

Effect of community-based model interventions on ICOPE intrinsic capacity domains: a systematic review

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Systematic Review

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Abstract

Background

Healthy ageing is defined as the maintenance of functional capacity through the interaction of intrinsic factors and the environment, focused on well-being. The ICOPE strategy evaluates domains such as vitality, mobility, and mental health to implement community-based interventions that prevent functional decline.

Objective

To present a synthesis of knowledge regarding the effect of community-based model interventions on ICOPE intrinsic capacity domains through a systematic review.

Methods

Systematic review following the PRISMA 2020 methodology in multiple scientific databases until August 5th, 2026. We selected studies on effect of multidimensional community-based models on healthy aging within the framework of ICOPE domains in community interventions in adults over 60 years of age. The eligibility criteria were older adults; community intervention; inclusion of assessments for two or more intrinsic capacity indicators; assessment of at least two ICOPE domains; participants must not suffer from chronic illnesses that limit their mobility or be extremely frail. The information sources were PubMed, Scopus, Web of Science, LILACS, SciELO, Redalyc, Google Scholar, and TESIUNAM. Their methodological quality was evaluated according to the Cochrane Handbook for Systematic Reviews of Interventions. The data analysis is presented with the standardized mean difference (SMD) and the percentage changes ($\Delta\%$).

Results

Six studies were included, the analysis of the evidence shows that community models aligned with the ICOPE guide showed improvement mainly in mobility, followed by depressive symptoms, cognitive function, and less frequently social participation.

Conclusions

Our findings suggest that community-based models for healthy aging primarily focus on improving mobility, followed by addressing depressive symptoms and cognitive function, with the least impact on social participation.

1. Background

Healthy aging is defined by the World Health Organization (WHO, 2015) as "the process of developing and maintaining the functional ability that enables well-being in older age". It specifies that optimal functional ability should allow individuals "to be and to do what they have reason to value." In this regard, environmental characteristics combined with the individual's intrinsic capacity (IC) and social support networks determine physical, psychological, and social functional ability to achieve maximum well-being [1].

Furthermore, the WHO (2019) established the Integrated Care for Older People (ICOPE) guidelines [2] to detect declines in IC and implement community-based interventions. The IC domains addressed are: (i) sensory capacity (visual and

hearing); (ii) vitality (nutritional status and strength); (iii) mobility (locomotor capacity); (iv) mental health status (depressive symptoms); and (v) cognitive domain (cognition).

In this context, interaction and interdependence exist among these domains; a deficiency in one can affect the others, thus impacting functional ability (FA), reducing quality of life, and altering the overall perception of well-being. Therefore, assessing more than one IC domain in older adults serves as an indicator of healthy aging [3]. The simultaneous loss of appetite and weight is associated with psychological impairments and changes in locomotion. Additionally, social participation is among the essential aspects impacting mobility, IC, and the performance of older adults in their environment, aiming to avoid a high risk of falls, physical deterioration, and mental decline, which negatively impact well-being [4–6].

Timely detection of deficits in IC domains allows for the implementation of necessary actions to enhance or restore FA and well-being. In this regard, community interventions employing the ICOPE approach have reported favorable effects on IC, promoting vitality, mobility, and cognitive functioning, while decreasing depressive symptoms and enhancing overall well-being [7–10].

Within this framework, the importance of implementing community gerontology models for healthy aging has been highlighted. A community-based care program or model is conceptualized as a set of actions that promote and facilitate efficient, effective, and timely approaches with an integrated and social focus on individuals in their place of residence. These models consider social support networks and prioritize strategies for self-care, mutual aid, and self-management to maintain or improve functional ability [11].

The purpose of this systematic review is to present a synthesis of knowledge regarding the effect of community-based model interventions on ICOPE intrinsic capacity domains.

2. Methodology

A systematic review was conducted according to the methodology established by PRISMA-2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) [12]. The protocol was previously registered in INPLASY (202470055) [13]

2.1. Search strategy

The research question was formulated using the PICO acronym, where: P (Population), older adults ≥ 60 years; I (Intervention), community intervention (excluding institutional settings); C (Comparison), no intervention; O (Outcome), ICOPE healthy aging domains. The literature search was conducted until August 5th, 2026, across the following scientific article platforms: PubMed, Scopus, Web of Science, LILACS, SciELO, Redalyc, Google Scholar, and TESIUNAM, using the keywords: ("Community model" OR "Community program" OR "Community intervention" OR "Community Exercise" OR "Community alimentation" OR "community peer support" OR "community leisure" OR "Generativity" OR "community volunteering") AND "healthy aging" OR ((ICOPE) OR (Mobility, Cognition, Depression, Vitality, Sensory, Social participation)). The search was conducted in English, Spanish, and Portuguese. The specific search strategy used on each scientific article platform is presented in Supplementary Material S1.

2.2. Inclusion and exclusion criteria

Population: Older adults; Group or Community Intervention; Inclusion of assessments for two or more intrinsic capacity indicators: (i) cognitive function; (ii) mobility; (iii) nutrition; (iv) physical exercise; (v) sensory functions (visual and hearing); (vi) depressive symptoms; and (vii) sleep; Assessment of at least two ICOPE domains: Mobility, Sensory capacity, Cognitive function, Vitality (Nutrition, Muscle strength), Psychological dimension (Depression, Health status,

Quality of life, Self-efficacy), Social participation. Participants must not suffer from chronic illnesses that severely limit their mobility or be extremely frail.

2.3. Study Selection

Once the studies were selected, data were extracted for the systematic review. All studies were analyzed considering the following data points: (1) authors, (2) year of publication, (3) study design, (4) study population (age, health status, and/or cognitive condition) and sample size, (5) intervention characteristics (topics, duration), (6) ICOPE assessment domains: evaluation instruments used, (7) pre-treatment results, (8) post-treatment results, and (9) standardized mean differences.

