International Seminar and Workshop on Public Health Action
https://swopha.dinus.ac.id

Community Exercise Interventions for Elderly: Health Outcomes and Quality of Life Meta-Analysis

Indriani[1*], Isna Qadrijati[2], Agus Kristiyanto[3], Arsita Eka Prasetyawati[4], Ahmad Nasrulloh[5]

[1]Doctoral Program in Public Health, Faculty of Medicine, Universitas Sebelas Maret, Surakarta, Indonesia
[2]Department of Occupational and Health Safety, School of Vocation, Universitas Sebelas Maret, Surakarta, Indonesia
[3]Faculty of Sports Science, Universitas Sebelas Maret, Surakarta, Indonesia
[4]Faculty of Medicine, Universitas Sebelas Maret, Surakarta, Indonesia
[5]Faculty of Sports Science, Universitas Negeri Yogyakarta, Yogyakarta, Indonesia

Article Info
Article History
Submitted: 10-08-2025
Revised: 09-09-2025
Accepted: 29-08-2025
Keywords:
Physical Exercise; Multicomponent Exercise; QoL; Physical Activity Promotion

Abstract

Physical and mental degeneration in elderly persons reduces their Quality of Life (QoL). Aerobic (AE) and Multi-Component Exercises (MCE) are two examples of community-based exercise programs that are effective in improving the mental and physical health of senior persons. However, the evidence comparing the effectiveness of MCE versus AE in older adults living in the community remains limited. Subjects and Methods: This meta-analysis used a PICO approach with a population of community-dwelling older adults aged ≥60 years, comparing multi-component exercise (MCE) and aerobic exercise (AE) on quality of life (QoL). Relevant RCT studies from 2015–2025 were retrieved from PubMed, ScienceDirect, ResearchGate, Google Scholar, and Scielo using relevant keywords. Data were analyzed using RevMan 5.4 with pooled standardized mean differences (SMD) to assess the effects of the interventions.
Results: Six RCTs involving 478 participants were included. Multicomponent exercise showed a higher effect size (SMD = 0.27) than aerobic exercise (SMD = 0.18), although neither reached statistical significance. The overall pooled effect favored exercise interventions (SMD = 0.23; 95% CI: -0.05 to 0.50). Conclusion: MCE having slightly better effects than AE. Multicomponent exercise is an excellent way to promote physical activity and improving QoL in the elderly population.

Correspondence Address:
Doctoral Program in Public Health, Faculty of Medicine, Universitas Sebelas Maret, Surakarta, Indonesia
E-mail: indriani19@student.uns.ac.id

eISSN 3063-2439

Introduction

The aging global population poses a significant public health challenge, particularly in promoting and maintaining the quality of life (QoL) among older adults. By 2050, the number of older individuals worldwide is projected to exceed 1.5 billion, accounting for more than 22% of the global population. This demographic shift is accompanied by an increased prevalence of chronic illnesses, disability, cognitive decline, and reduced physical function, all of which significantly impact QoL (World Health Organization, 2021). In Japan, nearly 30% of the population is expected to be aged 65 years or older by 2025, while in Europe, adults aged 80 and above represent the fastest growing age group (Jalenques et al., 2020; Nakada et al., 2024) .

Community-dwelling older adults, especially those living alone, face elevated risks of loneliness, social isolation, physical inactivity, and psychological distress, which further impair their functional capacity and overall well-being (Noh et al., 2021; Oh et al., 2017). Many of them prefer to remain in their own homes and maintain autonomy as they age—a concept known as aging in place. Achieving this goal requires targeted interventions that support both physical and mental health.

Physical activity (PA) has emerged as a cornerstone non-pharmacological strategy to promote healthy aging. Regular exercise improves physical function, reduces the incidence of chronic disease, and alleviates symptoms of anxiety and depression (Lu et al., 2022). Moreover, it enhances cardiovascular fitness, mobility, cognitive performance, and overall QoL (Ning et al., 2024). Among the various exercise modalities, aerobic activities such as walking, cycling, and swimming have been extensively studied and are known to increase physical endurance and psychological well-being (Poli et al., 2024). However, findings regarding their impact on QoL remain mixed, largely due to heterogeneity in exercise type, frequency, and duration.

In recent years, multicomponent exercise (MCE)—which integrates aerobic, resistance, balance, and flexibility training—has gained increasing attention for its comprehensive health benefits. Studies have shown that MCE is more effective than single-mode training in improving physical performance, functional independence, and mental health outcomes (Jofré-Saldía et al., 2023). Furthermore, community-based MCE programs foster social interaction, enhance motivation, and improve adherence—factors that are crucial for long-term benefits and sustained improvements in QoL (Di Lorito et al., 2021; Poli et al., 2024).

Despite the demonstrated potential of both aerobic and multicomponent exercise, existing literature presents inconsistent and inconclusive evidence regarding their comparative effects on QoL in community-dwelling older adults. While some studies suggest that MCE provides superior outcomes due to its multifaceted approach, others argue that aerobic exercise alone can be equally effective in improving mood and overall well-being (Di Lorito et al., 2021; Jofré-Saldía et al., 2023). This inconsistency highlights a critical gap in the synthesized evidence base and complicates decision-making for healthcare providers tasked with recommending appropriate exercise interventions.

