

Review article

Role of perceived control over falls in older adults

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Abstract

Falls among older adults constitute a considerable public health challenge, often leading to severe physical injuries, reduced independence, and a diminished quality of life. Perceived control, a critical psychological construct, plays a substantial role in sustaining physical health, cognitive function, and overall life satisfaction, and it is strongly associated with positive health outcomes. This review aims to examine the role of perceived control in fall risk among older adults. Concern about falling is a prevalent psychological factor that influences fall risk by affecting behaviors linked to physical activity, balance, and adaptive responses. Perceived control theory provides a framework for understanding how older adults' confidence in managing falls shapes their emotional responses and behavioral adaptations, thereby influencing fall-related outcomes and overall health. This review highlights the complex and multidimensional nature of perceived control related to falls. High levels of perceived control are positively correlated with better physical and mental health, whereas lower perceived control is associated with an increased fall risk and compromised well-being. A thorough analysis of theoretical models and empirical studies highlights perceived control as a mediator that promotes adaptive behaviors, supports emotional resilience, and encourages proactive engagement in fall prevention strategies. By identifying knowledge gaps in the existing literature, this review encourages further research on factors that influence perceived control and the development of standardized assessment tools that address the psychological and physical aspects of fall prevention. Such tools could enhance the independence and well-being of older adults.

Keywords: Concern about falling, falls, perceived control, older adults.

Falls are a notable health concern among older adults, which often leads to serious injuries, loss of independence, and decreased quality of life.^(1, 2) Intrinsic and extrinsic factors both influence falls among older adults, and understanding them is crucial for developing effective fall prevention strategies.^(3,4) Concern about falling (CaF), formerly known as fear of falling (FOF), is an important psychological factor associated with falls. CaF has been suggested as a replacement for FOF because it avoids the potentially stigmatizing word “fear” and captures a broader range of the psychological impact of falling.^(1,5) CaF is highly prevalent among community-living older adults⁽⁶⁻⁸⁾ and can lead to adverse effects that increase the risk of future falls.⁽⁹⁻¹¹⁾ Existing studies have indicated that

CaF has the potential to cause future falls in older adults by altering their gait and balance, increasing panic or anxiety, and resulting in activity restriction. However, it has also been suggested that CaF may have a beneficial impact by encouraging conscious movement strategies that enhance fall safety.⁽¹²⁻¹⁶⁾

Perceived control theory explains how physiological, cognitive, and psychological factors affect performance and adaptive behaviors in older adults. It is linked to health outcomes, including physical and mental well-being, and serves as a mediator across various domains.⁽¹⁷⁻¹⁹⁾ Older adults tend to have lower perceived control than adults in general due to deteriorated health outcomes with age across several areas, which influence these differences.^(17, 20-23) In the context of falls, perceived control is an individual's perceived ability to manage falls through emotions, physiological and cognitive changes, and behavioral adaptations.⁽²⁴⁾ This concept helps to explain the mechanism through which perceived control influences behavioral adaptations and fall risk. In particular, among older adults with a

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CaF, perceived control appears to mediate emotional regulation, behavioral adjustments, and participation in fall-prevention strategies, thereby reducing the likelihood of falls.^(14, 24)

This review amalgamates the existing literature on perceived control over falls, emphasizing its multifaceted nature, relevant theoretical frameworks, and its role and influence on the health-related outcomes of falls in older adults. In addition, this review identifies existing knowledge gaps and suggests future research directions to better manage fall prevention, thereby promoting independence, reducing fall risks, and improving the quality of life for older adults.

Methods

A comprehensive search for relevant literature published since 1986 was conducted from PubMed, Web of Science, and the Cochrane Library of Systematic Reviews. The search used terms such as “older adults,” “older people,” “elderly,” “aged,” “perceived control,” “control,” “fall,” “falling,” and various combinations of these keywords. Relevant references were identified using the authors’ existing knowledge of the literature, and the reference lists of the selected articles were manually reviewed to locate additional studies. Only peer-reviewed articles published in English were included in this review.

