# An Exploratory Study of Community Mobility in Adults With Multiple Sclerosis Across Different Ambulation Levels

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## ABSTRACT

**BACKGROUND:** The purpose of this study was to identify differences in community mobility in adults with multiple sclerosis (MS) at various ambulation levels.

**METHODS:** Seventy-one adults with MS completed a survey about their mobility impairment and avoidance of challenging mobility tasks. Individuals were categorized as having mild, moderate, or severe gait impairment.

**RESULTS:** Participants across the different functional groups significantly differed in perceived ambulation disability, fatigue impact, falls efficacy, quality of life, challenges with dual-tasking, and self-efficacy for community mobility. There were no significant differences between the mild and moderate gait impairment groups in crossing a busy street or going out in different ambient conditions. Significant differences were found between those with mild impairment and those with severe impairment in avoidance of various terrain elements, heavy manual doors, postural transitions, attentional situations, and crowded places. The only environmental dimension that significantly differed across all 3 groups was carrying 2 or more items, in which avoidance increased as ambulation worsened.

**CONCLUSIONS:** Avoidance behavior for particular environmental features can begin relatively early in the disease process. This underscores the need to further study mobility differences, community ambulation, and participation restrictions in adults with MS.


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Prolonged mobility is critical for functional capability and positive health, so for people with multiple sclerosis (MS), persistent and progressive mobility impairment presents significant challenges. More than 75% of people with MS report problems with mobility,[1] with those who report higher levels of fatigue concomitantly exhibiting greater functional mobility impairment.[2] Not only does mobility impairment associate with fear of falling[3] and precipitate fall risk,[3] it also plays a significant role in health-related quality of life (QOL).[4] In fact, walking is the highest priority for those with MS, regardless of disease level[5] because loss of mobility contributes to physical dependence, poorer disease self-management, and reduced ability to perform activities of daily living.[6]

Mobility limitations can also have a profound effect on community participation. Adults with MS report that walking difficulty affects their ability to participate in recreational and social pursuits as well as employment and volunteer activities.[7] It has also been shown that participation restrictions increase significantly as the disease progresses.[7]

Although community mobility is a prerequisite for community participation, little is known about how those with MS interact with and navigate their environments when walking. A behavioral assessment of what environmental aspects people avoid when moving through their community may offer insight. Research using the Environmental Analysis of Mobility Questionnaire,[8] a measure that captures one's tendency to face or avoid community mobility challenges, offers preliminary utility to examine the relationship between environmental characteristics and mobility.[9] To date, there has been no examination of mobility challenges for adults with MS from an environmental perspective. Moreover, research has shown that adults with MS with higher levels of self-efficacy (ie, the individual's beliefs about their capabilities to execute a given task or behavior)[10] have greater



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Note: Supplementary material for this article is available at IJMSC.org self-reported physical, cognitive, and social functioning, including better mobility.[11] Because community mobility self-efficacy underpins behavioral choices, it is useful to also examine its impact, especially for increasingly challenging mobility tasks.

Not only is it important to understand how mobility disability contributes to avoidance behavior, insight into how individuals at different functional levels experience community mobility challenges is also valuable information. By examining community mobility restrictions and mobility-related MS factors, targeted interventions to prevent or reduce participation restrictions can be developed across levels of ambulation disability.

## METHODS

### Participants

Individuals with MS were recruited through a general email sent via a regional MS chapter. Respondents self-reported having physician-diagnosed MS, no severe exacerbation of symptoms preventing mobility in the past 1 month, and age older than 18 years. The study was approved by the institutional review board of the University of Vermont, and survey completion implied consent.

### Measures

Demographic data included age, sex, years after diagnosis, and fall history.

Self-efficacy for community mobility[9] assessed participants' beliefs about their ability to perform 7 mobility-related activities. Participants rated their level of confidence on an 11-point scale ranging from 0 (not at all confident) to 10 (completely confident). An average score is derived, and higher scores indicate greater self-efficacy. In this study, the scale had good internal consistency ($\alpha = 0.95$).

