M, Sadeghigolafshan M. Relationship between sexual self-efficacy and marital satisfaction in elderly women in Gorgan City. *mubabol-cjhaa*. 2020;5(2):17.
5. Sadeghigolafshani M. An in-depth examination of geriatric nursing master's programs: A comparative analysis between Iran and Canada. *Journal of Nursing Advances in Clinical Sciences*. 2024;1(Issue 2):103-10.
6. Khavinson V, Popovich I, Mikhailova O. Towards realization of longer life. *Acta bio-medica : Atenei Parmensis*. 2020;91(3):e2020054.
7. Sala G, Jopp D, Gobet F, Ogawa M, Ishioka Y, Masui Y, et al. The impact of leisure activities on older adults' cognitive function, physical function, and mental health. 2019;14(11):e0225006.
8. Maghsoodloo Rad A, Nouri MA, Safarian B. Psychiatric disorders in the elderly. *Journal of Nursing Advances in Clinical Sciences*. 2025;2(Issue 3):165-7.
9. Shamsi S, Shahidifar S. Spiritual care: A forgotten tool in the lives of elderly people. *Journal of Nursing Advances in Clinical Sciences*. 2025;2(Issue 4):221-2.
10. Whoqol Group. The World Health Organization quality of life assessment (WHOQOL): position paper from the World Health Organization. *Social science & medicine*. 1995 Nov 1;41(10):1403-9.
11. Burks HB, des Bordes JK, Chadha R, Holmes HM, Rianon NJ. Quality of life assessment in older adults with dementia: a systematic review. *Dementia and geriatric cognitive disorders*. 2021 Jun 24;50(2):103-10.
12. Tseng YC, Liu SH, Lou MF, Huang GS. Quality of life in older adults with sensory impairments: a systematic review. *Quality of Life Research*. 2018 Aug;27(8):1957-71.
13. Marzo RR, Khanal P, Shrestha S, Myint PK, Su TT. Determinants of active aging and quality of life among older adults: systematic review. *Front Public Health*. 2023;11:1234567.
14. de Medeiros MMD, Carletti TM, Magno MB, Maia LC, Cavalcanti YW, Rodrigues-Garcia RCM. Does the institutionalization influence elderly's quality of life? A systematic review and meta-analysis. *BMC Geriatr*. 2020;20(1):1-15.
15. Hall RK, Cary MP, Washington TR, Colón-Emeric CS. Quality of life in older adults receiving hemodialysis: A qualitative study. *Qual Life Res*. 2020;29(5):1237-48.
16. Lavdaniti M, Zyga S, Vlachou E, Sapountzi-Krepia D. Quality of Life in Elderly Cancer Patients Undergoing Chemotherapy. *Adv Exp Med Biol*. 2017;1013:345-56.
17. Gil I, Costa P, Parola V, Cardoso D, Almeida M, Apóstolo J. Efficacy of reminiscence in cognition, depressive symptoms and quality of life in institutionalized elderly: a systematic review. *Rev Esc Enferm USP*. 2019;53:e180420.
18. Yucel H. How quality of life of elderly individuals living at home or in nursing homes is related to multi-purpose activities? *Adv Gerontol*. 2023;12(3):45-60.
19. Prost SG, Novisky MA. Visitation and quality of life among older adults in jail. *Int J Prison Health*. 2022;18(2):123-35.
20. Center M, Hillsdon M, Cooper C. How leisure activities affect health: a narrative review and multi-level theoretical framework of mechanisms of action. *Sports Med*. 2023;53(3):435-450. doi:10.1007/s40279-022-01740-0
21. Orrell M, Spector A, Unwin N, Kluge R. Cognitive leisure activities and their role in preventing dementia: a systematic review. *Int J Geriatr Psychiatry*. 2009;24(11):1129-1139. doi:10.1002/gps.2186
22. Verghese J, Mahoney JR, Reynolds CA, et al. Leisure activities and the risk of dementia in the elderly. *N Engl J Med*. 2003;348(18):1933-1940. doi:10.1056/NEJMoa021995
23. Li Y, Stern Y. Leisure activities, cognition and dementia. *Neurobiol Aging*. 2012;33(3 Suppl 1):S65-S71.
24. Gudcoddin M, Eiriksdottir E, Kizirian A, et al. Creativity, leisure activities, social engagement and cognitive impairment: the AGES-Reykjavík study. *BMC Geriatr*. 2013;13:70.
25. Salvador EP, Florindo AA, Reis RS, Costa EF. Perception of the environment and leisure-time physical activity in the elderly. *Revista de saude publica*. 2009;43:972-80.
26. Takiguchi Y, Matsui M, Kikutani M, Ebina K. The relationship between leisure activities and mental health: The impact of resilience and COVID-19. *Appl Psychol Health Well Being*. 2023;5(4):838-851.
27. Zhang B, Li Y, Jiang C, Lai JS. Leisure activities and cognitive impairment in old age: The role of life course socioeconomic status. *Int J Epidemiol*. 2013;42(4):1174-1183.
