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The Contribution of Sports to Emotional Regulation in Older Adults: A Literature Review

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ABSTRACT:

Background: Global population ageing increases the vulnerability of older adults to psychological stress, anxiety, depression, loneliness, and a decline in life meaning. Exercise has been recognized as an inexpensive and accessible promotive–preventive intervention, but its contribution to emotional regulation in older adults has not been systematically mapped.

Objectives: This review aims to analysis the contribution of exercise to emotional regulation in older adults through the latest empirical evidence, as well as to identify the forms of intervention that most consistently improve emotional health.

Methods: The literature was searched through PubMed and Scopus using the keywords ('older adults' OR 'elderly') AND ('physical activity' OR "exercise") AND ('emotion regulation' OR 'mental health'), following the PRISMA guidelines. Included articles were English-language publications from 2021–2025 relevant to the contribution of exercise to emotional regulation in older adults.

Results: Of the 3,508 publications identified, 10 randomized controlled trials met the criteria. Various forms of exercise (aerobic, resistance, multicomponent, yoga, tai chi, dance, and adaptive martial arts) consistently reduced depression, anxiety, and stress, and improved mental quality of life and emotional role functioning. Group-based and online interventions also strengthened mental health through social support.

Conclusion: Exercise is an effective and applicable non-pharmacological intervention for strengthening emotional regulation in older adults, although emotional regulation measurement is still predominantly based on symptom indicators. Further research is needed to explicitly measure emotional regulation strategies and determine the optimal exercise dosage.

KEYWORDS: Sports, Physical Activity, Emotional Regulation, Older Adults

I. INTRODUCTION

The ageing of the global population has serious implications for the mental health and psychological well-being of older people. Increased life expectancy in many countries has not always been accompanied by adequate emotional quality of life, leaving older people vulnerable to psychological stress, anxiety, depression, loneliness and a diminished sense of meaning in life [1], [2]. Various studies show that mental health problems in old age are not only a clinical issue, but also have an impact on social and economic burdens and the long-term healthcare system [3], [4]. In this context, effective, relatively low-cost, and easily accessible promotive-preventive interventions are a key priority.

Physical activity and exercise have been recognized as one of the main pillars of health promotion in older adults [5]. Various studies show that regular participation in physical activity is associated with improved quality of life, vitality, and overall mental health, as well as a reduction in symptoms of anxiety and depression [6]. Exercise is positioned not only as a means of maintaining physical function, but also as a potential non-pharmacological intervention in maintaining and improving psychological function in old age [7]. However, the specific psychological mechanisms that explain how exercise contributes to emotional regulation in older adults have not yet been systematically mapped out.

Recent literature has begun to emphasize that exercise can influence various dimensions of emotional regulation, including positive affect stability, negative affect reduction, and the application of more adaptive emotional regulation strategies.

Studies on older adults show that moderate physical activity can increase emotional stability and positive valence, while reducing physiological and cognitive stress responses [2], [8]. Neuroimaging findings also indicate that acute exercise sessions in healthy older adults alter the activation of brain networks involved in emotion processing and regulation, particularly by decreasing the processing of negative stimuli and increasing the recruitment of cortical regions involved in the inhibition of unpleasant emotions [9]. This reinforces the assumption that exercise is directly linked to emotional regulation mechanisms at the neuropsychological level.

In addition to its direct effects on emotions, exercise contributes to other psychological dimensions relevant to emotional regulation in older adults. Participation in sports and physical activity is associated with improved physical self-concept, intrinsic motivation, and better emotional regulation, which in turn supports continued engagement in physical activity [7], [10]. Exercise can also improve self-control and the use of adaptive cognitive emotion regulation strategies, such as cognitive reappraisal, which are associated with higher life satisfaction [11]. In older adults, the combination of increased emotional regulation capacity and self-control has the potential to be a protective factor against psychological well-being decline.

The social dimension of sports is another important avenue for emotional regulation in older adults. Participation in sports, especially in a community or team context, has been reported to be associated with improved social relationships, a sense of belonging, emotional support, and social integration (Eather et al., 2023; Inoue et al., 2019). Studies show that participation in sports can reduce loneliness, increase emotional support from peers, and strengthen a sense of group belonging that contributes to the subjective well-being of older adults [14]. Exercise can also increase collective social capital, which significantly mediates the relationship between physical activity and positive emotions in parents [15]. This social pathway indirectly supports emotional regulation through strengthening support networks and perceptions of social meaningfulness.