The Environmental Analysis of Mobility Questionnaire[12] provides a measure of how often participants avoid mobility challenges during community outings. On a 5-point Likert-type scale (never to always), participants rate the frequency of their avoidance of specific mobility situations. The questionnaire includes items related to 8 environmental dimensions: distance, temporal, ambient, terrain, physical load, postural transition, attention, and density. The average median score for each dimension and average median summary score were used for analysis. The median score for each item within the distinct environmental dimensions was also used to examine differences across groups. Dimensions with more than 1 item had acceptable levels of internal consistency ($\alpha = 0.81$-$0.89$).

The Leeds Multiple Sclerosis Quality of Life[13] scale is an 8-item reliable and valid tool used to assess QOL. Items were rated on a 4-point scale (not at all to most of the time), and item scores are summed into an overall score that ranges between 0 and 24. Higher scores indicate worse QOL. The internal reliability of the scale was acceptable ($\alpha = 0.73$).

Mobility impairment was measured with the 12-item Multiple Sclerosis Walking Scale.[14] On a 5-point scale, participants rate how much their MS impacts their ability to walk under various circumstances, with higher scores indicating greater mobility impairment. The internal reliability of the scale was $\alpha = 0.97$.

The Falls Efficacy Scale–International[15] assesses participant concern about falling during 16 activities of daily living. The level of concern for each item is scored on a 4-point scale (not at all to very) and summed for a total score. Lower scores indicate less concern about falling. The scale was shown to have good reliability in this study ($\alpha = 0.96$).

The Patient-Determined Disease Steps (PDDS)[16] scale is a self-reported measure of functional disability in MS primarily based on ambulation. The scale has 9 ordinal levels ranging between 0 and 8 (normal to bedridden). The PDDS scale has been validated[17] and has been used to classify individuals as having mild, moderate, or severe gait impairment.[18]

The Modified Fatigue Impact Scale (MFIS)[19] captures information regarding the effects of fatigue in 3 domains: physical, psychosocial, and cognitive. Each of the 21 items is rated on a 5-point scale (never to always) and summed for an overall score, with higher scores indicating greater fatigue impact. In the present study, the scale had an internal reliability of $\alpha = 0.96$.

Information related to everyday difficulties with dual-tasking was obtained via a 10-item dual-task questionnaire (DTQ).[20] Using a 5-point scale, participants rated the frequency of difficulties with everyday dual-tasks. For this study, we also used the DTQ-Expanded, which included 5 additional items representative of common mobility-related dual-tasks derived from the literature (**TABLE S1**, available online at IJMSC.org). The DTQ-Expanded was found to be reliable for this sample ($\alpha = 0.85$).

### Analysis

Using the PDDS scale, participants were classified as having mild (score <3), moderate (score of 3-4), or severe (score of 5-6) gait impairment. Each variable was tested for normality using Shapiro-Wilks analyses. A Kruskal-Wallis analysis of independent samples and Dunne post hoc tests were conducted for all data that were not normally distributed. For these nonparametric tests, effect size was calculated using the independent-samples Hodges-Lehmann median difference test. For all other variables, 1-way analysis of variance and Tukey post hoc tests were run. Significance was set at $P < .05$.

## RESULTS

Seventy-nine individuals completed the survey. Eight participants who were nonambulatory (ie, PDDS scale scores >6) were dropped, and data were analyzed for the remaining 71 respondents.

### Descriptive Differences Across Functional Levels

**TABLE 1** provides descriptive details of the demographic and study variables of the 3 ambulation groups. Participants ranged in age from 20 to 77 years (mean ± SD = 48.14 ± 13.48

