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QUALITATIVE PAPER

Motivation, psychological needs and physical activity in older adults: a qualitative review

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Abstract

Background: Despite the well-documented health benefits of Physical Activity (PA), older adults often struggle to engage in PA. The present review examines the relationship between PA, motivation and basic psychological needs among older adults aged 65 and over, through the lens of Self-Determination Theory (SDT).
Methods: Relevant studies that used qualitative methodologies and applied SDT framework were systematically searched in five electronic databases (i.e. Scopus, Web of Science, PubMed, PsycINFO and CINAHL). Methodological rigour was assessed using the GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative Research).
Results: 21 studies met inclusion criteria (N = 412; ages 65–97). Four themes and nine subthemes were identified. Peer relationships emerged as a pivotal element in supporting most autonomous forms of motivation and satisfying psychological needs (i.e. autonomy, competence and relatedness). A peer coach was preferred during several health programs, enhancing competence and relatedness. Outdoor activities in natural settings promoted intrinsic motivation, while indoor activities were driven more by extrinsic motivation. Barriers included ageist stereotypes and perceptions of inevitable physical decline, which negatively impacted competence and autonomy, ultimately reducing motivation for PA.
Conclusions: This qualitative synthesis highlights a complex interplay of SDT components and social factors in influencing PA behaviours among older adults. Tailored interventions that integrate social interaction, provide feedback from coaches and offer choices among several exercises with graduate intensity levels are likely to enhance adherence in PA. Future interventions should address both psychological and social barriers to create inclusive PA strategies that meet older adults' needs and motivation.

Keywords: motivation; physical activity; self-determination theory; psychological needs; qualitative review; older people

Key Points

- Peer relationships play a critical role in enhancing motivation for physical activity among older adults.
- Feedback and peer coaching improve competence and motivation for physical activity.
- Outdoor activities in natural settings foster intrinsic motivation for physical activity.
- Barriers such as ageist stereotypes and perceived physical limitations reduce motivation, impacting on autonomy and competence.

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- Interventions that address social conditions, needs, Self-Determination Theory motivations are essential for sustained physical activity engagement.

Introduction

Physical activity (PA) is widely recognized for its profound benefits on both physical [1, 2] and psychological health [3, 4]. Nonetheless, the World Health Organization reports that ∼1.4 billion adults, accounting for 27.5% of the world's adult population, fail to meet the recommended PA levels [5]. This trend shows a marked decline with age for both men and women. PA can ameliorate age-related health risks, such as cardiovascular disease, type 2 diabetes and cognitive impairments [6]. Several literature reviews state that motivation is a pivotal element in propelling older adults toward consistent PA engagement [7].

Self-Determination Theory (SDT) is a widely applied theoretical framework for examining the motivational processes involved in PA [8]. According to SDT, satisfying three basic psychological needs is essential for optimal well-being. These needs include (i) autonomy, defined as the perception of having choice, ownership and control over one's actions; (ii) competence, the sense of being capable of achieving desired outcomes; and (iii) relatedness, the experience of belonging and forming meaningful connections with others [8]. When these psychological needs are fulfilled, individuals are more likely to develop self-determined forms of motivation, such as intrinsic motivation (i.e. driven by internal interest and enjoyment), integrated regulation (i.e. where behaviour aligns with personal values and principles) and identified regulation (i.e. where the behaviour is personally important) [9]. Conversely, when these needs are frustrated, individuals are likely to develop controlled motivation, which leads to reduced participation and diminished well-being. Controlled motivation includes introjected regulation (i.e. behaviour driven by internal pressures like self-esteem maintenance or the avoidance of negative emotions such as anxiety, shame, or guilt) and external regulation (i.e. behaviour motivated by external demands, rewards, or punishments) [9]. Extensive empirical support for SDT has been found across various domains, including PA, exercise and sport [10].

Despite several reviews [10–12] examining the motives and barriers influencing older adults' participation in PA, most are limited to quantitative studies. While quantitative methods offer several advantages, they could fail to capture the complexity of human behaviour, limiting the exploration of unexpected insights or contextual factors not initially considered. In gerontology research, using qualitative methods, such as interviews and focus groups, has provided essential insights into a range of topics, including retirement [13], sexual relationships [14] and active aging [15]. Despite this evidence, few reviews are focused on qualitative studies [7, 16] and the majority lack the integration of a specific theoretical framework. In gerontology literature, no reviews explicitly focused on qualitative insights about integrating needs satisfaction, motives and barriers for PA. Identifying these specific factors that affect older adults' participation in PA can guide improvements in intervention strategies, ultimately informing policies and practices in PA, aging and health [16, 17].