Several pieces of evidence also highlight the role of exercise in reducing specific negative emotional symptoms in older adults. Systematic reviews and meta-analyses report that exercise interventions significantly reduce anxiety scores in older adults in various contexts. Controlled intervention studies show that structured physical activity programs can reduce symptoms of depression and improve various dimensions of quality of life. Various forms of exercise for older adults, such as gymnastics, water activities, and yoga, have been reported to be associated with differences in mental health profiles and social integration, indicating that the type and context of exercise can modify emotional outcomes. However, recent meta-analysis findings also indicate that evidence of the effects of physical activity on the mental health of older adults is still heterogeneous and not entirely consistent, particularly regarding the optimal dose of intervention.

Although a number of studies have linked exercise to various indicators of mental health in older adults, studies that explicitly position emotion regulation as a key construct are still relatively limited. Most studies focus on clinical symptoms (depression, anxiety, stress) and quality of life without detailing the process of emotional regulation, such as emotional regulation self-efficacy, choice of regulation strategies (e.g., reappraisal vs. suppression), and the capacity to manage one's own emotional burden. On the other hand, several recent studies have begun to show that physical activity is positively related to emotional regulation self-efficacy and reduces feelings of being a burden to others, which indirectly reduces social isolation. This indicates the need to more explicitly integrate the concept of emotional regulation into the framework of the relationship between exercise and mental health in older adults.

In addition, there is still a gap in understanding how contextual dimensions of sports, such as type of sport (individual vs. team; recreational vs. competitive), intensity and duration, environment (indoor vs. outdoor), and forms of technology such as exargames shape the emotional regulation profile in older adults. A systematic review shows that participation in sports, especially team sports, tends to provide stronger psychological and social benefits than individual sports in adults, including increased self-esteem, self-control, and reduced depression, anxiety, and stress. Other studies show that exergames can reduce loneliness and improve social connections, contributing to emotional well-being. However, how these contextual variations specifically facilitate or hinder the emotional regulation strategies of older adults has not been extensively elaborated.

Based on these gaps, a literature review on the contribution of exercise to emotional regulation in older adults is scientifically and practically relevant. Studies focusing on the elderly allow for a more precise mapping of the biological, psychological, and social pathways that link sports to the ability to manage emotions in old age. This review is important for synthesizing empirical evidence and identifying the contextual factors of sports that most support emotional regulation in the elderly.

II. MATERIALS AND METHODS

Study Design

The literature search in this study was conducted through the PubMed and Scopus databases. The search process began on the PubMed and Scopus databases which are recognized as an internationally reputable citation indexing system. Both

databases are the main reference sources that are widely used by researchers at the global level. The search strategy is designed using a combination of keywords, namely ("older adults" OR "elderly") AND ("physical activity" OR "exercise") AND ("emotion regulation" OR "mental health"). The entire literature search and selection process was carried out with reference to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [16], [17]. The PRISMA guidelines emphasize review reporting that evaluates randomized trials, but the framework is also relevant and can be applied in systematic review reporting for a variety of other types of research designs [18].

Exclusion Criteria

The exclusion criteria in this study include: (1) articles that are not written in English; (2) articles published outside the last five years, namely the period 2021–2025; and (3) articles that do not specifically examine the contribution of exercise to the regulation of emotions in the elderly population.

Procedure

In the initial stage, a total of 3,508 publications were identified through database searches, consisting of PubMed (1,286 articles) and Scopus (2,220 articles). After the selection process based on exclusion criteria, the number of articles that met the requirements was reduced to 10 articles. Most publications were eliminated because they did not examine the contribution of exercise to emotional regulation in older adults. All identified articles were extracted and analyzed using Mendeley software to remove duplicates. The flow and results of the literature selection are presented in detail in Figure 1.