Given these limitations, this systematic review and meta-analysis aims to rigorously evaluate and compare the effectiveness of multicomponent versus aerobic exercise interventions on QoL in community-dwelling older adults. By synthesizing available data from randomized controlled trials, this study seeks to clarify the relative efficacy of each intervention type and offer evidence-based recommendations for designing effective, community-based programs that support healthy aging. Understanding these nuanced differences is essential for informing public health policy, optimizing care strategies, and ultimately enhancing the well-being and independence of the aging population.

Methods

Study Design

A meta-analysis was conducted in four electronic databases: PubMed, ScienceDirect, Researchgate, Google Scholar, and Scielo. The search included studies published between 2015 and 2025 using keywords such as "multicomponent exercise," "aerobic exercise," "quality of life," “community dwelling,” and "older adults." Boolean operators (AND, OR) were used to combine terms. Only randomized controlled trials (RCTs) published in English were considered. The protocol followed PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) guidelines.

Inclusion Criteria

Studies included in this meta-analysis were required to meet specific eligibility criteria. First, the study design had to be a randomized controlled trial (RCT) that investigated the effects of either multicomponent or aerobic exercise interventions on quality of life (QoL) in community-dwelling older adults. Second, participants were required to be aged 60 years or older. Third, the studies had to report QoL as either a primary or secondary outcome, assessed using validated instruments such as the SF-36, SF-12, WHOQOL-BREF, WHOQOL-OLD, WHOQOL-26, or QoL-AD. Additionally, outcome data had to be reported as mean ± standard deviation or in a format that allowed the calculation of effect sizes. Only studies published between 2015 and 2025 were considered eligible.

Exclusion Criteria

Studies were excluded if they involved institutionalized participants, did not assess QoL as an outcome, used non-validated or qualitative-only measurement tools, were published in languages other than English, or were available only as abstracts or conference proceedings without sufficient data.

Operational Definition of Variable

Quality of life is difined as a multidimensional outcome referring to an individual's perceived physical, mental, and social well-being.

Multicomponent Exercise is defined as structured physical activity programs incorporating two or more components such as aerobic, resistance, balance, and flexibility training.

Aerobic Exercise is defined as an exercise intervention that primarily involves continuous rhythmic activities targeting cardiovascular endurance

Community-Dwelling Older Adults are defined as individuals aged 60 years and above living independently in the community (not in institutional care such as hospitals or nursing homes).

Quality Assessment

The risk of bias of the included studies was assessed using the Cochrane Risk of Bias 2.0 Tool, which evaluates potential sources of bias across several key domains. These domains include: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other potential sources of bias. Each domain was independently evaluated and rated as low risk, unclear risk, or high risk of bias, based on the information reported in each study.

Data Analysis

RevMan version 5.4 was used for meta-analysis. Standardized Mean Difference (SMD) and 95% Confidence Intervals (CI) were calculated for continuous outcomes due to the variability in QoL measurement tools. A random-effects model was applied to account for between-study heterogeneity. Heterogeneity was assessed using the I^2 statistic, with $I^2 > 50\%$ indicating moderate to high heterogeneity. Subgroup analysis was performed to compare the effect of multicomponent versus aerobic exercise.