The current review is the first to examine the relationship between self-determined motivation, psychological needs, as conceptualized within the SDT, and PA among older adults through a qualitative lens. Several research questions guided our approach: (i) How does the satisfaction or frustration of psychological needs impact motivation? (ii) Which characteristics of PA activities and interventions best enhance motivation or fulfil psychological needs? (iii) Which social conditions affect their psychological needs and motivation? (iv) How can these findings inform strategies for promoting PA in older adults based on SDT?

Methods

The review protocol was registered in the PROSPERO database: CRD42024565952. To improve rigour methodology and transparency, we used the GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative Research) [18] and Enhanced Transparency in Reporting the Synthesis of Qualitative Research approach (see Appendix 1) [19].

Search strategy

This study was conducted according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [20]. To identify the papers, we researched five databases: Scopus, Web of Science, PubMed, PsycINFO and CINAHL (see Appendix 2 for search terms).

The screening procedure was performed using the Rayyan.ai tool [21]. According to the Cochrane recommendations [22], before screening studies, the first and second authors utilized pre-determined data extraction templates to ensure consistency and reliability of the review process. Initially, the first and second authors independently evaluated 80% of titles and abstracts, addressing any conflicts. Subsequently, the first author reviewed the remaining abstracts, while the second author examined all excluded abstracts and resolved conflicts as necessary. This procedure was repeated for the full-text inclusion. Figure 1 reports the PRISMA flowchart of the systematic review process.

Peer-reviewed articles written in English were included. Table 1 shows the summary of the inclusion and exclusion criteria of the study characteristics according to the

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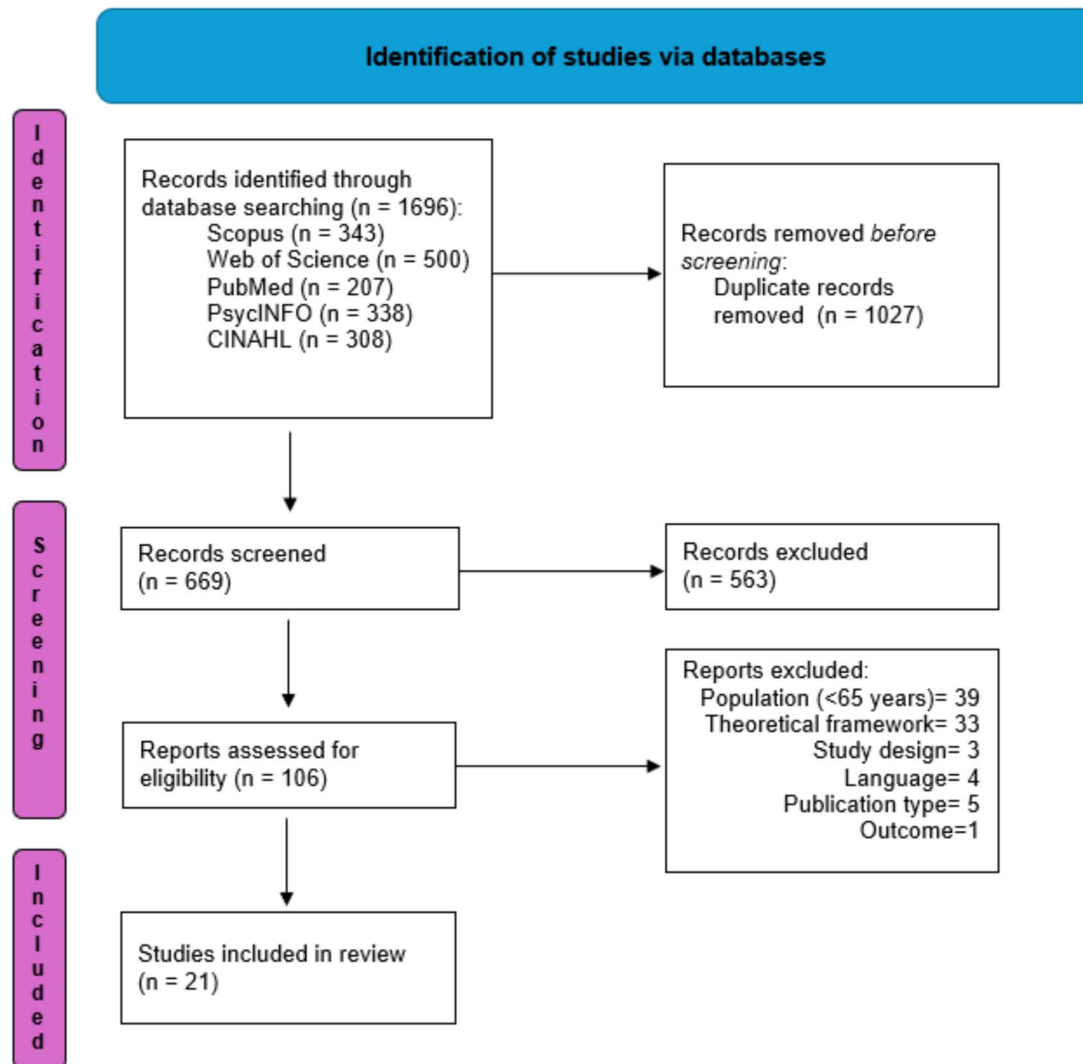