2.4. Data extraction

The following data were recorded for each selected study: (i) author and year, (ii) study design, (iii) population, (iv) type of intervention, (v) measurement parameters, (vi) measurement instruments, and (vii) results.

2.5. Risk of bias assessment

The selected studies were reviewed in detail to exclude those that did not meet the eligibility criteria. Their methodological quality was evaluated according to the Cochrane Handbook for Systematic Reviews of Interventions [14, 15]. For randomized controlled trials (RCTs), the RoB 2 tool was used, which considers seven elements: (1) random sequence generation, (2) allocation concealment, (3) blinding of participants and personnel, (4) blinding of outcome assessment, (5) incomplete outcome data, (6) selective outcome reporting, and (7) other sources of bias. Additionally, the ROBINS-I tool was used to assess the risk of bias in non-randomized studies, evaluating potential biases related to: (1) confounding, (2) selection, (3) information, and (4) reporting of selected outcomes.

2.6. Data analysis and synthesis

The standardized mean difference (SMD) was estimated for the assessments of each domain [14]. Furthermore, studies were evaluated for potential methodological biases using the Cochrane Collaboration's RoB 2 and ROBINS-I criteria to determine methodological quality and the risk of bias [15]. Percentage changes ($\Delta\%$) were calculated using the formula: $\Delta\% = [(Post - Pre) / Pre] \times 100$, for the domains evaluated after the intervention.

3 Results

3.1 Selected studies

The total number of articles identified through the database search was 1,621, of which 6 met the eligibility criteria for the systematic review (Fig. 1) [16–21]. The ICOPE domains that were evaluated are summarized in Table 1.

Table 1
Domains included in the evaluation of the articles

Author & design	Vitality	Mobility	Cognition	Depressive Symptoms	Social Participation
Chi et al. (2021) [16] (RCT)	☒	☒	☒	Δ%: -1.2**	Δ%: 140**
Merchant et al. (2021) [17] (RCT)	☒	Δ%: 8.3*	Δ%: 1.7*	Δ%: -35.7*	Δ%: 1*
Raichlen et al. (2020) [18] (RCT)	☒	Δ%: 55	Δ%: 48*	☒	☒
Hau et al. (2016) [19] (Qexp)	Δ%: 2.3	Δ%: 7.7* Δ%: 13.8** Δ%: -11.6**	Δ%: 6.9**	Δ%: -18*	☒
Lim et al. (2024) [20] (Qexp)	Δ%: 5.66** Δ%: -3.90*	Δ%: 21.5**	☒	Δ%: 0	☒
Lorente-Martínez et al. (2022) [21] (Qexp)	☒	☒	☒	Δ%: -1.13	Δ%: -2.33 Δ%: -3.49
Percentage changes [Δ% = (Post–Pre)/Pre*100] in the domains evaluated after the intervention. Significant differences with respect to baseline levels (*p < 0.05; ** p < 0.001). A high effect can be observed, mainly in mobility, with positive values from 7.7% to 55%, and a decrease in the time it takes for people to get up from the chair. Secondly, depressive symptoms decreased significantly, with percentages ranging between – 1.2% and – 35.7%; and cognition improved between 1.7% and 48%.					

3.2 Assessing the quality of the studies

The bias analysis of the three selected randomized controlled trials (RCTs) [16–18] reveals certain methodological limitations, particularly in the reported outcomes and a lack of comprehensive information regarding the intervention (Figs. 2). This may result in an underestimation or overestimation of the true intervention effect. Similarly, a moderate risk of bias in participant selection was observed in the three quasi-experimental studies [19–21] (Figs. 3). The exclusion of participants or outcome events can impact the final results, thereby altering the association between the intervention and the outcome.

3.3 Study characteristics

Of the six included studies, three were RCTs [16–18] and three were quasi-experimental [19–21]. The reported age of all participants ranged from 60 to 95 years. The sample populations included individuals with mildly limited mobility and mild cognitive impairment, along with diabetes and hypertension; individuals diagnosed with pre-frailty, frailty, and/or mild cognitive impairment; and individuals in good health without cognitive impairment. The duration of the interventions ranged from 2 months [16, 17, 21] to 3 months [18, 20] and 6 months [19].

3.4 Intervention components

The community programs implemented physical activation strategies ranging from coordination exercises [16], paired walking, and low-to-moderate intensity circuit training [17], aerobic exercise training on a stationary recumbent bicycle with gradual intensity increases [18], fitness conditioning in a fully equipped gym, Zumba, water aerobics [19], and progressive-intensity resistance band exercises [20].

In addition to physical activation, psychoeducational components were integrated into the interventions. These were addressed through group counseling sessions covering healthy lifestyles, topics of interest, and nutritional advice [16, 17,

19, 20]. Social participation in community activities was also included. For instance, one program consisted of 10 courses over 2 months (60 hours) addressing psychoeducation on the aging process, the value of life in older age, active living, positive emotion training, attention and concentration exercises, memory retention activities, and music therapy. It also emphasized personal and family relationships, expressions of appreciation and affection, and involvement in community social welfare activities [16]. Another program included cognitive training [18], while another utilized daily conversations to foster interpersonal relationships between volunteers and older adults, alongside a social activity plan that promoted community involvement and improved feelings of social integration across 4 community sessions [21].

3.5 Effects of Community Programs on ICOPE Domains

The evaluations addressed in the articles included: (i) Vitality domain (nutritional status), (ii) Mobility domain (locomotor capacity) [18–21], (iii) Mental health status domain (depressive symptoms), (iv) Cognitive domain (cognition) [17–19], and (v) Social participation [16, 21] (Tables 2–6).

Table 2
Changes in Vitality (nutritional status).

