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Opinion Article

Adaptive or Maladaptive Fear of Falling in Multiple Sclerosis: What Are We Overlooking?

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Abstract

Fear of falling is a common and distressing concern among people with multiple sclerosis due to the gait and balance impairments associated with the disease. Clinicians and researchers often assume that the degree of fear of falling, typically measured with the Falls Efficacy Scale International (FES-I), is proportional to activity restrictions or rehabilitation engagement. However, a low or high level of fear of falling alone does not indicate whether fear of falling influences individual's performance of daily living activities. Fear of falling can either be adaptive (when aligned with functional capacity and actual fall risk) or maladaptive (when disproportionate to functional capacity and actual fall risk). In this personal viewpoint, I discuss the importance of contextualizing fear of falling assessment within the performance of daily living activities and propose that a function-focused assessment of fear of falling may enhance our understanding of whether it is adaptive or maladaptive. This approach may also provide targeted information to guide the development of interventions to address fear of falling in people with multiple sclerosis, help identify who requires intervention, and the type of intervention needed.

Keywords: Multiple sclerosis, Fear of falling, Accidental falls, Activities of daily living

Research on falls and fear of falling (FoF) in persons with multiple sclerosis (PwMS) has grown exponentially in recent years[1-3]. More than 50% (95% CI; 53% - 59%) of PwMS experience at least one fall in a 6-month period[4]. FoF, both a cause and consequence of falling, is endorsed by over 85% of PwMS[4]. Notably, more than 70% of PwMS without a history of falls report experiencing FoF[4]. Altogether, the evidence indicates that FoF represents a clinically meaningful concern for PwMS, regardless of prior fall history. FoF is defined as "a persistent concern about falling that may lead individuals to avoid activities they can perform safely"[5]. Assessment of FoF in MS remains challenging due to its conceptual similarity with related psychological constructs, including concerns about falling and falls efficacy. Despite their similarities, these constructs are distinct and require clear differentiation in both research and clinical practice[6-8].

Conceptual differences between FoF, concerns about falling, and falls efficacy

In the geriatric populations, the constructs of FoF, concerns about falling, and falls efficacy are well-defined and provide a useful framework to guide neurorehabilitation research, including in PwMS. Older adults refer to FoF as an emotional response to a perceived treat that often results in distinct physiological and cognitive changes[7]. In contrast, concerns about falling reflect a less intense, less emotionally driven response that may be more socially acceptable for older adults to report[7]. Falls efficacy refers to an individual's confidence in their ability to prevent and manage falls across a range of situations[9]. Despite these distinctions, the terms are frequently used

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FoF and activities	Perception of FoF	Functional Impairment	Pathway	Expected Result	Real-world example
Case 1	Low	Low	Adaptive	Active, independent lifestyle	A patient with a low perception of FoF and good physical function, including balance and gait.
Case 2	High	High	Adaptive	Cautious & safe engagement	A patient with a high perception of FoF, as well as pronounced physical disability, including poor balance and gait impairment.
Case 3	Low	High	Maladaptive	Engagement in unsafe activities, high risk of falling.	A patient with a low perception of FoF despite having pronounced physical disability, including poor balance and gait impairment.
Case 4	High	Low	Maladaptive	Unnecessary fear-induced sedentary behavior, leading to accelerated disability, anxiety, and panic.	A patient with a high perception of FoF despite having good physical function, including balance and gait.

Table 1. Interaction between perceived FoF, functional impairment, and performance.

interchangeably[8], which may limit conceptual clarity and hinder research progress in this area.

Emerging research in MS suggests that PwMS also differentiate between FoF and concerns about falling[10,11]. For PwMS, concerns about falling and FoF may exist on a continuum, where concerns about falling reflect appropriate avoidance at high fall risk, whereas FoF reflects inappropriate avoidance of activities that an individual is capable of performing[10,11]. Further research is needed to refine and validate this conceptual framework in PwMS.

In current MS research and rehabilitation, the term FoF is most commonly used[2,3]; accordingly, this perspective adopts this terminology. However, MS clinicians and researchers are encouraged to draw on the literature in older adults[8,12] and adopt a unifying conceptual framework and terminology to advance this field[7].

Challenges associated with current assessment of perceived FoF in MS research

The most commonly used measure of level of perceived FoF in MS rehabilitation is the Falls Efficacy Scale- International (FES-I)[2,13,14]. The FES-I primarily measures level of concerns about falling despite its nomenclature suggesting assessment of falls efficacy[15]. This mismatch contributes to ambiguity in the assessment and interpretation of perceived FoF in PwMS. The recently developed Concern and Fear of Falling Evaluation (CAFFE), designed specifically for PwMS, addresses this limitation and overcomes the longstanding challenges associated with the assessment of perceived FoF in this population[10]. The CAFFE demonstrated strong reliability and validity and distinguishes concerns about falling from FoF in PwMS[10]. Although ongoing efforts seek to determine the "tipping point" between both concerns about falling and FoF[10], MS researchers are encouraged to select measurement tools that align closely with the construct of interest.