Figure 1. PRISMA flowchart of the study selection

PICOS framework (i.e. populations/participants, interventions/comparators, outcome(s) of interest and study designs/type) [23].

Data synthesis and quality rating

According to previous systematic reviews [24], we summarized the key findings from the various publications through a qualitative analysis to identify the dominant research areas. The process encompassed several sequential steps: (i) two authors performed a thematic analysis [25] to categorize the primary outcomes of the articles into research themes; (ii) the other authors reviewed the categorization of the primary outcomes and revised the thematic labels. Coding disagreements were resolved through discussion between researchers; (iii) all the authors helped to group according to these thematic areas, reviewed and approved the classification of the articles into thematic areas.

We used STROBE (Strengthening The Reporting of Observational Studies in Epidemiology) to evaluate the quality of the selected studies [26]. Specifically, we obtained the STROBE results for each study, where the publications that included 0–7 items were considered low quality, 8–14 items were intermediate quality, and 15–22 items were high quality.

Results

Description of included studies

Twenty-one qualitative studies met the inclusion criteria and were included in the current review (see Table 2). The present review was restricted to 2012–2023 because no articles published before 2012 met the inclusion criteria. Participants included older adults (N = 412) aged above 65 (ranging from 65 to 97) with a prevalence of females (N = 279). The included studies were conducted across different countries: Sweden (N = 5), United States of America (USA) (N = 4), Australia (N = 3), United Kingdom (UK) (N = 2), Germany (N = 2), Denmark (N = 2), South

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Table 1. Summary of inclusion/exclusion criteria according to the PICOS framework

		Inclusion Criteria	Exclusion Criteria
P	Populations/participants	Older adults (aged 65 or over)	Adults, young adults, adolescents, or children
I	Interventions	intervention based on the SDT framework	Interventions based on another theoretical framework
C	Comparators	With or without a comparison group	None
O	Outcome	Older adults' experiences of PA, motivation and needs related to PA	None
S	Study designs/types	Qualitative assessment methods	Quantitative assessment methods

Korea (N = 1), Italy (N = 1), Canada (N = 1). Studies were qualitative (N = 13), with eight mixed methods studies. The qualitative data included in the review were collected using semi-structured interviews (N = 13), focus groups (N = 7) and structured interviews or questionnaires (N = 4).

The STROBE classification provided methodology reproducibility, interpretation and application of study results. The results are reported in Table 2.

Synthesis of findings

The dataset encapsulated diverse perspectives, producing 30 primary descriptive codes that were subsequently categorized into nine overarching concepts. A more in-depth scrutiny of these nine higher-order concepts resulted in identifying four emergent themes, each encapsulating data from various studies. Considering the qualitative nature of the data, the themes do not exclusively correspond to a single SDT component (e.g. intrinsic motivation) but rather expound upon the interrelationships between different facets of SDT and PA or social environment. We classified the themes into four overarching categories: (i) Peer, (ii) Coach, (iii) Type of PA and Interventions and (iv) Social environment (see Table 3). Each of the following themes and sub-themes addresses one or more of our research questions. Each article could be included in one or more themes or subthemes. Additionally, the CERQual evidence profile reported the confidence level of each review finding (see Appendix 3).

Peer

Peer relatedness can make PA enjoyable

Several studies indicate that peer relationships are essential in increasing enjoyment in PA. Participants particularly value the group dynamics of exercise programs [33, 37, 38, 47], as social interactions and the opportunity to make new friends contribute significantly to the enjoyment of PA [33, 47]. This positive effect of peer interaction is also evident among cancer patients, who emphasize laughter and enjoyment as key motivational factors [37]. Conversely, a lack of social interaction could reduce participation in PA. Exercising alone is reported as challenging for maintaining PA habits, as it requires more effort to motivate oneself than exercising with others [42]. While most participants acknowledge the benefits of peer interaction, some experience a sense of internal pressure or guilt when failing to meet social commitments, reflecting a lower degree of internalization consistent with introjected regulation [30].