VITALITY DOMAIN: Nutritional status								
Author & Country	Design	Population, Age (Mean±SD) & Comorbidity	INTERVENTION	Duration			Variable & Questionnaires	Standard Mean difference (SMD; 95% CI)
				Hrs per wk	Days per wk	Months		
Hau et al. 2016 [19] U.S.A. Chinatown in Boston	Quasi-exp. No control group	N = 50 60–85 years. M: n = 34 H: n = 16 Mildly limited mobility and mild cognitive impairment. Diabetes Hypertension	Ind/Community Physical Activity + Group Counseling (Healthy Lifestyle Topics)	- 1	3 1	6 6	Nutritional status. Mini Nutrition Assessment (MNA). PRE: 25.1 (2.2) POST (6M): 25.7 (2.3)	0.26 [-0.13,0.66] p = 0.13
Lim, H-S et al 2024 [20] Korea	Quasi-exp. with control group	N = 109 60–75 years. Healthy women. GE = 57 GC = 52	Combination of resistance exercises with elastic band and progressive increase vs nothing.	1	1	3	Nutritional status. Mini Nutrition Assessment (MNA). PRE: 21 (36.8) POST (3M): 11 (19.3) Body fat (%) PRE: 41.0 ± 3.7 POST (3M): 39.4 ± 3.6 Skeletal muscle index (kg/m2) PRE: 5.3 ± 0.7 POST (3M): 5.6 ± 0.7	-0.34 [-0.71, 0.03] p = 0.267 -0.44 [-0.81, -0.06] p = 0.011 0.43 [0.05,0.80] p = 0.001
SMD = Standardized Mean Difference								

3.5.1 Vitality

Vitality was analyzed through nutritional status using the Mini Nutritional Assessment (MNA). Reported changes at three months were SMD= -0.34 (-0.71, 0.03, $p = 0.267$)[20]; and at 6 months, SMD = 0.26 (-0.13, 0.66, $p = 0.13$)[19]. Additionally, the 3-month change in body fat percentage was evaluated, showing an SMD= -0.44 (-0.81, -0.06, $p = 0.011$)[20], alongside the skeletal muscle mass index, which showed an SMD = 0.43 (0.05, 0.80, $p < 0.001$)[20].

No improvements were found in post-intervention scores regarding nutritional status. However, body fat percentage and the skeletal muscle mass index reported statistically significant changes following the 3-month progressive resistance band exercise intervention (Table 2).

3.5.2 Mobility

Mobility assessment was conducted using physical fitness tests through three evaluations: the Short Physical Performance Battery (SPPB), Gait Parameters, and the International Physical Activity Questionnaire (IPAQ).

The studies implemented various exercises to enhance functional capacity, such as supervised group fitness classes (yoga, tai chi, Zumba, conditioning exercises, aerobic exercise, and resistance bands) [17–20].

The reported changes in the post-evaluation at 6 months were SMD = 0.8 (0.5, 1, $p < 0.05$) [17]; combined with cognitive exercises, the SMD was 0.25 (-0.52, 1.01, $p = 0.925$) [18]. Lower extremity function scored an SMD = 0.40 (0, 0.79, $p < 0.01$) [19], habitual gait speed scored an SMD = 0.65 (0.24, 1.05, $p < 0.001$) [19], and the 5-times sit-to-stand test scored an SMD= -0.46 (-0.86, -0.07, $p = 0.007$) [19]; whereas walking showed a significant change with an SMD = 0.78 (0.40, 1.16, $p < 0.001$) [20].

Overall, higher scores were observed in functional capacity assessments, with notable changes ($p < 0.001$) in walking when combining resistance band exercises with progressive intensity increases, as well as in habitual gait speed after six months of activity [19] (Table 3). Additionally, the H.A.P.P.Y. multicomponent program [17] reported changes with a significance level of $p < 0.05$, suggesting that two months of exercise results in improved physical function.

Table 3
Changes in Mobility.

MOBILITY DOMAIN (Locomotor Ability): Physical Function/Physical Activity								
Author & Country	Design	Population, Age (Mean±SD) & Comorbidity	INTERVENTION	Duration			Variable & Questionnaires	Standard Mean difference (SMD; 95% CI)
				Hrs per wk	Days per wk	Months		
Merchant et al. 2021 [17] Singapore	RCT	N = 196 HC.= 75 V.= 121 prefrailty, frailty and/or mild cognitive impairment.	Multicomponent program H.A.P.P.Y. vs Volunteers	1	1–2	1–2	Physical activity. Short Physical Performance Battery (SPPB)	HC.: 0.8[0.5,1]. V.: 0.1 [-0.2,0.5]. ex 1pw: 0.4 [0.1,0.8]. ex 2pw: 0.6 [0.3,0.9]. p < 0.05
Raichlen et al. 2020 [18] U.S.A.	RCT	N = 51 60–74 years. Healthy COG = 10 EX = 17 EXCOG = 12 CONTROL = 12	Four parallel interventions: 1) cognitive training (COG), 2) aerobic exercise (EX), 3) combined aerobic exercise and cognitive training (EXCOG), 4) Control by video display (CON).	1	3	3	Dual-task cost Gait parameters Gait variable Straide Velocity Variability EXCOG: pre – 8.45 (6.86) post – 6.73 (6.6) EX: pre – 11.6 (5.76) post – 5.25 (4.62) COG pre – 12.3 (6.91) post – 5.61 (3.48) CON pre – 12.86 (12.89) post – 10.06 (10.69)	EXCOG: 0.25 [-0.52, 1.01] EX: 1.17 [0.27, 2.07] COG: 1.04 [0.12, 1.97] CON: 0.23 [-0.62,1.07] p = 0.925
Hau et al. 2016 [19] U.S.A. Chinatown in Boston	Quasi-exp. No control group	N = 50 60–85 years. M: n = 34 H: n = 16 Mildly limited mobility and	Ind/Community Physical Activity + Group Counseling (Healthy Lifestyle Topics)	-	3	6	Function of the lower limbs. Short Physical Performance Battery (SPPB) PRE: 10.3 (2.4)	0.40 [0.00, 0.79] p = 0.01 0.65 [0.24, 1.05] p < 0.001
SMD = Standardized Mean Difference								