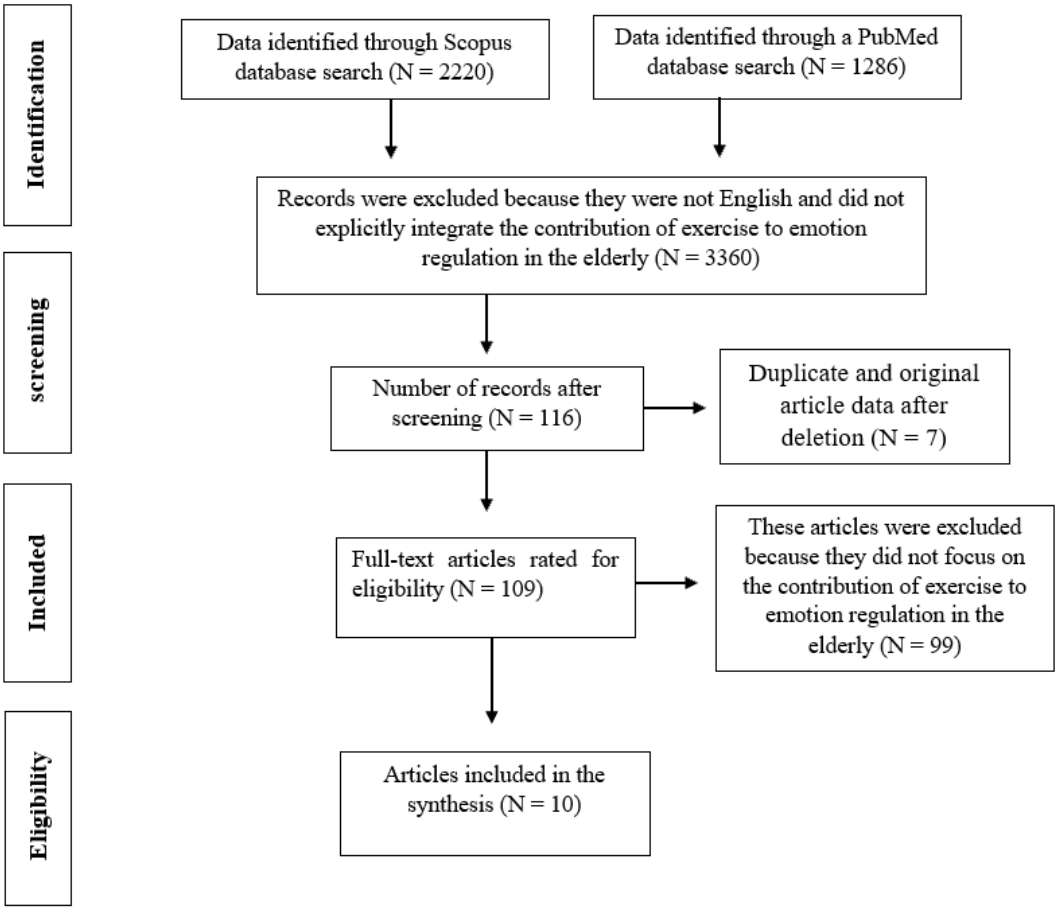


Figure 1. PRISMA Research Flowchart

III. RESULT

This review identifies ten randomized controlled trials that consistently show that participation in sports contributes positively to the emotional health and emotional regulation capacity of older adults, although most studies measure this through indicators of symptoms (depression, anxiety, stress) and mental quality of life. The key studies included in this meta-review are summarized in Table 1.

Table 1. Summary of exercise and emotional health in older adults

Author and Year	Study Title	Methodology	Key Finding
[19] Yang et al., 2025	The effect of different exercise modalities on older adults' quality of life: an assessor-blinded randomized controlled trial	Assessor-blinded RCT; 78 elderly individuals aged 66–96 years in nursing homes; 12–24 weeks of aerobic, resistance, or traditional Chinese gong exercises; QoL measured with SF-36 before, at 12 and 24 weeks.	All three types of exercise significantly improved SF-36 total scores; aerobic and resistance exercise improved physical and mental components, while gong exercise primarily improved physical function.
[20] Sánchez-Alcalá et al., 2024	Effects of Dance-Based Aerobic Training on Mental Health and Quality of Life in Older Adults with Mild Cognitive Impairment	RCT; 92 elderly individuals with MCI; dance-based aerobic exercise group vs. control group without intervention; depression (GDS), sleep quality (PSQI), QoL (SF-36).	Dance training improved depression, several PSQI domains, and all QoL domains, including emotional role and mental health.
[21] Milot et al., 2025	Effects of videoconference-supervised exercise training program on physical and cognitive conditions, and mental well-being in older adults	RCT; 30 elderly individuals aged 60–70 years; 12 weeks of multicomponent exercise via video, health education, or passive control; outcomes of physical fitness, cognition, and mental well-being (SF-36, depression scale, anxiety).	Only the exercise group showed significant improvement in mental well-being; depressive symptoms decreased similarly across all groups; executive function improved across groups.
[22] Beauchamp et al., 2021	Online-Delivered Group and Personal Exercise Programs to Support Low Active Older Adults' Mental Health During the COVID-19 Pandemic	Three-arm RCT; 241 low-active older adults; two online exercise programs (group vs. personal) vs. waitlist, 12 weeks; primary outcome flourishing, secondary outcomes mental/physical health, life satisfaction, depression.	There were no effects on flourishing, life satisfaction, or depression; however, both exercise conditions showed improvements in mental health (and physical health for the group) compared to the control group at most time points.
[23] He & Wang, 2025	Taichi is medicine: Effects of Taichi exercise on knee fitness and psychological health in older adults with knee osteoarthritis (KOA): A randomized controlled trial	RCT; elderly individuals with knee osteoarthritis; structured Tai Chi intervention; pre–post knee function, strength, balance, depression, anxiety, stress.	Tai Chi significantly improves knee function, strength, balance, and reduces depression, anxiety, and stress.
[24] Shams et al., 2021	Effect of Aerobic-Based Exercise on Psychological Well-Being and Quality of Life Among Older People: A Middle East Study	RCT; 45 elderly Iranian men; 12 weeks of low- vs moderate- vs no-exercise control; PWB (Ryff) and WHO QoL	Aerobic exercise improves PWB and QoL; moderate intensity provides greater benefits for total PWB, personal growth, and psychological components of QoL compared to low intensity and control.