Results

Literature Search and Characteristic of the Included RCTs

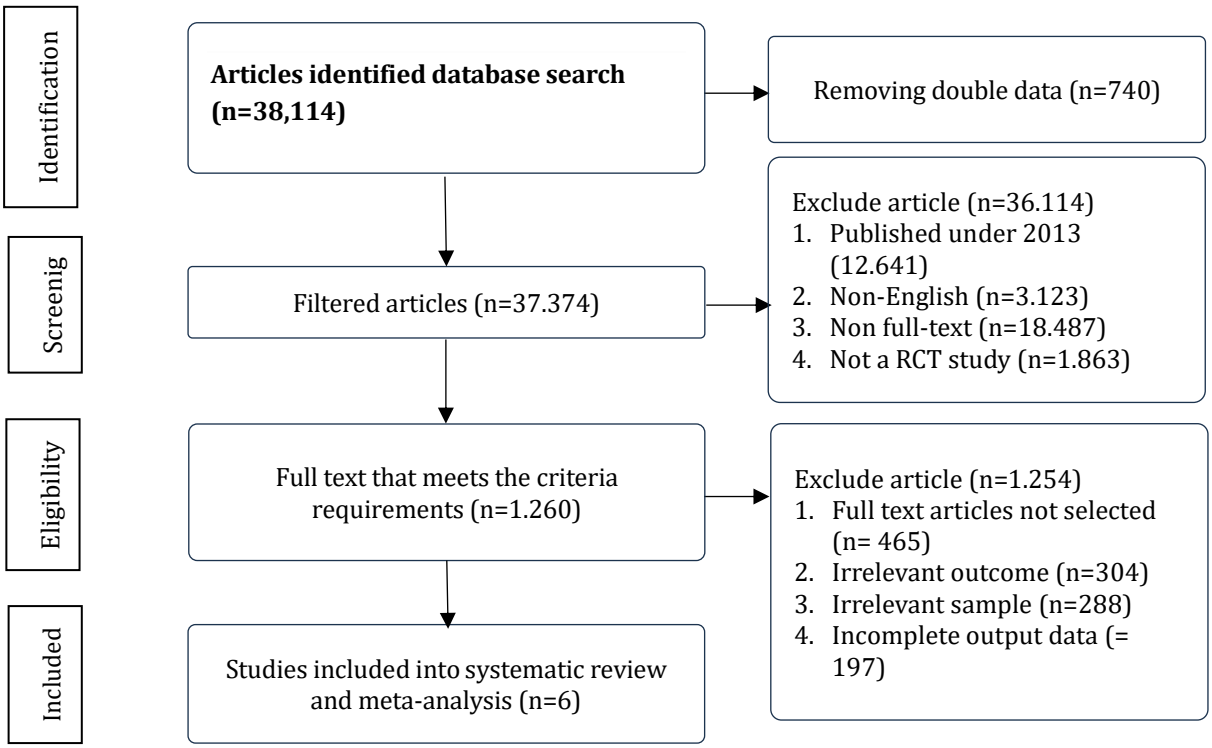

Figure 1. Preferred reporting items for Sytematic Reviews and Meta-Analysis (PRISMA) flow diagram

The PRISMA flow diagram in **Figure 1** illustrates the study selection process for the systematic review and meta-analysis. From an initial total of 38,114 articles identified through database searches, 740 duplicates were removed, leaving 37,374 articles for screening. Following the application of inclusion and exclusion criteria—such as publication year, language, availability of full text, and study design—a total of 1,260 full-text articles were assessed for eligibility. After further exclusion of studies due to reasons including irrelevant outcomes, non-target populations, and incomplete data, only 6 studies met all criteria and were included in the final analysis. This process highlights the strict methodological approach taken to ensure that only high-quality, relevant randomized controlled trials were included in evaluating the effect of multicomponent versus aerobic exercise on quality of life in community-dwelling elderly.

Risk of Bias Assessment

The risk of bias summary chart presents the quality appraisal of seven included randomized controlled trials across seven key domains based on the Cochrane Risk of Bias Tool. Green circles with a plus sign (+) indicate a low risk of bias, yellow circles with a question mark (?) indicate unclear risk, and red circles with a minus sign (−) indicate high risk. The risk of bias analysis shows that most included studies had a low risk across all domains, particularly (Sadjapong et al., 2020; Song & Yu, 2019), which

demonstrated strong methodological quality. However, (Alabarse et al., 2019) and Carta et al. (2022) showed high risk in randomization, with additional concerns in allocation concealment and blinding, which may introduce selection and performance bias. Minor unclear risks were also noted in (Miyazaki et al., 2022) and (de Resende-Neto et al., 2019). Overall, while the majority of studies were methodologically sound, these few biases should be considered when interpreting the results.

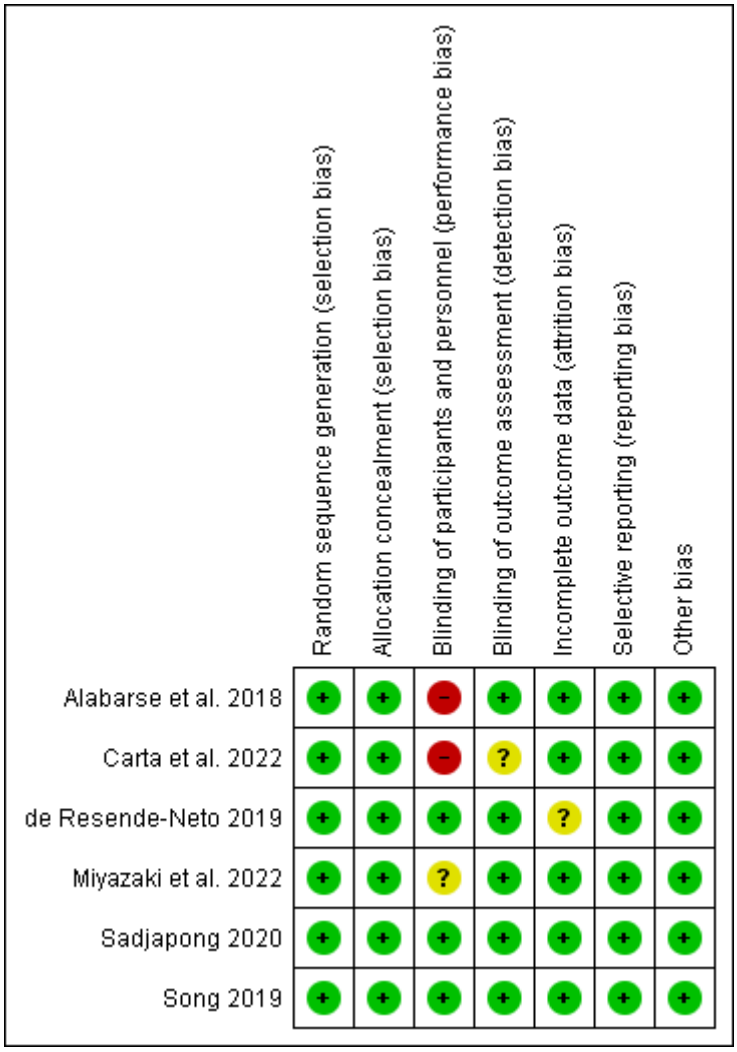

Figure 2. Risk of bias summary: Review authors' judgements about each risk of bias item presented as percentages across all included studies

Study characteristics

This table outlines the characteristics of six randomized controlled trials that assessed the impact of various exercise interventions on the quality of life (QoL) of community-dwelling older adults. The total sample size across studies ranged from 56 to 120 participants, with mean ages between 65 and 78 years, representing a typical elderly population.