MOBILITY DOMAIN (Locomotor Ability): Physical Function/Physical Activity								
Author & Country	Design	Population, Age (Mean±SD) & Comorbidity	INTERVENTION	Duration			Variable & Questionnaires	Standard Mean difference (SMD; 95% CI)
				Hrs per wk	Days per wk	Months		
		mild cognitive impairment. Diabetes Hypertension					POST (6M): 11.1(1.5) Habitual gait speed PRE: 0.94 (0.2) POST (6M): 1.07(0.2) 5-repeated chair rises PRE: 9.5(2.5) POST (6M): 8.4 (2.2)	-0.46 [-0.86, -0.07] p = 0.007
Lim, H-S et al 2024 [20] Korea	Quasi-exp. with control group	N = 109 60–75 years. Healthy women. EG = 57 CG = 52	Combination of resistance exercises with elastic band and progressive increase vs nothing	1	1	3	Physical activity. International Physical Activity Questionnaire (IPAQ)-Caminata EG PRE: 5.1 ± 1.7 POST (3M): 6.2 ± 1.0	0.78 [0.40, 1.16] p < 0.001
SMD = Standardized Mean Difference								

3.5.3 Cognitive function

Cognitive function was assessed using the Montreal Cognitive Assessment (MoCA), cognitive activity performance, and the Folstein Mini-Mental State Examination (MMSE).

Changes in cognitive function scores when combined with psychoeducation on healthy lifestyles and exercise proved to be significant, yielding an SMD = 1.7 (1.2, 2.3, p < 0.05)[17]; SMD = 1.09 (0.22, 1.96, p = 0.039)[18]; and SMD = 0.31 (-0.08, 0.71, p < 0.001) [19] (Table 4). Specifically, the greatest benefit was observed in the model involving six months of physical activity combined with group counseling on healthy lifestyle topics recommended for older age.

Table 4
Changes in Cognitive Function.

COGNITIVE FUNCTION DOMAIN (cognition).								
Author & Country	Design	Population, Age (Mean±SD) & Comorbidity	INTERVENCIÓN	Duration			Variable & Questionnaires	Standard Mean difference (SMD; 95% CI)
				Hrs per wk	Days per wk	Months		
Merchant et al. 2021 [17] Singapore	Quasi-exp. with control group	N = 196 HC.: 75 V.: 121 prefrailty, frailty and/or cognitive impairment	Multicomponent program H.A.P.P.Y. vs Volunteers	1	1–2	1–2	Cognition. Montreal Cognitive Assessment (MoCA).	HC.: 1.7 [1.2,2.3]. V.: 1 [0.1,2] ex 1pw: 1 [0.3,1.7] ex 2pw: 2 [1.3,2.7] p < 0.05
Raichlen et al. 2020 [18] U.S.A.	RCT	N = 51 60–74 years. Healthy COG = 10 EX = 17 EXCOG = 12 CONTROL = 12	Four parallel interventions: 1) cognitive training (COG), 2) aerobic exercise (EX), 3) combined aerobic exercise and cognitive training (EXCOG), 4) Control by video display (CON).	1	3	3	Cognitive training. Correct Virtual Cognitive Activity Score EXCOG: pre 17.8 (6.83) post (3M): 26.5 (8.48) EX 2 pre 19.58 (13.55) post (3M): 21.94 (13.64) COG pre 16.82 (6.71) post (3M): 21.8 (8.52) CON pre 14.79 (9.49) post (3M): 17.58 (10.15)	EXCOG: 1.09 [0.22,1.96] EX 0.17 [-0.5, 0.84] COG 0.62 [-0.28, 1.53] CON 0.28 [-0.5,1.05] p = 0.039
SMD = Standardized Mean Differenc								

COGNITIVE FUNCTION DOMAIN (cognition).								
Author & Country	Design	Population, Age (Mean±SD) & Comorbidity	INTERVENCIÓN	Duration			Variable & Questionnaires	Standard Mean difference (SMD; 95% CI)
				Hrs per wk	Days per wk	Months		
Hau et al. 2016 [19] U.S.A.	Quasi-exp.	N = 50 60–85 years.	Ind/Community Physical Activity + Group Counseling (Healthy Lifestyle Topics)	-	3	6	Global cognitive function.	0.31 [-0.08, 0.71]
Chinatown in Boston	No control group	M: n = 34 H: n = 16 Mildly limited mobility and mild cognitive impairment. Diabetes Hypertension					Folstein MiniMental State Examination (MMSE). PRE: 26.0 (3.0) POST (6M): 27.8(2.0)	p = 0.001
SMD = Standardized Mean Differenc								

3.5.4 Mental health

Regarding mental health status, depressive symptoms were considered, evaluated using the Geriatric Depression Scale (GDS) [16, 17, 20], the Patient Health Questionnaire-9 (PHQ-9) [19], and the UCLA Loneliness Scale (v3) [21].

The reported results showed an SMD = 0.03 (-0.26, 0.31, p < 0.001)[16]; SMD = 0.4 (-0.1, 0.8, p < 0.05)[17]; SMD= -0.13 (-0.52, 0.26, p = 0.03)[19]; SMD= -0.19 (-0.70, 0.33, p = 0.212)[21]. Lim et al. (2024) reported no changes in their assessments after 12 weeks [19] (Table 5). Depressive symptoms decreased in three of the five interventions evaluated for this outcome, reaching a significance level of p < 0.05 within the H.A.P.P.Y. multicomponent program and the model featuring six months of physical activity combined with group counseling on healthy lifestyles recommended for older adults.