[25] Carcelén-Fraile et al., 2024	Exercise and Nutrition in the Mental Health of the Older Adult Population: A Randomized Controlled Clinical Trial	RCT; 116 elderly individuals ≥65 years old; combination program of resistance training + Mediterranean diet vs. control; HADS, PSQI, PSS.	The intervention resulted in significant improvements in anxiety, depression, stress, and several domains and total PSQI scores compared to the control group.
[26] Ruiz-Comellas et al., 2021	Physical activity, emotional state and socialization in the elderly: study protocol for a clinical multicentre randomized trial	Multicenter RCT protocol; 150 patients >64 years old with depression/anxiety/loneliness; 4-month group PA program (walking twice a week + visits to social facilities) vs. control.	Will evaluate remission of depression or anxiety, social support, quality of life, response to intervention, satisfaction, and attachment to social organizations.
[27] Baklouti et al., 2022	The effect of web-based Hatha yoga on psychological distress and sleep quality in older adults: A randomized controlled trial	Web-based RCT; 200 elderly individuals isolated due to COVID-19; 8-week online Hatha yoga group vs. control group; DASS-21 and PSQI.	The yoga group showed a significant decrease in depression, anxiety, and stress, as well as an improvement in sleep quality and proportion of good sleep.
[28] Valdés-Badilla et al., 2023	Impact of adapted taekwondo vs. multicomponent training on health status in independent older women: a randomized controlled trial	RCT; 25 independent elderly women; 16 weeks of adaptive taekwondo vs. multicomponent exercise; HRQoL (including health/mental), fitness, blood pressure, balance	Taekwondo provides greater improvements in mental and general HRQoL, as well as fitness and balance, compared to multi-component exercise.

Various forms of exercise, ranging from aerobic training, resistance training, multi-component programs, to adaptive martial arts, show a significant reduction in symptoms of depression, anxiety, and stress, as well as an improvement in mental health and emotional well-being in the quality of life of older adults [23], [24], [25], [28], [29]. Several studies report statistically and clinically significant effects, such as a reduction of more than 50% in depression and anxiety scores after web-based yoga interventions or a significant improvement in mental quality of life in dance-based exercise programs [27], [29].

Interventions that combine physical exercise with other components, such as health education or the Mediterranean diet, tend to provide additional benefits on mental well-being and sleep quality, which are important aspects of emotional regulation in the elderly [25], [30]. Evidence also suggests that exercise intensity has an effect: moderate-intensity aerobic exercise results in greater improvements in psychological well-being and psychological health components of quality of life compared to low-intensity [24].

In addition to the indirect emotional benefits through a reduction in symptoms, some studies indicate that exercise done in a group or community format, including online programs, can improve mental health during stressful situations such as pandemics, although it does not necessarily increase indicators of flourishing globally [22], [26]. Overall, these findings confirm that exercise in various forms and settings makes a significant contribution to strengthening the emotion regulation capacity of the elderly, although most studies have not explicitly measured emotion regulation strategies.

IV. DISCUSSION

This review reinforces the position of exercise as one of the main pillars of nonpharmacological interventions to maintain and improve the emotional health of the elderly, but also reveals a number of important limitations in the way emotion regulation is understood and measured in this population. In general, all identified randomized controlled trials showed that participation in various forms of exercise ranging from aerobic exercise, resistance, multicomponent, adaptive martial arts, to yoga and dance-based exercises was associated with a reduction in symptoms of depression, anxiety, and stress, as well as an improvement in the mental dimensions of the elderly's quality of life and emotional role [25], [27]. These findings are in line with previous meta-

analyses that showed that physical activity in the elderly contributes to reduced anxiety, depression, and improved quality of life [3].