Table 1. Characteristics of synthesized clinical trials.

Study	Sample Age (Mean±SD)	Intervention	Comparison	Time Points of Measurement	Outcome
de Resende-Neto et al. (2019)	62 participants 65.28 ± 4.96	5 min of joint mobility, 15 min walking, 25 min muscle strength, and 5 min HIIT	a stretching training program,	12 week	Quality of life (WHOQOL-BREF)

Study	Sample Age (Mean±SD)	Intervention	Comparison	Time Points of Measurement	Outcome
Sadjapong et al. (2020)	64 participants 77.78 ± 7.24	10–20 min chair aerobic training, 25-30 min resistance training, 10 min balance training	No Intervention	24 week	Quality of life (SF-36)
Carta et al. (2022)	105 participants 71.8 ± 4.7	10 min warm up, 40 min aerobic and anaerobic exercise, 10 min cool down	Recreation	12 week	Quality of life (SF-12)
Alabarse et al. (2019)	69 participants 68.2 ± 5.2	30 minutes of continuous walking at moderate intensity, 3 days/week	No Intervention	12 week	Quality of life (WHOQOL-OLD)
Miyazaki et al. (2022)	56 participants 67.93 ± 5.81	30 min Nordic walking 3 times per week	Ceramic class	4 week	Quality of life (WHOQOL-26)
Song & Yu (2019)	120 75.78 ± 6.28	stepping exercise programme with three 60-minute group training sessions per week.	No Intervention	16 week	Quality of Life-Alzheimer's disease

Effectivenes of exercise on quality of life

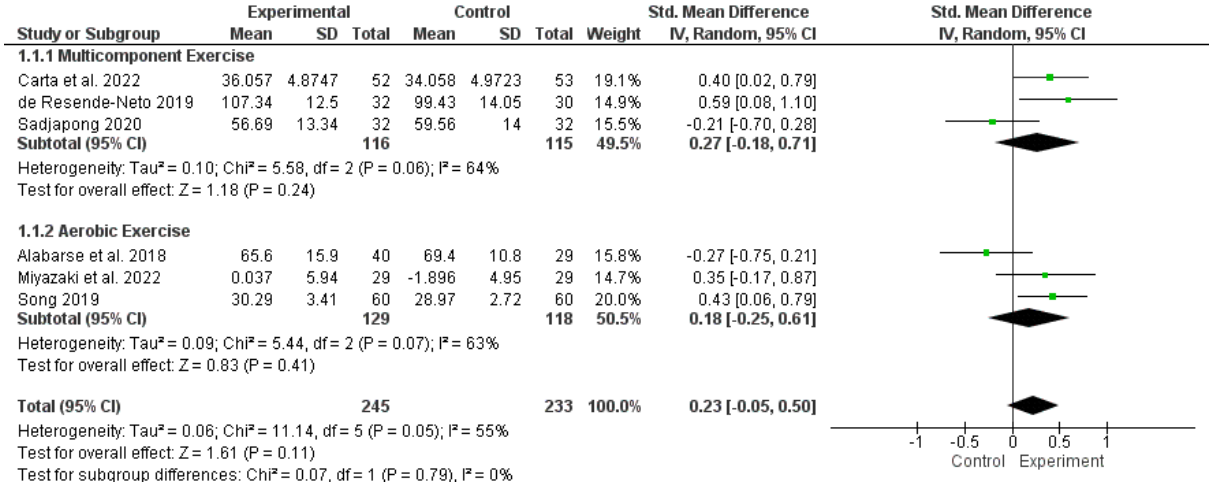

Figure 3. Forest plot of the effect of exercise on quality of life

This forest plot presents the results of a meta-analysis comparing the effects of multicomponent exercise and aerobic exercise on quality of life in community-dwelling older adults. A total of six randomized controlled trials involving 478 participants (245 in the experimental group and 233 in the control group) were included and categorized into two subgroups based on the type of intervention.

In the multicomponent exercise subgroup (3 studies), the pooled standardized mean difference (SMD) was 0.27 [95% CI: -0.18 to 0.71], with a non-significant overall effect (p = 0.24). Although statistical significance was not reached, this subgroup showed a larger effect size compared to the aerobic exercise subgroup, which had a pooled SMD of 0.18 [95% CI: -0.25 to 0.61], also not significant (p = 0.41). The moderate heterogeneity observed in both subgroups (I^2 = 64% and 63%, respectively) indicates variability in results across studies.

While the overall effect across all studies (SMD = 0.23 [95% CI: -0.05 to 0.50], p = 0.11) was not statistically significant, the trend of higher and more consistent effect sizes in the multicomponent group suggests a potentially greater impact on quality of life than aerobic exercise alone. This aligns with the hypothesis that combining multiple physical training elements—such as strength, balance, and aerobic components—may produce broader physical and psychological benefits for older adults.

Therefore, despite the statistical uncertainty, these findings offer practical support for the implementation of multicomponent exercise programs as a more promising intervention to enhance quality of life in the elderly. Future well-powered studies with standardized outcome measures are warranted to confirm these trends and strengthen the evidence based.