Table 5
Changes in Depressive Symptoms.

MENTAL HEALTH DOMAIN (depressive symptoms).								
Author & Country	Design	Population, Age (Mean±SD) & Comorbidity	INTERVENTION	Duration			Variable & Questionnaires	Standard Mean difference (SMD; 95% CI)
				Hrs per wk	Days per wk	Months		
Chi et al. (2021) [16] Taiwan	RCT	N = 195 65–80 years. Healthy. EG: 95 CG: 100	Community Wellness Class for Older Adults. Psychoeducation in the following topics: Aging, Health promotion Emotional health and cognitive function Social participation	2	2	2	Depressive symptoms. 5 item brief Symptoms rating (GDS 5) EG: pre 10.76 (4.19) post 10.85 (2.53)	0.03 [-0.26, 0.31] p < 0.001
Merchant et al. 2021 [17] Singapore	Quasi-exp. with control group	N = 196 HC.:75 V.:121 prefrailty, frailty and/or cognitive impairment	Multicomponent program H.A.P.P.Y. vs Volunteers	1	1–2	1–2	Depressive symptoms. Geriatric Depression Scale (GDS)	HC.: 0.4 [-0.1,0.8]. V.: -0.6 [-1.2,-0.1] ex 1pw: -0.4 [-0.8,0.1] ex 2pw: 0.3 [-0.3,0.8] p < 0.05
Hau et al. 2016 [19] U.S.A. Chinatown in Boston	Quasi-exp. No control group	N = 50 60–85 years. M: n = 34 H: n = 16 Mildly limited mobility and mild cognitive impairment. Diabetes Hypertension	Ind/Community Physical Activity + Group Counseling (Healthy Lifestyle Topics)	-	3	6	Depressive symptoms. Patient Health Questionnaire 9 (PHQ-9) PRE: 2.8 (3.9) POST (6M): 1.8 (3.7)	-0.13 [-0.52,0.26] p = 0.03
SMD = Standardized Mean Difference								

MENTAL HEALTH DOMAIN (depressive symptoms).								
Author & Country	Design	Population, Age (Mean±SD) & Comorbidity	INTERVENTION	Duration			Variable & Questionnaires	Standard Mean difference (SMD; 95% CI)
				Hrs per wk	Days per wk	Months		
Lim, H-S et al 2024 [20] Korea	Quasi-exp. with control group	N = 109 60–75 years. Healthy women. EG: 57 CG: 52	Combination of resistance exercises with band, gymnastics and stretching. With progressive increase in resistance in the belt	1	1	3	Depressive symptoms. Geriatric Depression Scale (GDS) KOREA GDSSF-K DELTA 0	0 [0,0] p = 1.0
Lorente-Martínez et al. 2021 [21] Spain	Quasi-exp. with control group	N = 48 65–95 years. EG: 34 CG: 14 Women live alone without cognitive impairment.	The Acompaña-Té Programme (conversation, cognitive restructuring, behavioral activation)	2.5	1	3	Loneliness UCLA Loneliness Scale (Version 3) EG: 32.29 (5.13) post (6M) 31.16 (6.97)	-0.19 [-0.70, 0.33] p = 0.212
SMD = Standardized Mean Difference								

3.5.5 Social participation

Four different scales were used to evaluate the social participation of older adults: the Social and Civic Participation Scale (Zheng), which showed an SMD = 1.03 (0.73, 1.33, $p = 0.001$) [16]; the 6-item Lubben Social Network Scale (LSNS-6), which showed an SMD = 1 (-0.3, 2.3, $p < 0.05$) [17]; and the Subjective Social Participation Index (SSPI) as a subscale of Social Loneliness Scale (Este II) [22], which showed - 0.05 (-0.56, 0.47, $p = 0.304$) [21].

The interventions demonstrated a significant impact on post-test assessments. Improvements were observed in social and civic participation ($p < 0.001$) [16] and perceived social support versus social isolation ($p < 0.05$). Conversely, perceived social participation and the loneliness perception scale did not show statistically significant improvements [21] (Table 6).

Table 6
Changes in Social Participation.

SOCIAL PARTICIPATION.								
Author & Country	Design	Population, Age (m± SD) & Comorbidity	INTERVENTION	Duration			Variable & Questionnaires	Standard Mean difference (SMD; 95% CI)
				Hrs per wk	Days per wk	Months		
Chi et al. (2021) [16] Taiwan	RCT	N = 195 65–80 años. Healthy. EG: 95 CG: 100	Community Wellness Class for Older Adults. Psychoeducation in the following topics: Aging Health promotion Emotional health and cognitive function Social participation	2	2	2	Social and civic participation. Social and civic participation Scale (Zheng) EG: PRE 1.31 (2.43) POST 3.22 (0.97)	1.03 [0.73,1.33] p < 0.001
Merchant et al. 2021 [17] Singapur	Quasi-exp. with control group	N = 196 HC.: 75 V.: 121 prefragility, frailty and/or cognitive impairment	Multicomponent program H.A.P.P.Y. vs Volunteers	1	1–2	1–2	Social network. 6-item Lubben Social Network Scale (LSNS-6). HC.: 1.0 (-0.3-2.3) V.: 1.3(0.0-2.6)	HC.: 1 [-0.3,2.3]. V.: 1.3[0.02.6] ex 1pw: 1 [0.3,1.7] ex 2pw: 2 [1.3,2.7] p < 0.05
Lorente-Martínez et al. 2021 [21] Spain	Quasi-exp. with control group	N = 48 65–95 years. EG: 34 CG: 14 Women live alone without cognitive impairment.	The Acompaña-Té Programme (conversation, cognitive restructuring, behavioral activation)	2.5	1	3	Social subjective participation. Subjective Social Participation Index (SSPI) is a subscale of the ESTE II. EG:pre 3.85 (1.72) post (6M) 3.76 (2.15)	-0.05 [-0.56, 0.47] p = 0.304
SMD = Standardized Mean Difference								

4 Discussion

The main findings of this systematic review revealed synergistic changes in outcomes following the implementation of community-based models addressing ICOPE domains; specifically, interventions incorporating physical exercise

programs improved mobility and positively impacted depressive symptoms and well-being. Nutritional status was maintained, suggesting that the risk of malnutrition can be prevented. Similarly, mental health improved significantly, as evidenced by a decrease in the prevalence of depressive symptoms. Furthermore, cognitive function scores remained consistent in post-intervention assessments, indicating the preservation of cognitive abilities through the combination of exercise and psychoeducation on healthy lifestyle habits.