**TABLE 1.** Study Demographic and Descriptive Details

| Variable | Total (N = 71) | PDDS scale score <3 (n = 41) | PDDS scale score 3-4 (n = 14) | PDDS scale score 5-6 (n = 16) | | | |
|---|---|---|---|---|---|---|---|
| Sex, F/M, No. | 63/8 | 36/5 | 13/1 | 14/2 | | | |
| Falls, Y/N, No. | 20/51 | 8/33 | 5/9 | 7/9 | | | |
| **Variable** | **Total (N = 71)** | **PDDS scale score <3 (n = 41)** | **PDDS scale score 3-4 (n = 14)** | **PDDS scale score 5-6 (n = 16)** | ***F* or $H_2$[a]** | ***P*** | **Group differences[b]** |
| Age, mean ± SD, y | 48.14 ± 13.48 | 44.58 ± 12.94 | 51.5 ± 10.73 | 54.53 ± 14.7 | 3.82 | .027 | (1,3) |
| MFIS score, mean ± SD | 39.06 ± 17.41 | 29.93 ± 13.05 | 48.29 ± 13.82 | 54.38 ± 15.41 | 22.12 | <.001 | (1,2), (1,3) |
| LMSQoL scale score, mean ± SD | 9.72 ± 3.86 | 8.68 ± 3.42 | 10.29 ± 3.58 | 11.88 ± 4.35 | 4.54 | .014 | (1,3) |
| Years after dx, median | 11 | 9 | 11.5 | 16 | 4.40 | .111 | |
| FES-I score, median | 24 | 20 | 27 | 40 | 34.87 | <.001 | (1,2), (1,3) |
| MSWS-12 score, median | 25 | 7.14 | 34.52 | 72.61 | 46.27 | <.001 | (1,2), (1,3) |
| DTQ score, median | 3.2 | 3.2 | 3.1 | 2.9 | 4.09 | .129 | |
| DTQ-E score, median | 3.27 | 3.37 | 3.13 | 2.83 | 9.51 | .009 | (1,3) |
| SECM score, median | 6.93 | 8.71 | 5.29 | 3 | 40.72 | <.001 | (1,2), (1,3) |

DTQ, dual-task questionnaire; DTQ-E, dual-task questionnaire expanded; dx, diagnosis; FES-I, Falls Efficacy Scale–International; LMSQoL, Leeds Multiple Sclerosis Quality of Life; MFIS, Modified Fatigue Impact Scale; MSWS-12, 12-item Multiple Sclerosis Walking Scale; PDDS, Patient-Determined Disease Steps; SECM, self-efficacy for community mobility.

[a]Mean ± SD values are *F* and median values are $H_2$.

[b]$P < .05$.

years), with number of years after diagnosis ranging from 1 to 35 (median = 11). Of the 71 respondents (63 females, 8 males), 20 had experienced a fall in the previous 3 months. The 3 ambulation groups did not significantly differ on years after diagnosis ($H_2$ = 4.40; *P* = .111) or dual-tasking using the original version ($H_2$ = 4.09; *P* = .129) but did differ on age ($F_2$ = 3.82; *P* = .027). **TABLE S2** provides mean and median differences with confidence intervals for all pairwise comparisons.

Participants across the PDDS score groups had significantly different perceived disease-related walking impairment ($H_2$ = 46.27; *P* <.001), fatigue impact ($F_2$ = 22.12; *P* <.001), and falls efficacy ($H_2$ = 34.87; *P* <.001). For each of these 3 variables, the mild impairment group had significantly less reported walking impairment, fatigue, and concerns about falling than both the moderate and severe impairment groups. There were no significant differences in these variables between the moderate impairment group and the severe impairment group.

There was also a significant difference across the 3 groups for QOL ($F_2$ = 4.54; *P* = .014); however, only the mild impairment group significantly differed from the severe impairment group (*P* = .021) with reportedly better QOL.

Although the DTQ showed no significant differences across groups ($H_2$ = 4.09; *P* = .129), the DTQ-Expanded revealed significant differences ($H_2$ = 9.51; *P* = .009): The mild impairment group experienced significantly less frequent dual-task challenges than the severe impairment group, but this comparison did not hold between the moderate and mild impairment groups.

Self-efficacy for community mobility significantly differed across groups ($H_2$ = 40.72; *P* <.001), with the mild impairment group having significantly more confidence than the moderate and severe groups.

### *Community Mobility Avoidance Across Functional Levels*

Avoidance behavior significantly differed across the 3 PDDS scale levels in overall avoidance of environmental dimensions ($H_2$ = 36.79; *P* <.001) for each of the environmental dimensions (**TABLE S3, TABLE S4**) and for specific features within each dimension (**TABLE 2, TABLE S5**).

### *Distance Dimension*

There were significant differences in avoidance of walking long distances across the 3 groups ($H_2$ = 24.56; *P* <.001). Post hoc tests revealed that the severe impairment group avoided walking long distances more frequently than the mild impairment group but not the moderate impairment group. No significant differences were seen in avoidance of walking long distances between the mild and moderate impairment groups.