Origins of perceived control

The notion of “perceived control” is well-known across several health-related domains, and particularly in psychology. Initially, perceived control was included under the umbrella term “control.” Numerous definitions of control have been developed through a range of constructs and theories, including locus of control, control beliefs, self-efficacy, personal mastery, learned helplessness, and primary/secondary control.⁽²⁵⁻²⁸⁾ To clarify and organize the distinct constructs of control, Skinner EA (1996)⁽²⁵⁾ provided a classification of control terminology based on two distinctions: (a) three aspects of control, including objective control, subjective control, and experiences of control, and (b) agents, means, and ends of control. These distinctions are useful for categorizing control-related terms and making their constructs explicit. Although control is a complex concept with various distinctions, a common core is the belief in the power of influence. Studies have explored the models and

dimensions of control, attempting to clarify its multiple components; however, a consensus on the theoretical framework is lacking.⁽²⁹⁻³¹⁾

A classical theory, based on social learning theory, defines control as the “locus of control” proposed by Rotter JB,⁽³²⁾ and “self-efficacy” proposed by Bandura A.⁽³³⁾ The root concept of control was the locus of control, as defined by social learning theory. It is described as the belief that situations are within (internal) or outside (external) one’s control. In which individuals with an external locus attribute outcomes to forces outside of themselves, such as chance, luck, fate, or external factors, whereas those with an internal locus believe that outcomes are shaped by their own actions.⁽³²⁾

Self-efficacy is a concept rooted in social learning theory and cognitive-behavioral theory, which is supported by numerous studies.⁽³³⁾ Self-efficacy refers to an individual’s perception of capabilities within a particular domain of activities.^(27, 33) The cognitive, motivational, emotional, and selection processes are the four primary ways that self-efficacy beliefs control human functioning.⁽³⁴⁾ The control belief model is founded on the concept of self-efficacy,^(18, 19) which is also explained in the context of the perceived control model over falls.⁽²⁴⁾ Current literature on definitions of control or perceived control has identified various terms, all of which assess an individual’s capabilities to meet expectations, predict and influence the aging process, control one’s environment and self for safety, and affect personal behaviors.⁽¹⁹⁾

Role of perceived control in health

Perceived control is associated with several favorable health outcomes, including physical and mental health and overall well-being. It plays a crucial role, as psychological factors in an individual’s outcome and performance contribute to their behavior. Perceived control functions as a mediator by operating as a buffer for an individual’s performance and outcome across several domains.⁽¹⁷⁻¹⁹⁾ According to recent studies, older adults with high perceived control consistently report good physical, cognitive, psychological, and emotional health and well-being.^(35, 36) Moreover, greater levels of self-rated health status, fewer chronic illnesses, less severe functional restrictions, and lower levels of depression were also reported among older adults who felt more in control of their lives.^(18, 37)

However, the physical, mental, and cognitive health of older adults tends to deteriorate, leading to a reduced quality of life; thus, they may perceive less control in several areas. In addition, reduced control expectations and low self-efficacy in older adults can result from age trends in perceived control, which increase in early adulthood, peak in midlife, level off, and then decrease in later life.^(17, 20-22, 33) Cognitive and physical health deteriorate with age, which influences the variation in perceived control.⁽²³⁾ Greater initial perceived control predicted a milder health decline and stronger social support, and subsequent increases in perceived control were predicted by better initial health and more support.⁽³⁸⁾ A longitudinal study found that functional limitations, depressive symptoms, and less emotional support resulted in lower perceived control levels over time. In contrast, those with fewer limitations and more emotional support experienced an increase in perceived control.⁽³⁹⁾ These studies concluded that perceived control can be used as a predictor and an outcome of health and cognition, thereby supporting a cyclical relationship.^(38,39) Therefore, older adults with physical or cognitive limitations often experience low perceived control, which can lead to a decline in mental or physical functioning.⁽¹⁸⁾