Publication bias

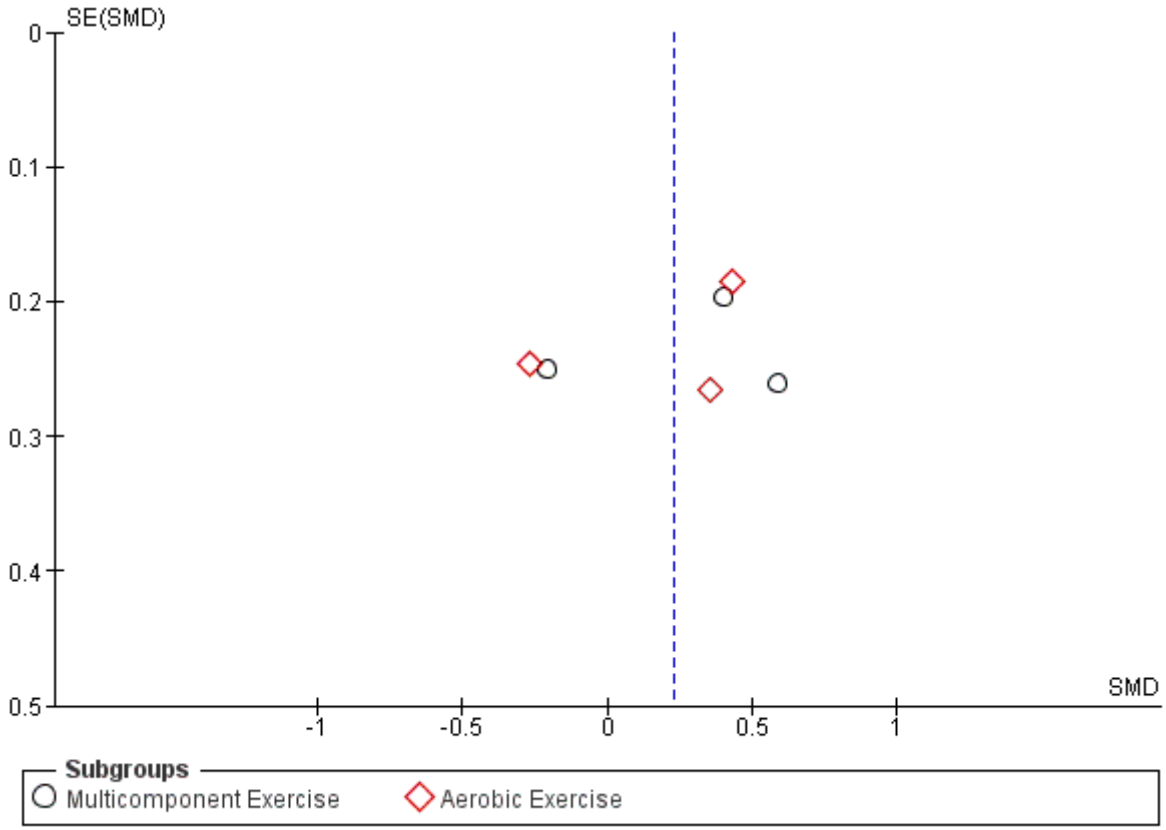

Figure 4. Funnel plot of the effect of exercise on quality of life

This funnel plot illustrates the distribution of studies based on their standardized mean difference (SMD) and standard error (SE), comparing multicomponent exercise (represented by circles) and aerobic exercise (represented by diamonds). The plot shows a relatively symmetrical distribution around the overall effect estimate, suggesting no clear evidence of publication bias. Most studies cluster within a moderate SE range, indicating moderate sample sizes and relatively balanced precision across trials.

While the number of included studies is limited, which reduces the interpretive power of the funnel plot, a visual trend can be observed. Studies involving multicomponent exercise appear more consistently positioned to the right of the mean line, indicating generally more favorable effects on quality of life. In contrast, the aerobic exercise studies are more dispersed across the SMD axis, reflecting greater variability in their results. Overall, the funnel plot supports the interpretation that multicomponent exercise may produce more consistent and positive outcomes compared to aerobic exercise, although this trend should be interpreted cautiously due to the small number of studies included.

Discussion

This meta-analysis found that multicomponent exercise (MCE) led to greater improvements in quality of life (QoL) among community-dwelling older adults compared to aerobic exercise (AE), although the difference was not statistically significant. Nonetheless, the observed trend favoring MCE indicates its potential as a more comprehensive intervention for enhancing well-being in older populations.

Multiple studies support the view that engaging in diverse forms of physical activity, including MCE, is positively associated with improved QoL in the elderly. Oh et al. (2017) reported strong correlations between varied physical activity types and enhanced QoL indicators, while Lin et al. (2022) emphasized the mediating role of physical activity in health-related QoL through the lens of the activity theory of aging, which posits that sustained activity is essential for life satisfaction in later years. The added benefit of MCE

compared to AE may stem from its inclusion of strength, balance, and flexibility training, which target a broader range of health domains beyond cardiovascular fitness alone (Chiu & Yu, 2022; Gonçalves et al., 2019).

The superiority of MCE over AE can be attributed to its multidimensional impact across physical, psychological, and social domains. MCE integrates various training components—such as aerobic, resistance, balance, and flexibility exercises—thereby enhancing physical function, including mobility, muscle strength, and frailty reduction (Flores-Bello et al., 2024; Sadjapong et al., 2020). These gains contribute to increased self-efficacy, independence, and ultimately, improved life satisfaction (Lin et al., 2022).