From a mechanism standpoint, these outcomes can be understood through a combination of biological, psychological, and social pathways that are increasingly mapped in the cutting-edge literature. Moderate physical activity in the elderly has been reported to improve emotional stability and positive valence as well as decrease physiological and cognitive stress responses [8]. Neuroimaging findings that acute exercise sessions modify the activation of brain tissues involved in emotion processing and regulation with decreased processing of negative stimuli and increased recruitment of cortical regions that play a role in inhibition of unpleasant emotions provide strong biological support for the role of exercise in emotion regulation [9].

On the psychological aspect, exercise appears to contribute to improved physical self-concept, intrinsic motivation, self-control, and the application of more adaptive cognitive emotion regulation strategies, such as cognitive reappraisal, which are associated with higher life satisfaction [10], [11]. Although most of the trials in this review did not measure emotion regulation strategies directly, significant improvements in negative emotion symptoms, mental well-being, and sleep quality provided a strong indication that emotion regulation capacity was increased through a combination of increased self-control, emotional self-efficacy, and improved executive cognitive function [30].

The social dimension proved to be an important mediation route. Sports in group or community formats, both face-to-face and online, are related to improving the quality of social relationships, belonging, emotional support, and social integration [12]. Participation in sports is reported to reduce loneliness, increase peer emotional support, and strengthen group attachment, which together contribute to the subjective well-being of the elderly [14]. Findings of group-based interventions and online programs during the pandemic suggest that, even when flourishing indicators do not always improve, exercise is still able to maintain or improve mental health relative to control conditions [22], [26]. This emphasizes the importance of social interaction as an integral part of the mechanism of emotion regulation through exercise.

In terms of intervention characteristics, the results of this study show that almost all forms of exercise provide emotional benefits, but some parameters appear to modulate the magnitude of the effect. Moderate-intensity aerobic exercise, for example, results in greater improvements in psychological well-being and psychological components of quality of life than low-intensity [24]. Interventions that combine exercise with other components, such as health education or the Mediterranean diet, provide additional benefits on anxiety, depression, stress, and sleep quality, all of which are closely related to the regulation of emotions [21]. Forms of exercise that integrate components of meditation, breathing, or structured movement arts such as Taichi, yoga, and adaptive taekwondo have also shown a strong impact on depression, anxiety, stress, and mental quality of life [23], [27], [28]. So, it is worth considering as an intervention that inherently facilitates full attention to emotional experience.

However, a number of important limitations need to be noted. First, most of the studies reviewed operationalized "emotion regulation" indirectly through indicators of symptoms (depression, anxiety, stress) and quality of life, without explicitly measuring emotion regulation processes such as choice of strategy (reappraisal vs suppression), self-efficacy of emotion regulation, or ability to manage emotional load [1]. As a result, conclusions about specific mechanisms are still inferential.

The practical implication of this review is the need to design an elderly exercise program that explicitly incorporates the goals and components of emotion regulation. Interventions can be directed not only at improving fitness or reducing symptoms, but also at strengthening the self-efficacy of emotion regulation, practicing adaptive cognitive strategies (e.g. reappraisal), and facilitating supportive social interactions, either through face-to-face group formats, sports communities, or digital platforms such as exergames that have been shown to improve the social connections of the elderly [14].

Scientifically, the future research agenda needs to integrate the emotion regulation framework more explicitly in the design of sports studies in the elderly. The use of specific instruments of emotion regulation, longitudinal measurement, and multimethod approaches (psychological, physiological, and neuroimaging) will allow for a sharper mapping of the biological, psychological, and social pathways that link sport to the ability to manage emotions in old age.

V. CONCLUSIONS

This literature review confirms that exercise is an effective, safe, and applicable non-pharmacological intervention for strengthening emotional regulation in older adults. Evidence from ten randomized controlled trials shows that various forms of physical activity, ranging from aerobics, resistance training, multi-component training, yoga, tai chi, to dance-based exercises and adaptive martial arts, consistently reduce symptoms of depression, anxiety, and stress, while improving mental quality of life and emotional role. These effects are understood through biological, psychological, and social pathways, including improved stress response, increased self-control, self-efficacy, and strengthened social support and sense of belonging. However, most studies still measure emotional regulation indirectly through symptom indicators, so specific mechanisms such as reappraisal or suppression strategies have not been clearly mapped. Moving forward, research needs to use more explicit emotion regulation instruments,

longitudinal designs, and consider variations in the type, dose, and context of exercise. Practically, exercise programs for older adults should be structured, sustainable, and focused on strengthening emotional well-being.

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