4.1 Mobility

Although comprehensive advantages were evident, specific changes are worth highlighting. In this regard, Hau et al. (2016) [19] showed the greatest significant changes in lower extremity locomotor capacity alongside global cognitive function. Their intervention was the longest, lasting a total of 6 months, and involved group resistance exercises 3 times per week combined with weekly 1-hour group counseling sessions addressing healthy lifestyles. This suggests that it is an effective community model that meets the four proposed pillars: having an educational objective, involving the active participation of individuals, strengthening informal support networks, and promoting healthy lifestyles.

4.2. Cognitive function and depressive symptoms

Regarding the improvement of mental health, active aging, and healthy living, simple physical training paired with courses focused on psychoeducation regarding aging, emotional health, cognitive function training, and social participation were the themes that showed improvements [20].

With respect to perceived health, focal groups combined with physical exercise twice a week showed a reduction in the social isolation of participants [17]. To reduce depressive symptoms, effective interventions included physical exercise two to three times per week combined with counseling groups utilizing guided conversations [19]. This indicates that the community component in social, physical, and recreational activities has a positive impact on individuals' perception of emotional health.

Nevertheless, it is worth noting that the evaluations do not address important aspects within each domain. Regarding the cognitive domain analyzed in this review, executive functions are not reported as part of the cognition domain. In this regard, Frost et al. (2021) [23] implemented an intervention that included 100 minutes of cycling across different groups varying in exercise intensity. Their evaluation of executive functions—such as task-shifting capacity, updating/working memory, inhibition, verbal generativity, and non-verbal reasoning—suggests that high-intensity exercise improves task-shifting, working memory, verbal generativity, and non-verbal reasoning.

4.3 Vitality (nutritional status) and social participation.

The changes observed after a 3-month intervention of progressively increasing resistance band exercises that shows recovery were the less percentage of body fat and the most skeletal muscle mass index ($p < 0.01$) [20].

While it is true that the decrease in body fat and the increase in muscle mass are important aspects, within the ICOPE framework and related literature, there are other relevant elements that have not been analyzed or adequately reported in community programs or interventions [24]: i) muscle strength, including handgrip strength; ii) body composition; iii) energy consumption and caloric balance; iv) subjective perception of vitality or energy; and v) associated habits such as sleep quality (highlighting self-perceived fatigue), hydration, and the use of nutritional supplements. Therefore, it would be pertinent to include these indicators in the evaluation of the vitality domain and, comprehensively, within intrinsic capacity.

There is a limited approach to evaluating the bodily functions of older adults, where sensory references addressed by the WHO in the ICOPE guide are omitted. Likewise, social participation shows limited assessments within the comprehensive evaluation, where loneliness, social support, and social and civic participation could be included. Hence the importance of implementing community models, as they aim to integrate participants into group activities.

4.4. Community-based model interventions

In this regard, our research group proposes to expand the comprehensive gerontological assessment by including: (i) gustatory and olfactory capacity within the sensory capacity domain (in addition to visual impairment and hearing loss); (ii) social participation; (iii) self-care and sleep hygiene; (iv) oral health; and (v) environmental assessment, taking life motives as the central axis to enhance IC [25].

Regarding findings in the literature, there is a precedent of interventions focused on promoting optimal aging. Fernández-Ballesteros and her research group [26] propose four areas in their intervention: i) promoting health and physical adjustment, decreasing disability; ii) optimizing and compensating for cognitive functions; iii) affective and personality development (ageism); and iv) social involvement. When comparing their program in face-to-face and "video" modalities, they report greater efficacy in promoting healthy lifestyles (nutrition, regular physical exercise, and life satisfaction) in the video modality. However, their outcome evaluations were conducted using questionnaires with dichotomous answers, which could introduce an important measurement bias.

Community-based self-care interventions significantly improve variables related to adherence to disease control and follow-up, such as medical visits, hospital admissions, and medication compliance [27]. Furthermore, if disability is addressed comprehensively by health professionals and maintenance personnel, significant decreases are observed in home safety risks, depression, and pain, alongside improvements in fall management and quality of life. These models also improve basic activities of daily living (BADLs), instrumental activities of daily living (IADLs), and quality of life compared to control groups [28] by addressing problem assessment, psychoeducation, interactive identification of functional barriers, retraining, and solutions. This suggests that the approach to mobility must consider even the environment where participants live [29]. Relatedly, longitudinal multidomain interventions combining physical, cognitive, psychological, and nutritional strategies tailored to individual needs have a significant positive impact on IC to achieve a reduction in deterioration among older adults [30]. This suggests that evaluations complementing the analysis of general gerontological health perceptions can and should consider both physical and emotional aspects, ensuring comprehensive and pertinent diagnoses that factor in the individual's context. This will more precisely determine mobility and detected barriers to promote healthy aging.

In this regard, the adoption of healthy lifestyles (HLS) will be favored if individuals have the knowledge and training necessary for change, which strengthens adherence and facilitates optimal environmental conditions, thereby favoring physical, psychological, and social functions [31, 32].