In addition to physical outcomes, MCE offers psychological advantages. Diverse exercise routines are associated with reduced symptoms of depression and anxiety (Lepsy et al., 2021). Such effects may also arise from physiological mechanisms, including improved cerebral blood flow and reduced systemic inflammation, which influence both mood and cognitive health (Fraga et al., 2024; Sadjapong et al., 2020).

Social engagement is another key factor explaining the effectiveness of MCE. Community-based programs often encourage group participation, fostering a sense of belonging and interpersonal connection (Lim et al., 2024; Nakada et al., 2024; Wei et al., 2022). These interactions promote emotional resilience and enhance motivation to adhere to exercise routines (Chaudhury et al., 2016). Socially supportive environments, such as group-based or intergenerational programs, can also reduce loneliness and strengthen self-efficacy (Nakada et al., 2024), contributing further to improvements in QoL (Chittrakul et al., 2020; Izquierdo et al., 2021).

Moreover, MCE is adaptable to various functional levels and preferences, promoting autonomy and sustained participation. This flexibility is critical for maintaining long-term engagement and maximizing health benefits. Environmental supports—such as walkable and safe neighborhoods—further reinforce participation in physical activity among older adults (Chaudhury et al., 2016).

This meta-analysis provides a comprehensive synthesis of current evidence comparing MCE and AE in community-dwelling older adults. However, several limitations must be noted. The included studies varied in sample size, intervention duration, and QoL measurement tools, contributing to heterogeneity and limiting the generalizability of findings (Fien et al., 2022). Small sample sizes in individual studies may have limited the statistical power to detect significant effects. Moreover, a lack of long-term follow-up in many studies limits understanding of sustained benefits over time (Flores-Bello et al., 2024).

From a public health perspective, the findings support the promotion of multicomponent exercise programs in community settings as part of aging-related health strategies. Health practitioners and agencies are encouraged to implement integrative programs addressing physical, cognitive, and social dimensions of health (Fien et al., 2022; Izquierdo et al., 2021). Educational efforts aimed at encouraging physical and social activity can empower older adults to take an active role in maintaining their health. Successful implementation of MCE could also reduce the burden of chronic diseases associated with aging. These recommendations align with the World Health Organization (WHO) 2020 guidelines, which advocate at least 150–300 minutes of moderate-intensity or 75–150 minutes of vigorous-intensity exercise weekly, incorporating multicomponent elements (Fien et al., 2022).

Future research should focus on developing standardized MCE protocols, ensuring consistent outcome measures, and exploring the mechanistic pathways by which exercise influences QoL. Larger studies with longitudinal designs are needed to understand how factors such as community support, environmental context, and program adherence influence long-term outcomes. Investigating how social networks and built environments contribute to the effectiveness of MCE interventions can provide additional insights for designing more inclusive, accessible, and sustainable programs (Lim et al., 2024; Zhang et al., 2018).

Although this meta-analysis did not find a statistically significant difference between multicomponent and aerobic exercise in improving QoL, the observed trends suggest that MCE may offer superior and more comprehensive benefits. By targeting multiple domains—physical, mental, and social—MCE emerges as a holistic and effective strategy for promoting healthy aging. These findings underscore the importance of adopting multifaceted exercise interventions in both clinical and community-based settings, and highlight the need for continued research to further validate and expand on these outcomes.

Conclusion

Multicomponent and aerobic exercise interventions showed improvements in the quality of life of community-dwelling older adults, with multicomponent exercise more effective and more comprehensive benefit. These findings suggest potential benefits for the health and well-being of older adults. In the meantime, health practitioners are encouraged to consider multi-component exercise as part of Physical Activity Promotion Programs to support improvements in the quality of life of older adults.

Limitations

This study has several limitations. First, there was substantial heterogeneity in the multicomponent exercise subgroup, likely due to differences in intervention types, durations, and outcome measures. Second, some studies reported only partial domain data for quality of life, limiting the comparability of results. Third, funnel plot asymmetry suggests potential publication bias. Lastly, most interventions were supervised, which may not reflect real-world conditions. Future research should aim for more standardized intervention protocols, complete and transparent reporting of quality of life domains, and include follow-up assessments to evaluate the long-term effects of exercise interventions in community settings.

Author Contributions

Conceptualization, Indriani and Isna Qadrijati; methodology,Indriani; software and validation, Indriani, Arsita Eka Prasetyawati, Ahmad Nasrullah and Agus Kristiyanto; formal analysis, Indriani; investigation, Arsita Eka Prasetyawati and Ahmad Nasrullah; resources and data curation, Indriani; writing—original draft preparation, Indriani; writing—review and editing, Isna Qadrijati, Arsita Eka Prasetyawati, Ahmad Nasrullah and Agus Kristiyanto; visualization and supervision, Indriani; project administration, Indriani; funding acquisition, Indriani. All authors have read and agreed to the published version of the manuscript.

