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Barriers and Facilitators to Physical Exercise Participation Among Community-Dwelling Older Adults: A Narrative Review Based on the Socio-Ecological Model

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Abstract: Background: Population aging in China's mainland has intensified the need to promote healthy aging. Regular physical activity is widely recognized as an effective strategy to prevent chronic diseases and functional decline among older adults; however, participation levels remain insufficient. Objective: This study aims to synthesize recent evidence on barriers and facilitators to physical exercise participation among community-dwelling older adults in China's mainland using a socio-ecological framework. Methods: A narrative review was conducted based on a structured literature search across PubMed, Web of Science, Scopus, SPORTDiscus, CNKI, and Wanfang databases covering the period from 2010 to March 2025. A total of 76 records were initially identified, of which 32 studies met the inclusion criteria after screening. Thematic synthesis was applied to categorize findings into intrapersonal, interpersonal, and environmental levels. Results: Among the included studies, intrapersonal factors such as fear of falling (reported in 21 studies), chronic conditions (18 studies), and low motivation (15 studies) were the most frequently identified barriers. Key facilitators included perceived health benefits and self-efficacy (20 studies). Interpersonal influences, particularly family caregiving responsibilities and social support, showed both inhibiting and promoting effects. Environmental factors, including accessibility of facilities and urban–rural disparities, were consistently associated with participation levels. Conclusion: Physical activity participation among older adults in China is shaped by multi-level determinants. Interventions should integrate individual, social, and environmental strategies to effectively enhance participation and support national healthy aging goals.

Keywords: Older Adults; Physical Activity; Community-dwelling; Barriers; Facilitators; Socio-ecological Model; China's Mainland; Healthy Aging.

1. Introduction

Population aging in China's mainland is accelerating at an unprecedented pace. According to the latest national statistics released by the National Bureau of Statistics, the proportion of adults aged 60 and above surpassed 21% by 2025, with projections indicating that this number will exceed 400 million by 2035[1]. This rapid demographic shift is placing enormous pressure on public health systems, significantly increasing the burden of chronic diseases, falls, cognitive decline, and long-term healthcare costs. In response, the Chinese government has incorporated healthy aging into national strategic priorities, most notably through the Healthy China 2030 initiative and the National Fitness Program.

Physical exercise is widely regarded as a cornerstone of healthy aging. The World Health Organization recommends at least 150 minutes of moderate-intensity aerobic activity per week, combined with muscle-strengthening exercises on at least two days[1]. Consistent participation has been shown to reduce the risk of cardiovascular disease, type 2 diabetes, depression, and functional decline while substantially improving quality of life and independence in daily living[3]. Despite these well-documented benefits, actual participation rates in China's mainland remain suboptimal. Recent national fitness surveys reveal that only 26.1% of older adults engage in regular exercise, with rural areas reporting significantly lower rates of approximately 43.54% monthly participation [8]. These disparities are further exacerbated by urban-rural gaps in infrastructure, deeply rooted cultural family obligations, and limited access to age-friendly facilities.

Previous research has consistently demonstrated that physical activity behavior is shaped by a complex interplay of factors operating at multiple levels. The socio-ecological model (SEM) offers a robust and widely accepted framework for understanding these influences, encompassing intrapersonal (individual), interpersonal (social), and environmental determinants[10]. While international systematic reviews (2024–2025) have mapped global patterns, China-specific studies highlight distinctive cultural elements—such as intensive family caregiving responsibilities and the popularity of traditional group activities like tai chi and square dancing—that shape participation in unique ways[7,8].

This narrative review aims to synthesize the existing literature from 2010 to 2025, placing particular emphasis on post-2020 evidence and China's mainland contexts, in order to provide a comprehensive understanding of the barriers and facilitators affecting physical exercise participation among community-dwelling older adults[2,4,5]. By integrating findings within the socio-ecological model and drawing on the most recent high-quality evidence, this review seeks to generate actionable insights for the design of culturally tailored interventions and to support national strategies for healthy aging.