Peer relatedness can affect competence and autonomy

While peer group training typically enhances PA enjoyment, some individuals may prefer exercising alone, which shifts the focus from relatedness to autonomy and competence. Exercising independently, such as at home, offers more freedom of choice and can be time-saving [40]. However, peer group activities, like those in a senior gym, can improve feelings of relatedness and competence by creating a supportive environment [35]. Being part of a group also fosters psychological safety, making PA more enjoyable [33, 47]. Conversely, depending on individual perceptions, exercising in the presence of younger people can either frustrate or satisfy the need for competence. Most older adults feel stressed and competitive [35], while few older adults find it motivating to meet challenges, such as lifting heavier weights than their younger counterparts [27]. For most, exercising within a same-aged group at a suitable intensity level is generally preferred, improving their competence [28].

Real or digital coach

Providing feedback can improve competence, autonomy and motivation

Participants emphasized the need for feedback during exercise to enhance their competence. [28, 46]. Real-time coaching is perceived as a way to make PA more enjoyable and satisfy the need for competence. Many participants appreciated receiving feedback or a score during activities, viewing it as a motivator for increased effort. Some also expressed interest in positive feedback, such as rewards for performance (i.e. external regulation), to boost their competence [32, 45]. Self-monitoring tools like pedometers and adjustable goals, further motivate participants by offering a sense of control and satisfying their need for autonomy [31, 37].

Coaches can enhance competence and relatedness

Many older adults hesitate to join PA programs due to concerns about their abilities, expressing worries like 'I'm concerned about my abilities' or 'I can't do it'. To reduce uncertainty and improve competence in executing PA, visual demonstration and verbal guidance provided by a coach or via instructional videos are crucial [40]. Across the included

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Table 2. Sample characteristics and assessment methods of the reviewed studies

Authors	Country	Sample size	Age	Qualitative methods	Primary aim	Strobe
Arnautovska et al., 2017 [27]	Australia	20 (9F; 11 M)	67–87	Semi-structured interview	Understand and identify key socio-cognitive and motivational influences on PA among older adults	High Quality
Arnautovska et al., 2018 [28]	Australia	48 (29 F; 19 M)	65–91	Phone-based interview	Investigate what specific behaviour change techniques would be most helpful in facilitating PA in older adults	High Quality
Bedini et al., 2019 [29]	United States	6 (5 F; 1 M)	76–92	Structured interview	Evaluate the impact of a reaction therapy-based adaptive sports program on the psychological needs of older adults	High Quality
Collins et al., 2021 [30]	Canada	27 (19F; 8 M)	66–87	Focus groups	Explore the degree to which community-dwelling older adults' motives to limit their sedentary behaviours were internalized	High Quality
Cross et al., 2023 [31]	UK	15 (8F; 7 M)	>65	Semi-structured interview	Understand motivations in older adults receiving the Retirement in ACTion PA intervention	High Quality
Ehn et al., 2019 [32]	Sweden	7 (3F; 4 M)	66–82	Focus group	Investigate seniors' and healthcare professionals' perceptions of possible contributions and qualities needed/required from technology in supporting and motivating seniors to perform PA	High Quality
Kramer et al., 2020 [33]	Germany	6 (1F; 5 M)	>65	Semi-structured interview	Feasibility evaluation of a group-based format of the Lifestyle-integrated Functional Exercise developed for large-scale implementation	High Quality
Lee et al., 2016 [34]	South Korea	18 (14F; 4 M)	>65	Semi-structured group interview	Test the effectiveness of an exercise program exploring factors and types of motivation affecting adherence	High Quality
Lubcke et al., 2012 [35]	Sweden	8 (5F; 3 M)	65–81	Semi-structured interview	Investigate what factors influenced and motivated older people to start and continue exercising in a senior gym	Intermediate Quality
Matteucci et al., 2022 [36]	Italy	88 (88F)	65–85	Semi-structured interview	Examine older women's forms of resistance to ageism-based frailty to show the intersection of their experiences with age, PA, sense of identity and active body perception	High Quality
Mikkelsen et al., 2022 [37]	Denmark	18 (9F; 9 M)	68–76	Semi-structured interview and questionnaire	Provide insights into the experiences of older patients with advanced cancer who participated in a multimodal and exercise-based intervention, including perceptions of motivation, facilitators, benefits, barriers and/or risks	High Quality
Nielsen et al., 2014 [38]	Denmark	8 (8 M)	65–71	Focus group	Explore how and why older men continue to exercise or stop	High Quality
Oliver et al., 2016 [39]	UK	6 (5F; 1 M)	79–89	Semi-structured interview	Respond to calls for research that explores how health behaviours are changed in older people	High Quality
Petterson et al., 2021 [40]	Sweden	17 (9F; 8 M)	71–91	Focus group and semi-structured interview	Explore expressions of self-determination among community-dwelling older adults using a self-managed digital exercise program for fall prevention	High Quality
Robertson et al., 2022 [41]	United States	20 (20F)	65–74	Semi-structured interview	Investigate the acceptability of this unique approach to PA promotion and how to improve upon challenge	High Quality
Sandlund et al., 2018 [42]	Sweden	18 (10F; 8 M)	>65	Focus group	Explore exercise preferences and motivators of older community-dwelling women and men in the context of fall prevention	High Quality
Stehr et al., 2021 [43]	Germany	20 (10F; 10 M)	65–91	Semi-structured interview	Explore the behavioural, normative and control beliefs of older adults for PA	High Quality
Thiamwong et al., 2021 [44]	United States	15 (14F; 1 M)	>65	Questionnaire, Focus group and semi-structured interview	Explore older adults' experience with the Peer intervention and explore whether the Peer intervention influenced their exercise adherence	High Quality
Valenzuela et al., 2018 [45]	Australia	24 (17F; 7 M)	70–97	Structured interview	Explore older adults' experiences using an interactive cognitive-motor step training program to reduce fall risk unsupervised at home	High Quality
Vikberg et al., 2022 [46]	Sweden	8 (4F; 4 M)	70–71	Semi-structured interview	Evaluate the effectiveness and user experience and explore barriers, and motivators toward an online-delivered, home-based Resistance Training program for older adults with low muscle mass	High Quality
Walters et al., 2022 [47]	United States	15 (N/A)	>65	Focus Group	Evaluate the influence of a monthly walking program on older adults' community connection	High Quality