Perceived control theory relevance to falls

In older adults, reduced expectations for self-efficacy and perceived control are often shaped by negative aging stereotypes, which are reinforced by experiences of loss and health decline.⁽³³⁾ In the context of falls, enhancing self-efficacy or fall efficacy can help mitigate functional limitations and restricted activities caused by CaF in specific activity areas.⁽⁴⁰⁾ Bandura's theories are related to the conceptual framework of control belief in aging.^(17, 18) When applying self-efficacy theory to the specific domain of fall prevention and balance-related behaviors, it is essential to quantify the relationship between an individual's perceived control and their actual performance of daily activities.^(41, 42)

The relationship between perceived control and falls is important to understand, as older adults' perceptions of their ability to control or prevent falls can influence their actual risk of falling. Several conceptual frameworks for perceived control have been established, such as the perceived control or control beliefs proposed by Lachman ME,⁽¹⁷⁾ which was an earlier conceptual model of perceived control.

This is widely applied in several specific health conditions in psychology, such as fall-related issues. This conceptual model, which was derived from cognitive-behavioral theory, demonstrates an obvious relationship between age-related outcomes and perceived control or control beliefs.⁽³³⁾ It demonstrates how perceived control serves as a mediator between prior age-related outcomes and subsequent outcomes or performance through behavioral, motivational, affective, and physiological dimensions. Age-related outcomes (i.e., memory, cognitive, muscle strength and fitness, and well-being) could influence perceived control, which can subsequently affect health outcomes and performance. Furthermore, these processes were found to be reciprocal and cyclical.⁽¹⁷⁾

Age-related challenges, such as physical or cognitive decline, often undermine an older individual's sense of control, particularly when these changes are viewed as inevitable. These self-limiting beliefs are detrimental because they foster emotional distress and physical inactivity, which causes individuals to stop utilizing adaptive strategies that are essential for maintaining optimal functioning.⁽⁴³⁾ In contrast, stronger perceived control promotes health-sustaining behaviors (e.g., exercise and diet) and serves as a critical mediator for positive health outcomes during aging.⁽²⁰⁾ According to control belief theory,⁽¹⁸⁾ falls represent an age-related decline in performance that substantially affects perceived control and, in turn, impacts their outcomes and performance. Older adults experiencing cognitive and physical health decline often exhibit deterioration in balance performance, cognitive function, and overall well-being, all of which contribute to an increased risk of future falls.^(3, 4, 44) As a psychological construct, perceived control influences an individuals' motivation, behavior adaptations (e.g., activity levels and movement strategies), and compromise affection (e.g., anxiety or CaF). Consequently, it regulates performance and fall-safety-related outcomes.

Existing research on the relationship between perceived control and falls

Most studies have found a relationship between perceived control and several aspects of health and well-being.^(45,46) Research has demonstrated that those who felt more in control of their lives had higher self-rated health, fewer chronic illnesses, and less severe functional limitations.^(41, 46, 47) In fall concerns, recent studies have found that older adults who experienced

repeated falls had substantially lower perceived control over falling.^(24, 48) Moreover, research on perceived control and falls in older adults has focused on several key areas to understand how perceived control affects falls. This review summarizes key studies that have explored the relationship between perceived control and various health outcomes, including physical and psychological health, as well as sociodemographic factors related to falls.