### *Temporal Dimension*

The temporal dimension involved 2 activities, crossing a street with a traffic light and crossing a busy street. There was a significant difference across the 3 groups in this dimension ($H_2$ = 28.72; *P* <.001). When examining the 2 temporal items separately, the severe impairment group avoided crossing a street with a traffic light significantly more than those with mild impairment but not significantly more than those with moderate impairment. This was not the case for crossing a busy street, whereby the moderate impairment

**TABLE 2.** Differences in Environmental Features Across Ambulation Groups

| | PDDS scale score | | | $H_2$ | *P* | Group differences[a] |
|---|---|---|---|---|---|---|
| | <3 | 3-4 | 5-6 | | | |
| **Distance** | | | | | | |
| Long distances | 2.0 | 3.0 | 5.0 | 24.56 | .000 | (1,3) |
| **Temporal** | | | | | | |
| Crossing street with traffic light | 1.0 | 2.0 | 3.0 | 22.16 | .000 | (1,3) |
| Crossing busy street | 1.0 | 2.5 | 4.0 | 27.49 | .000 | (1,2), (1,3) |
| **Ambient** | | | | | | |
| Dark | 1.5 | 3.5 | 4.0 | 22.72 | .000 | (1,2), (1,3) |
| Snowing | 2.0 | 4.0 | 4.0 | 16.14 | .000 | (1,3) |
| Hot | 3.0 | 4.0 | 4.0 | 13.82 | .000 | (1,2), (1,3) |
| Cold | 2.0 | 4.0 | 4.0 | 26.44 | .000 | (1,2), (1,3) |
| Icy | 3.0 | 5.0 | 5.0 | 16.55 | .000 | (1,2), (1.3) |
| Wet | 2.0 | 3.0 | 3.0 | 16.92 | .000 | (1,2), (1,3) |
| **Terrain** | | | | | | |
| Single flight of stairs | 1.0 | 2.0 | 4.0 | 27.14 | .000 | (1,3), (2,3) |
| Two flights of stairs | 1.0 | 2.0 | 4.0 | 23.81 | .000 | (1,3) |
| Escalator | 1.0 | 1.0 | 3.0 | 20.96 | .000 | (1,3), (2,3) |
| Curbs | 1.0 | 1.0 | 3.0 | 20.95 | .000 | (1,3), (2,3) |
| Uneven surfaces | 1.0 | 2.0 | 4.0 | 28.19 | .000 | (1,3), (2,3) |
| **Physical load** | | | | | | |
| Carrying 2 items | 2.0 | 3.0 | 5.0 | 33.75 | .000 | (1,2), (1,3), (2,3) |
| Manual doors | 1.0 | 1.0 | 4.0 | 28.90 | .000 | (1,3), (2,3) |
| **Postural transitions** | | | | | | |
| Reaching above shoulder | 1.0 | 1.5 | 3.0 | 20.65 | .000 | (1,3), (2,3) |
| Reaching below knee | 1.0 | 1.5 | 3.0 | 16.27 | .000 | (1,3), (2,3) |
| **Attention** | | | | | | |
| Traveling alone | 1.0 | 1.5 | 4.0 | 24.95 | .000 | (1,3), (2,3) |
| Noisy places | 1.0 | 2.5 | 4.0 | 22.92 | .000 | (1,3), (2,3) |
| Unfamiliar places | 1.0 | 2.5 | 4.0 | 19.03 | .000 | (1,3), (2,3) |
| **Density** | | | | | | |
| Crowded places | 1.0 | 2.0 | 4.0 | 25.12 | .000 | (1,3), (2,3) |

Note: Differences are given as medians.
PDDS, Patient-Determined Disease Steps.
[a]$P < .05$.

group avoided this situation significantly more than the mild impairment group, and the severe impairment group avoided this situation significantly more than the mild impairment group.

### *Ambient Dimension*

Significant differences were found across the 3 groups for avoiding going out in varying ambient conditions ($H_2$ = 28.06; $P$ <.001). For most conditions (ie, dark, hot, cold, icy, wet), those in both the moderate and severe impairment groups avoided going out significantly more than those in the mild impairment group, and there was no difference between the moderate and severe impairment groups. The only exception to this pattern was found in avoidance of snow. Only the severe impairment group significantly differed from the mild impairment group, with no differences in avoiding snow between the moderate and severe impairment groups.