Note. F, Female; M, Male; N/A, Not Applicable

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Table 3. Qualitative data from the included studies

Main Theme: A. Peer relationships		SDT constructs linked to the theme
Subtheme	Quote examples	SDT constructs
A.1 Peer relatedness can make PA more enjoyable [27, 28, 30–33, 37, 38, 42, 44, 47]	*'We had a good time with the group exercise every week. I like to join with these friends'.* (Older Adult) *'When you are alone, then you have to put in an active effort to get going. . . it will be easier to find arguments against. . .-it looks like bad weather out there! or whatever'.* (Older Adult)	Relatedness, Intrinsic motivation, Introjected regulation
A.2. Peer relatedness can affect competence and autonomy [27, 28, 33, 35, 47]	*'I feel more comfortable exercising with people who are like me and who don't know much more about exercise than I do'.* (Older Adult) *'I think walking with a group feels safer than taking off and doing something by myself'.* (Older Adult) *I'm 67 so I have some limitations, and if I was to be exercising with 30-year-old men, I wouldn't feel right".* (Older Adult)	Autonomy, Competence, Relatedness
Main Theme: B. Coaching		SDT constructs linked to the theme
B.1 Providing feedback can improve competence, autonomy and motivation [28, 31, 32, 37, 40, 45, 46]	*'Instructions were good but getting feedback halfway would have made it even better, to know if I did [the exercises] right e.g. and also how I could progress if I needed and adapt [the exercises] to my weaknesses'.* (Older Adult) *'The pedometer has kept me going and has motivated me to go on planned walks'.* (Older Adult)	Autonomy, Competence, External regulation, Intrinsic motivation
B.2 Coaches can enhance competence and relatedness [28, 29, 31–33, 37, 39, 42, 44, 46]	*'If it wasn't for their help, I'm sure everybody thought, "I can't do this," "I'll never be able to do this," but girls all proved that we were able to'.* (Older Adult) *'Would be better for me than someone (Coach) who's 30. . . They don't know how an older person feels'.* (Older Adult)	Competence, Relatedness
Main Theme: C. Type of PA and interventions		SDT constructs linked to the theme
C.1. Outdoor and Indoor activities impact motivation and psychological needs [27, 30, 31, 33, 35, 38, 41–43, 45, 47]	*'I just love bike riding, you're out in nature, it's just a good feeling'.* (Older Adult) Being able to exercise in the privacy of their home was especially important to those who felt self-conscious about their bodies and their reduced abilities. (Author)	Outdoor activities: Relatedness, Intrinsic motivation. Indoor activities: Autonomy, Competence, External and Identified regulation
C.2 Challenging activities can enhance competence and intrinsic motivation [27, 34, 38, 40–43, 45, 46]	*'I added another kilometre once in a while, expanding my walk bit by bit. This makes walking worthwhile'.* (Older Adult) *'It (the game) becomes better and better. . . you see more first-time passes, you see better marking, discover how to run. You might not see much when you look at it, but there has been a tremendous improvement on the technical side. . . It makes it more fun'.* (Older Adult)	Autonomy, Competence, Intrinsic motivation
C.3 Providing choices can enhance autonomy, competence and intrinsic motivation [28, 31, 33, 34, 40, 46]	*'I can choose those activities for myself which are effective for me and I can benefit from them, because I have a high risk of falling'.* (Older Adult) *'Exercises were so exciting, not boring, because of the changing exercise program, even in the same type of exercise'.* (Older Adult)	Autonomy, Competence, Intrinsic motivation
Main Theme: D. Social environment		SDT constructs linked to the theme
D.1 Concerns about health as a motivator for PA [27, 28, 30–32, 35, 37, 38, 42, 45–47]	*'I still want to be able to bounce in and out of the chair and look after myself'* (Older Adult) *My doctor says I should do back exercises and hand exercises, for arthritis, but I don't do that regularly. . .I did them for quite a while, then my back got better and I gradually stopped doing the exercises. At the moment I don't need them* (Older Adult)	Autonomy, Competence, External and Identified regulation
D.2 Aging stereotypes [27–29, 36, 38–40]	*You aren't invited on the pitch unless you know how to handle the ball: don't you think you're in the wrong part of town? They would say* (Older Adult) Participants sometimes avoided certain public settings or exercises due to an awareness of sociocultural ageist norms for exercise and the aging body (Author)	Competence, Relatedness, Intrinsic motivation