Impact on physical health

Perceived control is associated with physical and cognitive health⁽²³⁾ and has been associated with improved performance in this area, including enhanced memory and greater use of strategies.⁽⁴⁹⁻⁵¹⁾ Older adults with high perceived control maintain good memory, memory self-efficacy, and other cognitive abilities, which are linked to improved performance and behaviors.^(50, 52, 53) Furthermore, physical activity was found to mediate the relationship between perceived control and cognition in episodic memory and executive function.⁽⁵⁴⁾ This evidence supports the assumption that health behaviors, such as physical activity, moderate the relationship between perceived control and cognitive performance.^(55, 56)

The multifaceted effects of falls, including FOF, perceived control, and the psychological correlations influencing these experiences, were explored. Ribeiro and Santos (2015) highlight that FOF is prevalent among older adults, often correlating with reduced self-efficacy, impaired balance, and anxiety. This finding demonstrated that those individuals with a FOF had worse results in falls self-efficacy, perceived control over falling, and balance. Increased fall self-efficacy leads to greater perceived control over falling and balance, and improved balance performance is associated with greater perceived control over falling.⁽⁴⁸⁾ In addition, the empirical data show a direct correlation between higher perceived control levels and increased physical activity, enhanced physical fitness, and reduced cardiometabolic risk.^(57, 58) Moreover, lower perceived control among older adults is associated with greater functional limitations and lower social activity.⁽⁵⁹⁾ However, little is known about how perceived control directly affects physical performance variables.

Impact on psychological health

Numerous studies have shown a positive correlation between high perceived control and improved

psychological and emotional well-being in later life.^{(35,}

³⁶⁾ Individuals with high perceived control report greater life satisfaction and an optimistic attitude.^(41, 46, 47) According to the conceptual model of control beliefs,⁽¹⁸⁾ low perceived control may be detrimental to age-related outcomes and performance if it is associated with worries, anxiety, inactivity, or reduced effort.^(18, 43) Therefore, psychological variables are hypothesized to be linked to perceived control and should, therefore, be considered as well.

Perceived control can function as a buffer against emotions that interfere with desired performance and outcomes. A decreased level of control can have psychological, behavioral, motivational, and physiological repercussions, including increased stress and anxiety, decreased effort, persistence, and use of coping strategies, as well as less frequent engagement in memory tasks or physical activities.⁽²⁰⁾ Those with greater perceived control have a lower prevalence of depression and greater life satisfaction.^(41, 46, 47) In the context of falls, a study found that older adults with anxiety scored considerably lower in perceived control over falling in relation to their self-reported anxiety.⁽²⁴⁾ To the extent that there is a relationship between perceived control over falling and anxiety, a decrease in perceived control over falling and balance corresponded with an increase in anxiety.⁽⁴⁸⁾ In addition, the likelihood of substantially lower levels of perceived control was reported among older adults who had experienced a fall during the past year. Furthermore, according to a longitudinal study, older adults who initially reported more perceived control were less likely to experience mental health issues, including depression and anxiety. Hence, the impact of falls on psychological conditions may be mediated or correlated with perceived control over falling.

Differences in perceived control across demographics

Along with the effect of perceived control on mental and physical health, studies have examined how perceived control varies by socioeconomic factors such as gender, race, and living conditions. Although the magnitude of sex differences is generally small, representative data suggest that men typically reported a higher general sense of control than women. Notably, these differences are less pronounced in populations with higher educational levels. Furthermore, women often demonstrate a higher sense of control within some social domains, including marriage and sex life.^(18, 37, 60)

These socioeconomic status variables are characterized by income and education. People with higher incomes or higher levels of education generally feel greater perceived control.⁽²²⁾ In a descriptive study, substantial differences in mastery and perceived constraints were found by income, with a three-group split on income categories, indicating a notable impact on mastery.⁽³⁷⁾ This phenomenon occurs because individuals with lower socioeconomic status often face higher perceived constraints. In contrast, those with higher income and education typically experience greater “mastery” because their environment provides more frequent opportunities to observe a direct link between their actions and successful outcomes, effectively reinforcing their sense of control. Consistent with previous sociodemographic research, higher education was positively associated with domain-specific control beliefs. This relationship is likely mediated by increased access to resources and the inherent motivation of high-control individuals to seek educational advancement.^(60, 61) In addition, high perceived control can decrease socioeconomic disparities in adverse health outcomes and mortality risk.^(19, 37)