References

Alabarse, S. L., Coelho Júnior, H. J., Asano, R. Y., Luna Filho, B., Santos, W. C., & Oliveira Filho, J. A. (2019). Moderate-Intensity Walking Training Improves Depressive Symptoms and Pain in Older Adults with Good Quality of Life: A Controlled Randomized Trial. International Journal of Cardiovascular Sciences. https://doi.org/10.5935/2359-4802.20190026

Carta, M. G., Atzori, L., Aviles Gonzales, C. I., Minerba, L., Pau, M., Crisafulli, A., Cauli, A., Ferreli, C., Puxeddu, R., Orrù, G., Scano, A., Machado, S., Romano, F., Cossu, G., & Preti, A. (2022). Improving Quality of Life in Older Adults Living at Home by a Moderate Exercise Training. The Open Psychology Journal, 15(1). https://doi.org/10.2174/18743501-v15-e2206060

Chaudhury, H., Campo, M., Michael, Y., & Mahmood, A. (2016). Neighbourhood environment and physical activity in older adults. Social Science and Medicine, 149, 104–113. https://doi.org/10.1016/j.socscimed.2015.12.011

Chittrakul, J., Siviroj, P., Sungkarat, S., & Sapbamrer, R. (2020). Multi-system physical exercise intervention for fall prevention and quality of life in pre-frail older adults: A randomized controlled trial. International Journal of Environmental Research and Public Health, 17(9). https://doi.org/10.3390/ijerph17093102

Chiu, T. Y., & Yu, H. W. (2022). Associations of multicomponent exercise and aspects of physical performance with frailty trajectory in older adults. BMC Geriatrics, 22(1). https://doi.org/10.1186/s12877-022-03246-6

de Resende-Neto, A. G., do Nascimento, M. A., Aragão-Santos, J. C., Andrade, B. C. O., Vasconcelos, A. B. S., da Silva, D. R. P., Netto, R. S. M., de Santana, J. M., & Grigoletto, M. E. D. S. (2019). Effects of Multicomponent Training on Functional Fitness and Quality of Life in Older Women: A Randomized Controlled Trial. International Journal of Sports and Exercise Medicine, 5(4). https://doi.org/10.23937/2469-5718/1510126

Di Lorito, C., Long, A., Byrne, A., Harwood, R. H., Gladman, J. R. F., Schneider, S., Logan, P., Bosco, A., & van der Wardt, V. (2021). Exercise interventions for older adults: A systematic review of meta-analyses. Journal of Sport and Health Science, 10(1), 29–47. https://doi.org/10.1016/j.jshs.2020.06.003

Fien, S., Linton, C., Mitchell, J. S., Wadsworth, D. P., Szabo, H., Askew, C. D., & Schaumberg, M. A. (2022). Characteristics of community-based exercise programs for community-dwelling older adults in rural/regional areas: a scoping review. Aging Clinical and Experimental Research, 34(7), 1511–1528. https://doi.org/10.1007/s40520-022-02079-y

Flores-Bello, C., Correa-Muñoz, E., Sánchez-Rodríguez, M. A., & Mendoza-Núñez, V. M. (2024). Effect of Exercise Programs on Physical Performance in Community-Dwelling Older Adults with and without Frailty: Systematic Review and Meta-Analysis. Geriatrics (Switzerland), 9(1). https://doi.org/10.3390/geriatrics9010008

Fraga, B. S., Zanella, J. C., Miranda, C., de Souza Strehl, M., e Silva, A. M., Pires, V. J., Bracht, C. G., Reichert, T., & Kanitz, A. C. (2024). Effects of a remote multicomponent training intervention on quality of life of older people: a randomized controlled clinical trial. Revista Brasileira de Ciencias Do Esporte, 46. https://doi.org/10.1590/RBCE.46.20240002

Gonçalves, I. D. O., Bandeira, A. N., Coelho-Júnior, H. J., Aguiar, S. D. S., Camargo, S. M., Asano, R. Y., & Batista Júnior, M. L. (2019). Multicomponent exercise on physical function, cognition and hemodynamic parameters of community-dwelling older adults: A quasi-experimental study. International Journal of Environmental Research and Public Health, 16(12), 1–14. https://doi.org/10.3390/ijerph16122184

Izquierdo, M., Merchant, R. A., Morley, J. E., Anker, S. D., Aprahamian, I., Arai, H., Aubertin-Leheudre, M., Bernabei, R., Cadore, E. L., Cesari, M., Chen, L. K., de Souto Barreto, P., Duque, G., Ferrucci, L., Fielding, R. A., García-Hermoso, A., Gutiérrez-Robledo, L. M., Harridge, S. D. R., Kirk, B., … Singh, M. F. (2021). International Exercise Recommendations in Older Adults (ICFSR): Expert Consensus Guidelines. Journal of Nutrition, Health and Aging, 25(7), 824–853. https://doi.org/10.1007/s12603-021-1665-8

Jalenques, I., Rondepierre, F., Rachez, C., Lauron, S., & Guiguet-Auclair, C. (2020). Health-related quality of life among community-dwelling people aged 80 years and over: A cross-sectional study in France. Health and Quality of Life Outcomes, 18(1). https://doi.org/10.1186/s12955-020-01376-2

Jofré-Saldía, E., Villalobos-Gorigoitía, Á., Cofré-Bolados, C., Ferrari, G., & Gea-García, G. M. (2023). Multicomponent Training in Progressive Phases Improves Functional Capacity, Physical Capacity, Quality of Life, and Exercise Motivation in Community-Dwelling Older Adults: A Randomized Clinical Trial. International Journal of Environmental Research and Public Health, 20(3). https://doi.org/10.3390/ijerph20032755