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studies, most participants emphasized the importance of having knowledgeable trainers who can adjust exercises to individual needs, fostering a trustful trainer-client relationship, particularly among cancer patients [37] and wheelchair users [29]. Instructors play a key role in explaining exercises and facilitating competence [29] and social interaction [31]. Additionally, many older adults felt more inspired by an instructor of the same age, someone they could identify with, to improve competence and relatedness [28, 42, 44]. Finally, a coach's presence enhances safety during the training program [33].

Types of PA and interventions

Outdoor and indoor activities impact motivation and psychological needs

Outdoor exercise programs, such as walking in natural settings, enhance relatedness and intrinsic motivation by fostering social interaction and a sense of community [27, 30, 38, 41–43, 47]. The natural environment plays a pivotal role in this process, as contact with nature is shown to improve mood and enjoyment [41]. The intrinsic motivation to participate in such activities often stems from the enjoyment of being outdoors and the positive feelings associated with nature.

In contrast, home-based exercise programs are essential for providing a sense of safety, especially for those with physical limitations. According to Kramer et al. [33], activities like 'walking along a wall' are ideal for home environments, where high safety levels can be maintained. Exercising at home allows for customization, supporting autonomy and competence, particularly for those who may feel self-conscious about physical abilities [31, 45]. Additionally, gym exercises are often driven by extrinsic motivation, such as healthy reasons [27, 35]. Overall, participants reported mainly extrinsic reasons for performing PA in indoor environments, while intrinsic motivation for outdoor activity [27].

Challenging activities can enhance competence and intrinsic motivation

Across the included studies, calibrating exercise intensity was crucial in enhancing competence and intrinsic motivation among older adults. Setting an appropriate challenge level can boost confidence, support autonomy in choosing the difficulty and enhance intrinsic motivation to continue engagement in PA [34, 40, 42, 43]. Rather than competing against others, individuals are often driven by the desire to set and overcome personal challenges [43]. Participants across various health programs recognized that progressing through increasing difficulty levels fosters a sense of competence, self-esteem and intrinsic motivation in PA [38, 41, 45, 46].

Providing choices can enhance autonomy, competence and intrinsic motivation

Across the included studies, health programs that allow individuals to choose the time and location for exercise help satisfy their need for autonomy [40, 46]. While assistance in PA can enhance competence, some older adults feel that planning assistance may encroach on their autonomy [28]. Tailoring exercises to suit personal needs and limitations is crucial for fostering autonomy, confidence and motivation [31, 33]. Additionally, various exercise content makes PA enjoyable, preventing boredom and enhancing sustained engagement through intrinsic motivation [34].

Social environment

Concerns about health as a motivator for PA

Most older adults view PA as a preventive measure against age-related illnesses and as a means to reduce the risk of specific diseases, such as coronary heart disease. These participants also engaged in PA to stay alive and enjoy life as long as possible [27]. These health concerns could often be socially mediated, shaped by interactions with healthcare professionals, family members, peers and prevailing cultural expectations around aging and health, fostering different forms of extrinsic motivation that contribute to this engagement in PA, driven by health-related goals. Some individuals reported starting PA based on recommendations from healthcare practitioners or friends, indicating an externally driven incentive to reduce future medical care [35]. Other participants recognized the personal value of being physically active. The personal value of the health benefits related to PA could also be involved in satisfying the need for autonomy and competence [31, 38, 45, 46].