Cultural differences, such as economic conditions, values, and religious beliefs, are likely the primary factors that contribute to variations in control beliefs across countries.⁽¹⁸⁾ Previous multicultural studies have suggested differences in perceived control between Asian and non-Asian populations, with Asians generally showing lower levels of perceived control.⁽⁶²⁻⁶⁴⁾ However, this finding has not been extensively researched in the specific context of falls among older adults. Another study examined how age and marital status affect perceived control over falling. The results indicated that advancing age, being single, and cohabiting were all substantial factors associated with decreased perceived control over falling.⁽⁶⁵⁾

Mechanisms linking perceived control, concern about falling, and falls

The CaF is a common psychological factor occurring among older adults,⁽⁶⁻⁸⁾ which is triggered by postural or balance threats that contribute to falls. CaF influences postural control through cognitive systems, modifying strategies in response to perceived threats in tasks and environments.⁽⁶⁶⁾ These changes contribute to balance performance and gait alterations that result from physical and cognitive changes in response to postural threat, for example, stiffening

adaptive mechanisms,⁽⁶⁷⁻⁷²⁾ as well as psychological changes, such as intense fear and anxiety, low self-efficacy, or low self-perceived control. High CaF seems related to low perceived control over falling, which leads to decreased performance and increased negative behavioral outcomes, thereby perpetuating a cycle of falling among older adults.^(5, 14-16, 24) Previous research has found a direct correlation between CaF and impaired balance performance, which suggests a potential association between CaF and overall balance.⁽⁷³⁾ Nevertheless, additional studies have shown that some older adults with CaF can still engage in regular physical activity and maintain a good quality of life.⁽¹²⁻¹⁶⁾ Consequently, the construct of perceived control may serve as a crucial mediator to distinguish whether CaF leads to adaptive or maladaptive behavioral responses among older adults.

A new term, “perceived control over falling,” has been introduced to describe one’s perception of control in threatening situations: (a) the ability to regain their balance and avoid falling and (b) the ability to manipulate any fear experienced in positive ways to enhance safety. Perceived control is an important determinant of whether CaF in older adults will be an adaptive or maladaptive behavior mechanism.⁽²⁴⁾ Falls were often considered a negative consequence of inadequate perceived control over falling by the individual. A recent qualitative study investigated the root causes of the detrimental effects of CaF, specifically those related to perceived control. Feeling in or out of control influenced their adaptive behaviors related to falls.⁽¹⁴⁾ Recently, the perceived control concept has developed concerning individual psychological factors within performance and function in specific domains. The perceived control model of falling, aligned with Lachman’s conceptual model,⁽¹⁷⁾ explains the mechanism of CaF and the role of perceived control in falls, drawing on the cognitive and behavioral sciences.⁽²⁴⁾ The automatic defensive bodily and emotional responses (e.g., CaF or anxiety/worry) are triggered when people face a balance threat that they perceive as probable and harmful. Thus, individuals may adopt conscious behavioral adaptations or conscious movement processing (CMP), which primarily reflect an adaptive, self-regulatory process.⁽¹⁴⁾ CMP is responsible for avoiding irrelevant stimuli distraction, employing appropriate motor strategies for safety, monitoring movement, and ensuring proper implementation of fall prevention.^(68, 74, 75) However, improperly initiating CMP can result

in cognitive and motor inefficiencies in postural control, thereby reducing safety during locomotion and potentially disrupting attentional processing efficiency, and affecting overall movement efficiency.^(12, 76-79)

Individuals with high perceived control can modulate their high CaF through conservative behavioral adaptations to ensure safety. However, low perceived control can trigger a maladaptive response by enhancing the initial emotional response, such as intense CaF; this leads to an overestimation of harm, which contributes to overly cautious movement and disrupts effective CMP functioning that involves cognitive and attentional motor control. This may result in negative consequences, including (a) inappropriate/unsafe motor behaviors, (b) increased distractibility by external threatening stimuli, and (c) undue activity restriction. All these adverse consequences may increase the likelihood of falls.