4.5 Strengths and limitations

This systematic review features a comprehensive approach oriented toward analyzing the adjacent indicators indispensable for fulfilling the WHO's key goal of enabling individuals "to be and to do what they have reason to value."

Another strength is the community-based approach to healthy aging, which treats it not as an isolated factor but rather considers physical, cognitive, emotional, and social aspects.

A limitation of this systematic review is the scarce number of included articles, making it impossible to draw inferences that can be generalized to the broader older adult population. Hence, more community-based intervention studies for healthy aging are necessary to positively impact multiple domains considered in the ICOPE guide. For this reason, it would be pertinent for future community intervention studies to include the measurement and promotion of advanced activities of daily living (AADLs) across different contexts, as they constitute an excellent multidimensional indicator of healthy aging in the community.

On the other hand, general guidelines should be proposed to standardize the characteristics of community intervention programs for healthy aging within the ICOPE framework.

4.6 Practical implications

The importance of community interventions to achieve optimal outcomes in improving healthy aging based on the ICOPE guide domains lies in the interrelation shown by these factors. It is essential to bear in mind that functional capacity and intrinsic capacity are composed of both physical and psychological aspects that play an inherent role in the perception of healthy aging.

It is pertinent to continue conducting multidimensional community interventions that show a positive impact on the functional capacity and well-being of older adults across different contexts.

5 Conclusions

The findings of this systematic review suggest that multidimensional community models are effective in improving more than one ICOPE domain. In this regard, mobility is the domain where changes are observed most frequently among community-dwelling older adults, both with and without controlled chronic diseases and with pre-frailty. Likewise, the second domain in which a positive effect is observed is depressive symptomatology, followed by the cognitive domain.

Nevertheless, it was found that little attention is given to social participation and vitality. It is noteworthy that there is no reported evidence regarding assessments that comprise other areas of health in older adults, such as oral health, sensory capacity, psychological well-being, and quality of life.

These findings carry implications for identifying a key indicator of IC and achieving the premise that older adults can be and do what is important to them.

Declarations

Institutional Review Board Statement

Not applicable.

Informed Consent Statement: Not applicable.

Conflicts of Interest:

The authors declare no conflicts of interest.

Clinical trial number

not applicable.

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Author Contribution

MJC-P and VMM-N conceptualized the study, performed the initial and final article selection, assessed the risk of bias, conducted the analysis, and drafted the article. CF-B participated in the final article selection and contributed to drafting the article. VMM-N approved the final analysis, and contributed to drafting the article. All authors have read and approved the final version of the manuscript.

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Data Availability Statement:

The data presented in this study are available upon request from the corresponding author.

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Figures

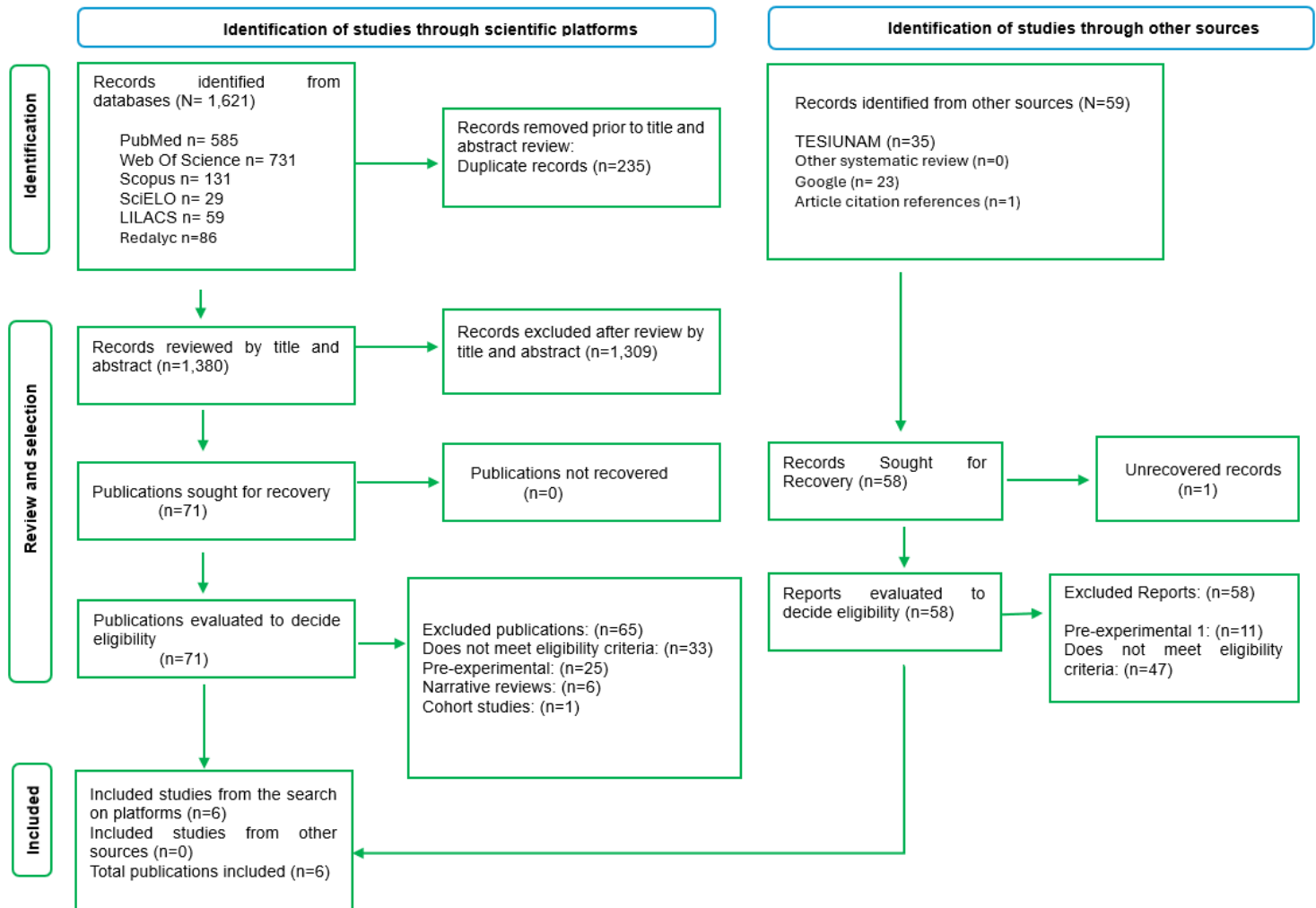
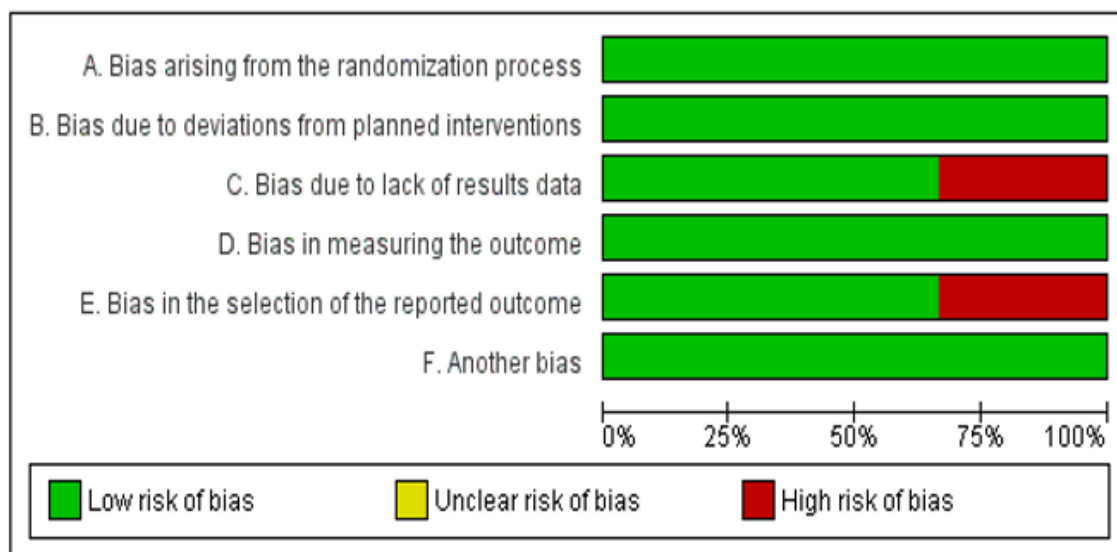