Aging stereotypes

Older adults often experience a significant internal conflict between their current physical limitations and the memory of their previously active selves. This dichotomy can result in a reluctance to engage in PA, stemming from a perception of frailty which reinforces a sense of incompetence [27, 29, 31, 39]. Social stigma also plays a significant role in deterring participation in PA. The expectation that seniors should '*dress and act their age*' often comes with an unspoken rule that engaging in PA is inappropriate for their age group [38]. As a result, many older adults may avoid specific public settings or activities, reinforcing a cycle of inactivity as they internalize these ageist norms [40]. This tendency was particularly pronounced during the COVID-19 pandemic, when societal perceptions often painted them as frail and at higher risk, discouraging outdoor or group activities among the older adult population [36].

Discussion

To our knowledge, this review is the first to explore qualitative insights about the interactions between SDT components and PA in older adults. In line with our research questions, we explored how the satisfaction or frustration of basic psychological needs impacts motivation and engagement in PA. We examined the characteristics of PA activities and

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interventions that enhance motivation levels and satisfy these psychological needs. Additionally, the review delved into the role of social conditions in shaping psychological needs and motivations, and identifying the barriers that influence older adults' participation in PA. Finally, we discuss the practical implications of our findings to contribute to developing targeted strategies and interventions that promote PA in the older adult population.

Overall, our findings complement those of recent reviews applying alternative theoretical models, such as the COM-B framework [16]. However, the SDT framework offers a lens to investigate how older individuals internalize the behaviour. SDT foregrounds the quality of motivation, rather than its presence or absence, distinguishing between controlled and autonomous forms of motivation and emphasizing their interactions with basic psychological needs in sustaining engagement in PA.

The current review suggests that no single factor determines PA behaviour; rather instead, the interaction between SDT components and the social environment shapes older adults' engagement in PA. Our findings provide qualitative insights into how SDT components interact with PA among older adults, highlighting peer relationships as a pivotal element in supporting motivation, psychological needs and PA. Almost all included studies reported that older adults prioritize social connections, and this need for relatedness profoundly impacts their intrinsic motivation to engage in PA. These findings align with existing gerontology literature and previous reviews, which demonstrate that enhanced socialization opportunities can increase PA enjoyment [7, 16]. However, group activities with peers not only fulfil the social need for relatedness but also enhance feelings of competence, as older adults support each other in mastering exercises, thus increasing their sense of security [33, 35, 47]. Conversely, exercising alone can be challenging, often leading to lower participation in PA [42]. The satisfaction of competence, achieved through feedback and gradual increases in PA intensity, boosts self-esteem and intrinsic motivation. In contrast, a lack of competence, or feeling incapable of performing exercises, can reduce motivation and PA engagement [38, 41, 45, 46]. These findings support our research questions, highlighting the impact of needs satisfaction/frustration on motivation and PA and reporting the aspects of PA activities and interventions that enhance motivation levels and satisfy these psychological needs.

Other factors underlying older adults' PA in this review are related to the type of PA and the nature of the intervention that plays significant roles in enhancing motivation and satisfying psychological needs. In line with a recent review conducted by Meredith et al. [16], outdoor activities, such as group walks in natural settings, are particularly motivating as they combine physical exercise with enjoying nature and social interaction [27, 30, 38, 41–43, 47]. Interestingly, while indoor activities are driven mainly by extrinsic motivation like health maintenance, intrinsic motivation is more prevalent in outdoor settings, where the natural environment enhances enjoyment and emotional fulfilment [27, 35]. Almost all participants in the included studies reported their preference for performing PA in a natural environment with peers. A peer coach was often preferred during several health programs, fostering a sense of understanding and relatability and enhancing competence and relatedness. Several studies have upheld these conclusions, underscoring the efficacy of peer coaching in implementing PA interventions for older adults [48, 49]. Additionally, interventions offering personalized novel activities or different options, such as different types of exercises, settings, or scheduling flexibility, help to satisfy the need for autonomy, increasing enjoyment and vitality [40]. According to the scientific literature, satisfaction with novelty in PA and the possibility to choose the activity is linked to increased enjoyment and sustained PA engagement [50, 51]. Our findings reveal the main characteristics of PA interventions in enhancing several SDT components, in line with our research question.