When integrating knowledge of the perceived control over falls model and relevant health factors, it becomes evident that relationships among sociodemographic factors, health outcomes, performance, and perceived control are cyclical. Perceived control acts as a mediator, and an

individual's outcome and performance contribute to their behaviors. When older adults experience CaF, it can contribute to adaptive or maladaptive behaviors, mediated by their perceived ability to control falls, which is influenced by individual differences in sociodemographic, physical, cognitive, or psychological factors. If older adults perceive low control over falls, this can lead to maladaptive behaviors, such as activity restriction or inappropriate movement strategies, which can eventually result in falls (**Figure 1**).

Assessment of perceived control over falling

Several instruments for measuring perceived control have been used in various contexts or under specific conditions, depending on the underlying theories.^(25, 31) These include the sense of control scale (personal mastery)⁽³⁷⁾ and the perceived control questionnaire for assessing personal responsibility and perceived control of others in patients with type 2 diabetes.⁽⁸⁰⁾ However, a reliable measurement tool for assessing perceived control in the context of falling may require more specific components that encompass all aspects of falls to achieve a comprehensive understanding of the CaF phenomenon.

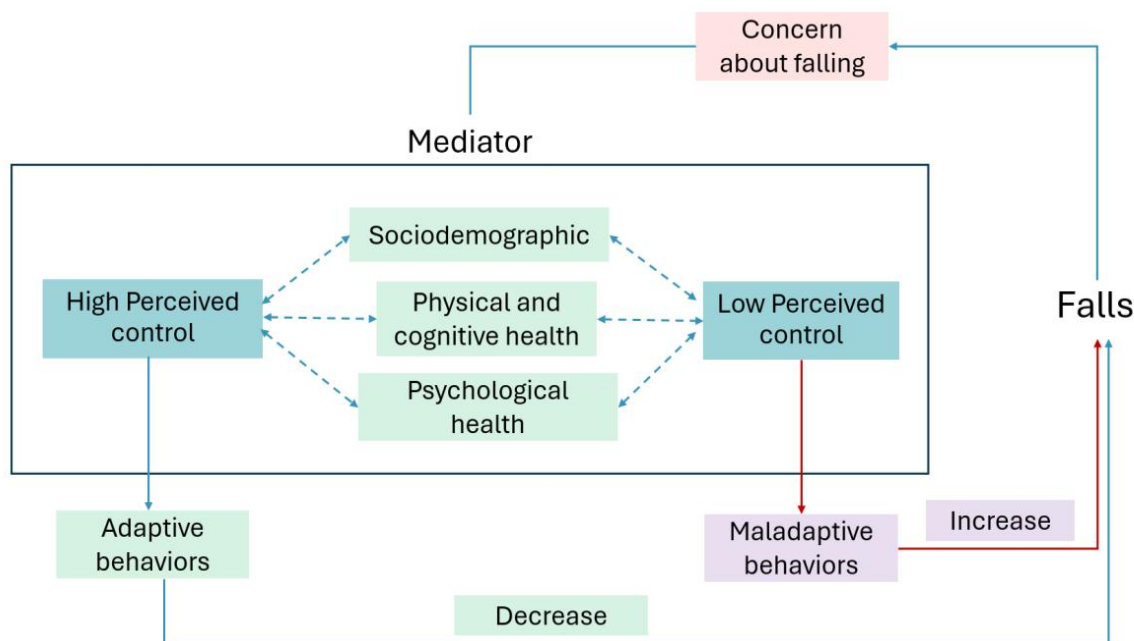


Figure 1. The conceptual framework illustrates the relationship between perceived control and various factors contributing to falls.