Lepsy, E., Radwańska, E., Żurek, G., Żurek, A., Kaczorowska, A., Radajewska, A., & Kołcz, A. (2021). Association of physical fitness with quality of life in community-dwelling older adults aged 80 and over in Poland: a cross-sectional study. BMC Geriatrics, 21(1). https://doi.org/10.1186/s12877-021-02421-5

Lim, H., Jani, N. D. B., Pang, W. T., & Lim, E. C. W. (2024). Community-based exercises improve health status in pre-frail older adults: A systematic review with meta-analysis. BMC Geriatrics, 24(1). https://doi.org/10.1186/s12877-024-05150-7

Lin, C. H., Liu, C. Y., Huang, C. C., & Rong, J. R. (2022). Frailty and Quality of Life among Older Adults in Communities: The Mediation Effects of Daily Physical Activity and Healthy Life Self-Efficacy. Geriatrics (Switzerland), 7(6). https://doi.org/10.3390/geriatrics7060125

Lu, J., Lin, R., Zhang, C., Zhang, M., Wang, Y., & Zhang, Y. (2022). Exercise training modalities in patients with lung cancer: a protocol for systematic review and network meta-analysis. BMJ Open, 12(9), 1–4. https://doi.org/10.1136/bmjopen-2021-058788

Miyazaki, A., Okuyama, T., Mori, H., Sato, K., Kumamoto, K., & Hiyama, A. (2022). Effects of Two Short-Term Aerobic Exercises on Cognitive Function in Healthy Older Adults during COVID-19 Confinement in Japan: A Pilot Randomized Controlled Trial. International Journal of Environmental Research and Public Health, 19(10). https://doi.org/10.3390/ijerph19106202

Nakada, T., Kozawa, T., Seino, S., Murota, S., Eto, M., Shimasawa, J., Shimizu, Y., Tsurugano, S., Katsukawa, F., Sakamoto, K., Washizaki, H., Ishigaki, Y., Sakamoto, M., Takadama, K., Yanai, K., Matsuo, O., Kameue, C., Suzuki, H., Kurotani, K., & Ohkawara, K. (2024). A Community-Based Intervention to Enhance Subjective Well-Being in Older Adults: Study Design and Baseline Participant Profiles. Healthcare (Switzerland), 12(3). https://doi.org/10.3390/healthcare12030322

Ning, H., Chen, F., Li, J., Du, Y., Chen, X., Wu, S., Joseph, A., Gao, Y., Cao, Z., & Feng, H. (2024). Effectiveness of a multicomponent exercise intervention in community-dwelling older Chinese people with cognitive frailty: protocol for a mixed-methods research. Frontiers in Aging Neuroscience, 16. https://doi.org/10.3389/fnagi.2024.1282263

Noh, E. Y., Park, Y. H., Cho, B., Huh, I., Lim, K. C., Ryu, S. I., Han, A. R., & Lee, S. (2021). Effectiveness of a community-based integrated service model for older adults living alone: A nonrandomized prospective study. Geriatric Nursing, 42(6), 1488–1496. https://doi.org/10.1016/j.gerinurse.2021.10.006

Oh, S. H., Kim, D. K., Lee, S. U., Jung, S. H., & Lee, S. Y. (2017). Association between exercise type and quality of life in a community-dwelling older people: A cross-sectional study. PLoS ONE, 12(12), 1–11. https://doi.org/10.1371/journal.pone.0188335

Poli, L., Greco, G., Cataldi, S., Ciccone, M. M., De Giosa, A., & Fischetti, F. (2024). Multicomponent versus aerobic exercise intervention: Effects on hemodynamic, physical fitness and quality of life in adult and elderly cardiovascular disease patients: A randomized controlled study. Heliyon, 10(16). https://doi.org/10.1016/j.heliyon.2024.e36200

Sadjapong, U., Yodkeeree, S., Sungkarat, S., & Siviroj, P. (2020). Multicomponent exercise program reduces frailty and inflammatory biomarkers and improves physical performance in community-dwelling older adults: A randomized controlled trial. International Journal of Environmental Research and Public Health, 17(11). https://doi.org/10.3390/ijerph17113760

Song, D., & Yu, D. S. F. (2019). Effects of a moderate-intensity aerobic exercise programme on the cognitive function and quality of life of community-dwelling elderly people with mild cognitive impairment: A randomised controlled trial. International Journal of Nursing Studies, 93, 97–105. https://doi.org/10.1016/j.ijnurstu.2019.02.019

Wei, L., Hu, Y., Tao, Y., Hu, R., & Zhang, L. (2022). The Effects of Physical Exercise on the Quality of Life of Healthy Older Adults in China: A Systematic Review. In Frontiers in Psychology (Vol. 13). Frontiers Media S.A. https://doi.org/10.3389/fpsyg.2022.895373

World Health Organization. (2021). Decade of Healthy Ageing 2021–2030. https://www.who.int/initiatives/decade-of-healthy-ageing

Zhang, Y., Yeager, V. A., & Hou, S. (2018). The impact of community-based supports and services on quality of life among the elderly in China: A longitudinal study. Journal of Applied Gerontology, 37(10), 1244–1269. https://doi.org/10.1177/0733464816661945