Does assessing the level of FoF effectively inform rehabilitation strategies?

In the context of MS-related disability, individuals with greater gait and balance impairments are more likely to report elevated FoF[3], which may adversely affect the performance of activities of daily living (ADLs). Clinicians and researchers often assume that the level of perceived FoF reported by PwMS is proportional to activity restrictions or rehabilitation engagement. However, without contextualizing perceived FoF within activity performance and identifying how it is adapted across specific ADLs among PwMS, researchers and clinicians are unable to determine whether FoF is maladaptive or adaptive, or who may benefit from intervention.

To date, measures commonly used to assess perceived FoF primarily categorize individuals with MS into varying levels of perceived FoF, including low, moderate, or high FoF[16,17]. However, these assessments fail to capture the downstream consequence of FoF related to activity limitation and participation restriction. Identifying the level of perceived FoF among PwMS, without a comprehensive understanding of its impact on the performance of ADLs, limits researchers and clinicians' ability to develop effective rehabilitation strategies targeting perceived FoF.

Optimal rehabilitation outcomes typically reflect the alignment between an individual's functional capacity and their performance of ADLs[18]. Among PwMS, performance

represents the interaction between objective capacity (what an individual can do under optimal conditions, such as in a clinical setting) and other factors such as perceived FoF and environmental barriers[18]. Despite assessing individuals' functional capacity (e.g., 10-meter Walk Test, Berg Balance Scale, physical fall risk) in current MS research and rehabilitation[19], the impact of perceived FoF on the performance of ADLs remains unexamined and undocumented. Therefore, it remains unclear whether the interaction between an individual's functional capacity and their level of perceived FoF corresponds to expected ADLs performance, and consequently, whether FoF in PwMS is maladaptive or adaptive.

Perceived FOF that aligns with an individual's functional impairment and disability-related limitations can be considered adaptive, as it may help avoid high-risk activities while preserving engagement in safe activity and functional independence[10]. However, perceived FoF that is inconsistent with an individual's functional impairment can be maladaptive, initiating a vicious cycle of activity restriction, physical inactivity, muscular and cognitive decline, impaired ambulation and balance, and further exacerbation of FoF[3]. Table 1 presents potential cases of how perceived FoF may interact with functional impairment and expected ADLs performance in PwMS.

- **Case 1** reflects an ideal rehabilitation outcome, where both perceived FoF and impairment are low, minimally affecting ADLs' performance.
- **Case 2** represents alignment between high perceived FoF and high functional impairment, resulting in cautious and safe engagement in ADLs. Although this pathway is considered adaptive, individuals may benefit from a multidisciplinary rehabilitation approach aimed at both improving functional capacity and optimizing perceived FoF.
- **Case 3** describes a discordance between perceived FoF and functional impairment, leading to a high likelihood of engaging in unsafe activity and increased fall risk. These individuals may benefit from physical therapy intervention to improve capacity, or, in cases of advanced disability with plateaued capacity, from cognitive behavioral therapy (CBT) to align FoF with actual functional capacity.
- **Case 4** represents maladaptive FoF, which, if unaddressed, may accelerate disability. Individuals in this scenario may benefit from CBT to reduce FoF and optimize ADLs performance.

Moving forward, it is essential that FoF measurement in PwMS is contextualized within ADLs performance. This requires a valid and reliable outcome measure that assesses the impact of FoF on ADLs' performance among PwMS. Examples of potential items include: "As a result of my FoF, I have stopped walking in your neighborhood, going up and downstairs, exercising, participating in outdoor activities, participating in social events, or grocery shopping?". Likert scale response options may include: "completely agree, agree, unsure, disagree, completely agree" or "always, often, sometimes, rarely, never". Potential outcome measures that may be adapted to individuals with MS include the Survey of Activities and Fear of falling in the Elderly (SAFE) or the fear of falling avoidance behavior questionnaire (FFABQ), developed for other populations[20,21]. Implementing a function-focused assessment approach will advance MS FoF research by identifying who requires intervention and the type of intervention needed.

In summary, a clinically relevant assessment of perceived FoF should consider not only its severity but also its impact on ADLs performance. As demonstrated in this perspective, a low or high perceived FoF score alone does not indicate whether or how FoF affects ADLs performance and, therefore, does not provide enough information to guide appropriate rehabilitation strategies targeting perceived FoF.

Author contribution

Libak Abou: Conceptualization, design, and writing - original draft, review, and editing.

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