Recently, a 4-item updated version of the Perceived Control Over Falling Scale (UP-COF) was validated in relation to perceived control and CaF. This tool is used to identify older adults with high or low perceived control over falling. Its purpose is to assess a person's perceived control over falling, which determines whether the CaF positively or negatively affects adaptive behavior. The findings revealed that some older adults who experienced CaF also had low perceived control, which correlated with psychological conditions (e.g., anxiety and depression), a history of falls, and activity restrictions.

Gaps in the literature

Despite existing research on perceived control and falls, there remains a considerable gap in our understanding of the relationship between variables associated with perceived control, such as demographics, physical performance, balance, cognitive function, and psychological conditions. This gap is particularly pronounced in studies involving older adults, especially those with deteriorated physical and cognitive health, who are at an increased risk of falling. The psychological construct of perceived control is crucial, as it relates to behavior and can influence outcomes such as CaF, which may escalate into panic responses and, subsequently, adverse behavioral consequences.

Moreover, current research on perceived control is hampered by inconsistencies in definitions and the use of broad, inconsistent measurement tools, which leads to varied interpretations of results. While the UP-COF scale was specifically designed to address this, existing validation studies have also relied on small sample sizes. This limitation restricts the generalizability of the findings and obscures a deeper conceptual understanding of the construct. Consequently, there is a critical need for rigorous, large-scale research using standardized measures. Such studies are essential to accurately capture the nuanced relationship between perceived control and fall-related factors, particularly among older adults.

Future directions

Future studies should focus on addressing existing gaps in the literature on the relationship between perceived control over falling and factors such as demographics, physical performance, balance, cognitive function, and psychological conditions. Furthermore, research in this area should prioritize the inclusion of older adults,

particularly those with compromised physical and cognitive health, as they are at a higher risk of falls and may exhibit distinct patterns in perceived control. Moreover, future research should include systematic reviews or meta-analyses to synthesize these diverse findings, thereby enhancing the rigor and scope of existing literature.

To advance this field, future research should aim to standardize the current measurement tools used to assess perceived control over falling. Developing and validating consistent, reliable instruments that can be applied across diverse populations is vital for ensuring that findings are comparable and meaningful across studies. In addition, larger, more representative sample sizes are necessary to enhance the generalizability of results and provide a more comprehensive understanding of how perceived control interacts with the various risk factors for falls.

Furthermore, future studies should explore the psychological dimensions of perceived control, particularly in individuals with CaF. Understanding how perceived control influences behavior and responses to fall-related concerns could inform the development of targeted interventions to reduce the incidence of falls and their associated negative outcomes. Finally, longitudinal studies could provide insights into how perceived control evolves and how it interacts with changing physical and cognitive health in older adults.

Conclusion

This review highlights the essential role of perceived control on falls among older adults. Higher perceived control is associated with better physical and psychological health, whereas lower perceived control increases the risk of falls and adversely affects well-being. Enhancing perceived control can improve the adoption of fall prevention strategies and promote independence. Determining the factors associated with an individual's perceived control over falls is crucial and warrants further research. This investigation is essential for developing more effective fall prevention strategies and interventions tailored to individual needs and risk factors. In addition, there is a need for large-scale research, standardized tools to assess perceived control, and community-based initiatives that address the physical and psychological aspects of fall prevention.

Author contributions

KT contributed substantially to the study of conception and design, and data acquisition, analysis, and interpretation. KT, KA, and DS contributed to drafting the manuscript and revising it critically for important intellectual content. All authors approved the final version submitted for publication and took responsibility for statements made in the published article.

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Conflicts of interest statement

All authors have completed and submitted the International Committee of Medical Journal Editors Uniform Disclosure Form for Potential Conflicts of Interest. None of the authors disclose any conflict of interest.

Data sharing statement

All data generated or analyzed in the present study are included in the published article. Further details are available for non-commercial purposes from the corresponding author upon reasonable request.

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