Figure 1

PRISMA Flowchart of the included studies

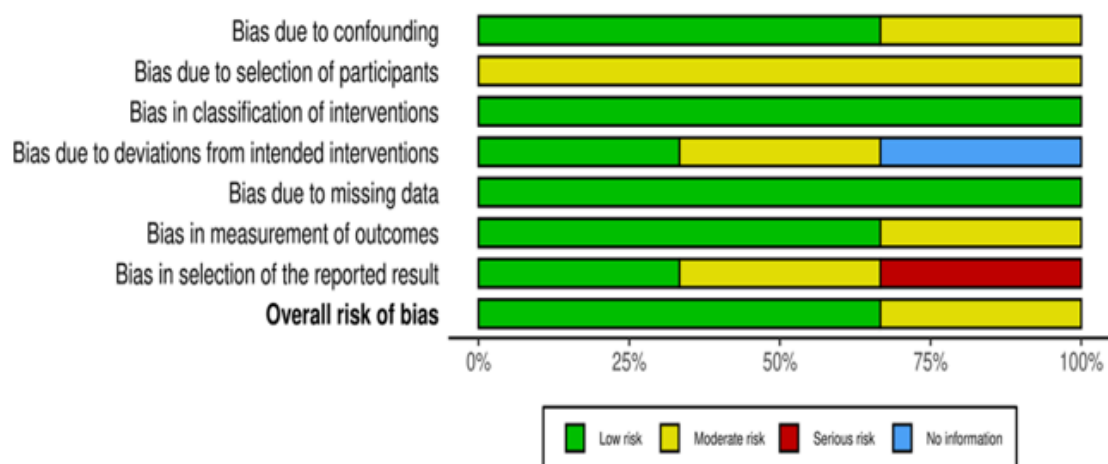


	A. Bias arising from the randomization process	B. Bias due to deviations from planned interventions	C. Bias due to lack of results data	D. Bias in measuring the outcome	E. Bias in the selection of the reported outcome	F. Another bias
Chi,et al. 2021	+	+	+	+	-	+
Merchant et al 2021	+	+	-	+	+	+
Raichlen et al.2020	+	+	+	+	+	+

Risk of bias analysis by clinical trials [16-18].

Figure 2

Bias analysis of the selected controlled clinical trials.



		Risk of bias domains							
		D1	D2	D3	D4	D5	D6	D7	Overall
Study	HAU, 2016	-	-	+	-	+	+	+	+
	Lim, 2024	+	-	+	+	+	+	-	+
	Lorente-Martinez, 2021	+	-	+	?	+	-	×	-

Domains:
D1: Bias due to confounding.
D2: Bias due to selection of participants.
D3: Bias in classification of interventions.
D4: Bias due to deviations from intended interventions.
D5: Bias due to missing data.
D6: Bias in measurement of outcomes.
D7: Bias in selection of the reported result.

Judgement
× Serious
- Moderate
+ Low
? No information

Risk of bias analysis of quasi-experimental studies [19-21].

Figure 3

Bias analysis of the selected quasi-experimental studies

Supplementary Files

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