### *Terrain Dimension*

Significant differences were found across the 3 groups in avoiding variable terrain ($H_2$ = 35.92; $P$ <.001). Those in the severe impairment group avoided climbing a flight of stairs, using an escalator, stepping onto or off of a curb, and moving over uneven surfaces significantly more often than both the mild and moderate impairment groups. The severe impairment group avoided climbing 2 flights of stairs significantly more often than the mild impairment group; however, no difference in this avoidance behavior was seen between the moderate and severe groups.

### *Physical Load Dimension*

All groups significantly differed in the physical load dimension ($H_2$ = 32.98; $P$ <.001). All 3 impairment groups significantly differed in their avoidance of carrying 2 or more items, with increasingly more avoidance of this task as the disease progressed and functional ambulation declined. For opening heavy manual doors, there were significant differences in avoidance behavior between the severe impairment group and both the mild and moderate impairment groups but not between the mild and moderate impairment groups.

### *Postural Transitions Dimension*

There was a significant difference across groups for postural transitions ($H_2$ = 19.31; $P$ < .001). Individuals in the severe impairment group avoided reaching above shoulder height and below knee height significantly more than those in the mild and moderate impairment groups. There was no significant difference in avoiding these postural transitions between the mild and moderate ambulation groups.

### *Attention Dimension*

The 3 groups also significantly differed in the attention dimension ($H_2$ = 25.79; $P$ < .001). Similar to previous avoidance patterns, the severe group avoided traveling alone, in noisy or busy places, and in unfamiliar places significantly more than the mild and moderate impairment groups, but no significant difference was found between the mild and moderate impairment groups.

### *Density Dimension*

There was a significant difference in the density dimension across the groups ($H_2$ = 25.12; $P$ < .001). There was significantly more avoidance of crowded places where people might bump into one another by the severe impairment group but no difference between the mild and moderate impairment groups.

## DISCUSSION

Individuals with MS highly value their ability to walk as declining mobility impacts their daily functioning and community participation.[7] In this study, community mobility changed as the disease progressed, with significant differences in avoidance behavior occurring among the 3 ambulation groups; however, avoidance of some environmental features began before others. In general, individuals in the earlier stages of ambulation disability avoided crossing a busy street and going out in different ambient conditions. Conversely, avoiding various terrain elements, heavy manual doors, postural transitions, attentional situations, and crowded places occurred in the later stages of mobility disability. The only environmental dimension that significantly differed across all 3 groups was carrying 2 or more items: avoidance increased as ambulation worsened.

Research has shown mobility to be most predictive of health status, with a significant reduction in health-related QOL as mobility deteriorates.[21] In the present study, those in the mild impairment group reported significantly better QOL than those in the severe impairment group, although there was no difference in QOL for any other group comparisons. The fact that the moderate impairment group included those who used assistive devices for ambulation and those who did not may have differentially impacted perceived disability[22] and, by extension, QOL. Numerous other cognitive and psychological factors (eg, coping skills and depression) also influence QOL.[23]

Previous research has demonstrated the utility of dual-task walking to accurately depict community ambulation in people with MS.[24] In the present study, the DTQ did not significantly differ across any of the PDDS scale scoring categories. This may have been because the groupings were based on mobility and the DTQ includes many items that are not mobility related. On the other hand, the DTQ-Expanded, which contains more ambulatory-related dual-tasks, showed significant differences between the mild and severe impairment groups. The difference between the 2 groups supports research demonstrating the link between dual-tasking and mobility impairment.[25] It has also been shown that cognitive deficits more highly associate with participation restrictions than gait and balance.[7]

The present study also revealed significant differences in perceived fatigue impact, falls efficacy, and self-efficacy for community mobility between individuals in the mild impairment group and those in the moderate and severe impairment groups. It makes sense that individuals in the mild impairment group would be less fatigued, be less fearful of falling, and have greater confidence in community mobility than those with progressing mobility impairments.[3,26]

Given that the PDDS scale is primarily a self-assessment of mobility, it was not surprising to find significant differences in avoidance of all environmental dimensions across the ambulation groupings. This follows previous research that also linked functional walking differences with disability level[27]; the present study extends this understanding by revealing how mobility differs based on environmental features. We found significant differences between the mild and moderate impairment groups, including those who do not yet use assistive devices, on several features. The present evidence suggests that participation restrictions may occur for specific tasks at a lower level of disability than was previously suggested.[22,27]

One notable avoidance behavior that began earlier was crossing a busy street. The dynamic and unpredictable nature of this context may not afford the stable visual referent necessary for postural control, especially important for individuals with MS who are visually dependent.[28] In addition, the necessity of quick changes in direction, also compromised in this population,[29] and the perception of

## PRACTICE POINTS

Community mobility is associated with independence, social and recreational pursuits, and quality of life. However, adults with multiple sclerosis avoid specific environmental contexts and tasks depending on their ambulation ability.