2. Methods

2.1. Study Design

This study adopted a narrative review design guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to enhance transparency and reproducibility. Although a meta-analysis was not conducted, systematic search and screening procedures were applied.

2.2. Search Strategy

A comprehensive literature search was conducted across PubMed, Web of Science, Scopus, SPORTDiscus, CNKI, and Wanfang databases. The search covered publications from January 2010 to March 2025.

Search terms were developed based on three key domains: physical activity ("physical activity" OR "exercise"), population ("older adults" OR "elderly"), and context ("community-dwelling") combined with outcome-related terms ("barriers" OR "facilitators"). Boolean operators (AND, OR) were used to refine the search.

In addition, reference lists of relevant articles were manually screened to identify additional eligible studies.

2.3. Inclusion and Exclusion Criteria

Studies were included if they: (1) involved participants aged 60 years or older; (2) focused on community-dwelling populations; and (3) examined barriers or facilitators to physical activity participation. Both qualitative and quantitative studies were eligible.

2.4. Data Synthesis

A thematic synthesis approach was employed. Findings were categorized according to the socio-ecological model into intrapersonal, interpersonal, and environmental levels. Frequency counting was used to identify commonly reported factors across studies.

3. Results

Findings are organized according to the socio-ecological model (Fig. 1), which illustrates the multi-level barriers and facilitators with adaptations specific to China's mainland.

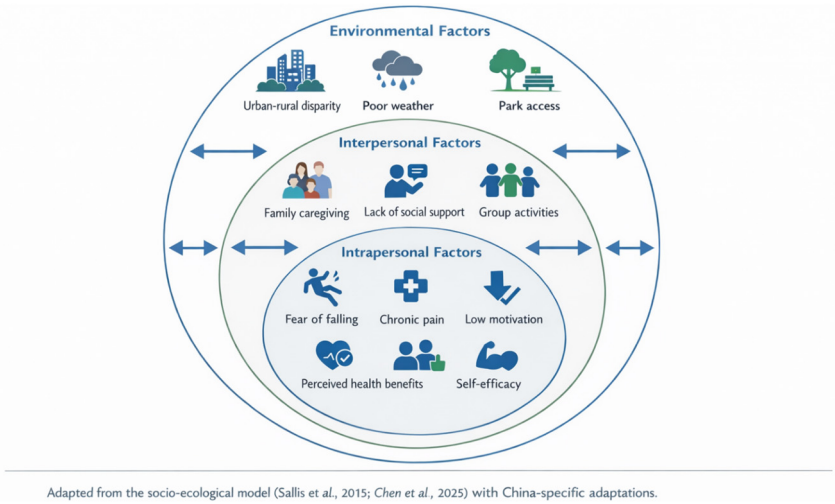

Fig 1. Socio-ecological model of barriers and facilitators to physical exercise participation among community-dwelling older adults in China's mainland. Adapted from the socio-ecological model (Sallis et al., 2015; Chen et al., 2025) with China-specific adaptations

3.1. Intrapersonal Factors

Across the reviewed literature, intrapersonal factors were frequently identified as key influences on participation. Fear of falling or injury was among the most commonly reported barriers, particularly among women and individuals with prior falls or balance impairments[4,11]. Chronic health conditions, including arthritis, cardiovascular disease, and persistent pain, often restricted engagement, with prevalence rates exceeding 95% in several sampled populations[6,12]. Low motivation, perceived lack of interest, and time constraints—frequently linked to daily household responsibilities—further contributed to reduced activity levels[13].

On the facilitating side, perceived health benefits, enjoyment derived from the activity itself, and enhanced self-efficacy consistently emerged as powerful motivators[3,5]. The use of simple fitness devices such as wearables and positive reinforcement from healthcare professionals were also noted to improve adherence. Recent studies conducted in Chinese communities confirm that self-efficacy remains one of the strongest individual-level predictors of sustained participation[5].