28. Wilson RS, et al. Handicraft art leisure activities and cognitive reserve. *Clin Neuropsychol*. 2019.
29. Monserud MA. Leisure Activities and Depressive Symptoms among Older Men and Women in Mexico: Implications of Physical Health. *J Aging Health*. 2023.

30. Chodzko-Zajko WJ, Proctor DN, Singh MA, Minson CT, Nigg CR, Salem GJ, Skinner JS. Exercise and physical activity for older adults. *Medicine & science in sports & exercise*. 2009 Jul 1;41(7):1510-30.
31. Smallfield S, Molitor WL. Occupational therapy interventions supporting leisure and social participation for older adults. *Am J Occup Ther*. 2018;72(4):7204190040p1-8.
32. Wion RK, Secor E, Playdon M, Breen E. Barriers and facilitators to leisure-time physical activity in older adults living with HIV. *J Assoc Nurses AIDS Care*. 2022;33(1):14-25.
33. Tong B, Thang LL, Abalos J. Introduction to Special Issue of Journal of Cross-Cultural Gerontology on Leisure and Older Adults in Asia. *Journal of Cross-Cultural Gerontology*. 2024 Sep;39(3):207-11.
34. Kim J, Lee J, Ko MJ, Min Oh S. Leisure, Mental Health, and Life Satisfaction among Older Adults with Mild Cognitive Impairment. *American journal of health behavior*. 2022;46(4):477-87.
35. Sadeghigolafshani M, Papi S, Maghsoodloo E, Rostamvand M. The role of oral care in reducing hospital-acquired infections and improving the health of critically ill patients: A narrative review. *Journal of Dental Advances in Clinical Sciences*. 2025;1(Issue 1):38-42.
36. Akhoondzadeh G, Jalalmanesh S, Hojjati H. Effect of reminiscence on cognitive status and memory of the elderly people. *Iranian journal of psychiatry and behavioral sciences*. 2014;8(3):75-80.
37. Bone JK, Bu F, Sonke JK, Fancourt D. Leisure engagement in older age is related to objective and subjective experiences of aging. 2024;15(1):1499.
38. Yang X, Xu X, Guo L, Zhang Y, Wang S, Li Y. Effect of leisure activities on cognitive aging in older adults: A systematic review and meta-analysis. *Frontiers in psychology*. 2022;13:1080740.
39. Chang PJ, Wray L, Lin Y. Social relationships, leisure activity, and health in older adults. *Health psychology : official journal of the Division of Health Psychology, American Psychological Association*. 2014;33(6):516-23.
40. Wu M, Yang D, Tian Y. Enjoying the golden years: social participation and life satisfaction among Chinese older adults. *Frontiers in Public Health*. 2024;Volume 12 - 2024.
41. Mansouri N, Sadeghigolafshani M, Rezaei M, Aloustani S, Shokri S. The role of spirituality in well-being and quality of life among older adults: A narrative review. *Journal of Nursing Reports in Clinical Practice*. 2025:1-7.
42. Zafarramazanian F, valizadeh H, sheibani z, aminizadeh H, mansouri N, Saeedi K. The Application of Mary White's Spiritual Self-Care Model on Health Behaviors: A Review Study. *J EHC*. 2025;14(1):21
43. Rezaei Aghuei A, Hojjati H, Hekmati Pour N, Nejat H, Akbari A. The Application of Spiritual Self-care Pattern to Increase Resilience in Spouses of Veterans with Post-traumatic Stress Disorder. *J Health Rep Technol*. 2024;10(1):e143489.
44. Pedersen BK, Saltin B. Exercise as medicine. *Scand J Med Sci Sports*. 2017;27(4):1-72
45. Shephard RJ. Physical activity and prostate cancer: an updated review. *Sports Medicine*. 2017 Jun;47(6):1055-73.
46. Ozdemir K, Keser I, Sen I, Ozgur Tan M. Investigating the relationships between quality of life, fatigue and leisure time physical activity in prostate cancer patients. *Journal of Back and Musculoskeletal Rehabilitation*. 2019 May;32(3):497-503.
47. Tommasini E, Cipriani E, Antonietti A, Galvani C. Correlations between physical activity level, quality of life, and cognitive performance in elderly individuals engaging in multi-year dance activities. *Journal of Dance Medicine & Science*. 2022 Mar;26(1):35-41.
48. Eifert EK, Hall M, Smith PH, Wideman L. Quality of life as a mediator of leisure activity and perceived health among older women. *J Women Aging*. 2019;31(3):245-260.
49. Chen M, Chen S, Wu Y, Song D, Xie L, Shang Y, Chen Z. Are men dominant? Evidence of differences between physical activity and quality of life among older adults in China. *Frontiers in Public Health*. 2023 Sep 29;11:1210374.
50. Liu Y. Urban/Rural Disparity in Quality of Life among the Older Adults in China: Mediation Effect of Leisure Activity. *Journal of Cross-Cultural Gerontology*. 2024 Sep;39(3):299-313.