Social conditions, such as ageist stereotypes and negative perceptions about aging, can negatively affect motivation by undermining feelings of competence and autonomy. Internalizing these negative views can reduce motivation to stay active [52, 53], as some older adults may view physical decline as an unavoidable part of aging. According to Menkin et al. [54], views on aging profoundly impact physical, cognitive and social functioning. When older adults believe that physical decline is an unavoidable part of aging, they are less likely to participate in preventive health behaviours, such as exercise, that could improve their health. In addition, individuals whose perspectives on the aging process improved demonstrated significant enhancements in PA levels, as indicated by several studies [55, 56]. Messages that emphasize competence and autonomy can motivate older adults to take action to improve their health.

Conversely, societal messages focusing on inevitable decline diminish their sense of competence and autonomy, discouraging PA engagement. Indeed, older adults have expressed concerns regarding their lack of competence, feeling apprehensive about their health and engaging in PA [29, 37, 40]. Participants referenced external sources, such as advice from healthcare providers, encouragement from family members, or normative expectations about staying healthy in older age, as influential in shaping their motivation for PA. As such, these concerns are not purely internal but could be socially mediated, making them a meaningful part of the broader social environment. Although these external cues could operate to improve external forms of motivation in engaging PA, they could undermine the intrinsic motivation and sense of competence. Reframing PA as an enjoyable activity rather than purely a health-related and anti-aging behaviour [16], could enhance feelings of competence and intrinsic motivation, improving PA engagement. In line with our third research question, this evidence highlights the role of social conditions in shaping psychological needs and motivations, identifying how the social environment influences older adults' participation in PA.

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Implications

According to our last research question, the findings contribute to guiding clinical practice and intervention design, promoting PA in older adults by emphasizing the importance of satisfying basic psychological needs and motivations [57]. Generally speaking, exercise and fitness activities among older adults tend to have health-related motivation, specifically controlled forms of motivation [8]. Given the negative outcomes of the controlled forms of motivation, promoting needs satisfaction and autonomous forms of motivation becomes crucial to improve adherence and sustained PA engagement. Incorporating group activities that foster social interaction in a natural environment could be the central aspect in significantly enhancing intrinsic motivation in PA. Peer coaching is also recommended, as older adults feel more comfortable exercising with those of similar age. Additionally, providing tailored feedback and offering variety and choice during health programs are more likely to satisfy the need for competence and autonomy, motivating them to participate in PA consistently. Finally, educating older adults about the benefits of PA and addressing common fears, social stigma about aging, or misconceptions can help overcome barriers to participation.

Although our review highlighted the relevance of several SDT constructs in engaging PA among the included studies, it is important to note that older adults are not a homogenous group. So, the interaction between different types of motivation and psychological needs satisfaction could be varied among older individuals. For instance, while most participants were driven by a desire for social interaction or outdoor enjoyment, few others prioritized safety or privacy, preferring home-based activity. Factors such as health status, physical limitations and caregiving responsibilities could influence different psychological needs and motivations in PA. This underscores the importance of designing personally tailored interventions that are responsive to individual needs, values, motivation and life contexts.

Strengths and limitations

The present study is the first review to examine SDT factors influencing PA, specifically in individuals aged 65 and older, by synthesizing qualitative findings. Adopting an interpretive, qualitative research approach, the study aimed to uncover the complex and diverse meanings that older adults attach to their participation in PA. Importantly, rigorous review and synthesis processes were utilized to enhance the reliability of the findings, including applying the CERQual framework to evaluate the confidence in the evidence presented.

The current review is not without limitations. Most studies do not include minority ethnic groups, older adults with lower socioeconomic backgrounds, or who belong to sexual or gender-minorized groups, limiting the generalizability of results. For instance, existing research indicates that older LGBT+ adults often face more significant socio-ecological barriers to engaging in PA, contributing to lower activity levels [24, 58]. So, while our review highlights key psychological and social factors influencing PA in older adults, there is a lack of findings addressing how socioeconomic conditions, unpaid caregiving and continued employment in later life shape psychological needs and motivation for PA. Financial strain, caregiving responsibilities and extended working lives, whether by choice or necessity, could limit time, energy and perceived autonomy or competence, thereby undermining motivation. Additionally, most of the studies do not deeply explore the extent to which choosing different types of PA or settings in engaging PA is perceived as genuinely autonomous, versus being constrained by life or health-related circumstances. Future research should explore how these structural and social realities intersect with psychological needs and motivation to inform more inclusive and context-sensitive PA interventions.

Conclusion

Older adults' varying reasons for engaging in or avoiding PA are influenced by a range of interacting SDT factors and social environments that affect their adherence to PA. We extend prior research by providing qualitative insights into the interactions between psychological needs, motivation and the social environment. These findings offer critical insights that could drive the development of targeted health programs, potentially significantly boosting PA levels and improving the overall well-being of older adults.

Supplementary Data: Supplementary data are available at *Age and Ageing* online.

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Data Availability: Data are available under request to the first author.

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