3.2. Interpersonal Factors

In many studies, lack of social support and the absence of exercise partners constituted a major barrier, especially for older adults living alone[9,14]. In the China's mainland context, family caregiving responsibilities—such as caring for grandchildren or a spouse—represent a culturally prominent constraint. This is particularly evident among older women, who often prioritize family duties over personal exercise due to longstanding cultural norms[7,9].

Conversely, interpersonal relationships frequently acted as strong facilitators. Encouragement from family members and peers, participation in group activities, and the presence of companionship were repeatedly associated with higher engagement levels. Social support has been identified as one of the most robust predictors of physical activity in multiple analyses[9]. In Chinese communities, traditional group-based activities such as square dancing and tai chi classes effectively harness these social bonds, providing both motivation and emotional support[7].

3.3. Environmental Factors

Environmental barriers commonly included poor weather

conditions, inadequate or distant facilities, high program costs, and concerns about neighborhood safety[14,15]. The urban-rural divide is especially pronounced in China: rural older adults encounter greater shortages of exercise facilities and transportation options, directly contributing to their lower participation rates[8].

In contrast, supportive environments—such as well-maintained public parks, accessible recreational spaces, and affordable community programs—were consistently linked to increased activity. In China's mainland, government-subsidized facilities and culturally adapted programs (tai chi sessions in parks and square dancing squares) function as particularly effective facilitators, helping to overcome weather-related and accessibility challenges[8]. Recent longitudinal evidence further demonstrates that community environmental characteristics exert a direct and measurable influence on rural older adults' participation levels[8].

4. Discussion

The synthesized evidence clearly demonstrates that physical exercise participation among community-dwelling older adults in China's mainland is shaped by interconnected multi-level factors operating within the socio-ecological framework[2,4,5]. Intrapersonal barriers such as health limitations and fear of falling are often amplified by interpersonal family obligations—a distinctive cultural feature in China—and by environmental urban-rural disparities in resource distribution[7,8].

Recent systematic reviews confirm the universality of these patterns while simultaneously underscoring China-specific opportunities for intervention[2,4,5]. Traditional low-intensity, socially oriented activities such as tai chi and square dancing emerge as dual interpersonal-environmental facilitators that align closely with cultural preferences and existing policy frameworks under the Healthy China 2030 initiative[7,8].

Effective interventions must therefore adopt a genuinely multi-level approach. At the intrapersonal level, targeted education on health benefits and fall-prevention techniques is essential. At the interpersonal level, family-inclusive programs that involve relatives as exercise partners can reduce caregiving-related barriers. At the environmental level, expanding rural park infrastructure and providing more free or subsidized community classes would address structural inequities. The integration of social support with culturally familiar activities appears especially promising for achieving long-term adherence.

Strengths of this review lie in its integration of the most recent China-specific evidence and its direct relevance to national policy priorities.

5. Limitations

As a narrative review, this synthesis is subject to selection bias and lacks formal meta-analysis. The reliance on published literature may introduce publication bias, and under-representation of ethnic minority groups and very remote rural populations in the reviewed studies limits generalizability. The narrative approach, while flexible, involves a degree of author subjectivity in thematic organization.

6. Conclusion

Physical exercise participation among community-dwelling older adults in China's mainland is profoundly influenced by intrapersonal, interpersonal, and environmental factors operating within the socio-ecological framework. Although significant barriers—such as fear of injury, heavy family responsibilities, and facility gaps—persist, strong facilitators including perceived health benefits, robust social support networks, and accessible traditional programs provide clear and practical pathways for improvement.

Comprehensive, culturally tailored, multi-level interventions are urgently needed to elevate participation rates and advance healthy aging across the country. Future research should prioritize longitudinal designs and rigorous evaluation of multi-level programs in both urban and rural Chinese settings. Ultimately, this review offers actionable insights for policymakers, healthcare professionals, and community organizers striving to realize the goals of the Healthy China 2030 initiative and promote sustainable physical activity among the rapidly growing older population.

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