Avoidance of some environmental features, such as crossing a busy street or going out in different ambient conditions, was shown to begin early in the disease process and before the use of assistive devices.

The only environmental dimension that significantly differed across functional ambulation groups was that of carrying 2 or more items, with avoidance increasing as ambulation worsens. ■

greater potential for injury than when in other mobility situations may further contribute to earlier avoidance of this activity. As a further illustration, the moderate and mild impairment groups did not significantly differ in their avoidance of moving in crowded places, a situation where it is likely that they have greater decisional control over how fast they must move and whether they need to momentarily stop to resteady themselves.

Individuals in the moderate impairment group significantly differed from those in the mild impairment group in avoidance of going out in different ambient conditions. In the moderate impairment group, going out when icy was most frequently avoided as the conditions vary and the mobility requirements are less predictable. As with crossing a busy street, going out when dark was also notably avoided and similarly requires somatosensory inputs other than vision to maintain postural stability. Mobility in these differing ambient conditions may well require effective reactive postural responses and greater balance confidence, both known to be impaired in adults with MS.[30]

In this study, fear of falling did not significantly differ between the mild and moderate impairment groups, but this could be due to instrument incongruency. The Falls Efficacy Scale–International produces an average score across 16 different tasks or contexts, many of which do not involve community mobility (ie, getting dressed or undressed) or specific contextualized tasks (ie, walking around in the neighborhood) and, as such, may not strongly align with the avoidance behavior specificity reported by participants. It is also interesting to note that there was no difference between the groups in their avoidance of going out in the snow. As offered previously, the moderate impairment group includes those who do and do not use an assistive device, which may differentially impact walking in the snow.

The only avoidance behavior that significantly differed across all groups was carrying 2 items. Although upper extremity function, strength, and postural control play a part in carrying items, it is difficult to determine why and under what circumstances this behavior differed. Participants may have interpreted this task differently in terms of type and weight and exactly how the items were being carried. Carrying items to one's side may differentially affect postural adjustments and stability limits, and carrying items in front of the chest may obscure vision, thereby affecting sensory weighting and integration. The reported avoidance differences across the 3 groups have practical implications for where and how objects are carried and supports the need for continued exploration on the intersect between the weight, size, and position of carried objects and functional mobility.

For all other environmental dimensions—walking long distances, crossing a street with a traffic light, moving over different terrain, opening heavy manual doors, reaching above the shoulder or below the knee, and moving in contexts that require attention—there was no significant difference between the mild and moderate impairment groups. These findings suggest that individuals with early mobility impairment, especially those who do not use assistive devices, may still possess the requisite attentional resources of strength, postural control, and dual-tasking ability to perform these tasks.

Although the present study offers deeper insight into community mobility behavior by people with MS, it has some methodological limitations. The study sample was relatively small, comprised those living in New England, and included more participants with lower PDDS scale ratings. As such, the sample is not representative of all others with MS, especially those with greater mobility challenges or those who live in other geographic areas. The limited number of participants with moderate and severe gait impairment may also have influenced the statistical power necessary to detect effects between these 2 groups. Moreover, the present study did not differentiate between those who used assistive devices and those who did not, which may have confounded results when comparing groups. Finally, study findings were based on self-reported behavior that may or may not have accurately depicted actual avoidance of specific environmental tasks and there may have been other factors that could have affected community mobility (eg, cognition, depression).

Nonetheless, examination of self-reported community mobility along with self-efficacy and QOL go beyond isolated and decontextualized descriptions of gait impairment, offering deeper insight into the lived experience of ambulation and participation of adults with MS and underscoring the need for further study of mobility differences, community ambulation, and participation restrictions in this population. Because avoidance behavior for particular environmental features can begin relatively early in the disease process, behavioral inventories, such as the one used in this study, may facilitate clinical discussions regarding mobility strategies important to prolonging community participation and supporting QOL in individuals with MS. ■

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