The Effect of a Task-Oriented Walking Intervention on Improving Balance Self-Efficacy Poststroke: A Randomized, Controlled Trial

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OBJECTIVES: To evaluate the efficacy of a task-oriented walking intervention in improving balance self-efficacy in persons with stroke and to determine whether effects were task-specific, influenced by baseline level of self-efficacy and associated with changes in walking and balance capacity.

DESIGN: Secondary analysis of a two-center, observer-blinded, randomized, controlled trial.

SETTING: General community.

PARTICIPANTS: Ninety-one individuals with a residual walking deficit within 1 year of a first or recurrent stroke.

INTERVENTION: Task-oriented interventions targeting walking or upper extremity (UE) function were provided three times a week for 6 weeks.

MEASUREMENTS: Activities-specific Balance Confidence Scale, Six-Minute Walk Test, 5-m walk, Berg Balance Scale, and Timed "Up and Go" administered at baseline and post-intervention.

RESULTS: The walking intervention was associated with a significantly greater average proportional change in balance self-efficacy than the UE intervention. Treatment effects were largest in persons with low self-efficacy at baseline and for activities relating to tasks practiced. In the walking group, change in balance self-efficacy correlated with change in functional walking capacity (correlation coefficient = 0.45, 95% confidence interval = 0.16–0.68). Results of multivariable modeling suggested effect modification by the baseline level of depressive symptoms and a prognostic influence of age, sex, comorbidity, time poststroke, and functional mobility on change in self-efficacy.

CONCLUSION: Task-oriented walking retraining enhances balance self-efficacy in community-dwelling individuals with chronic stroke. Benefits may be partially the result of improvement in walking capacity. The influence of baseline level of self-efficacy, depressive symptoms, and prognostic variables on treatment effects are of clinical importance and must be verified in future studies. **J Am Geriatr Soc 53:576–582, 2005.**

Key words: self-efficacy; cerebrovascular accident; randomized, controlled trial; balance; walking

The effect of acute stroke on motor ability has been well documented.[1–4] The most commonly occurring deficit is to the lower limb, resulting in an immediate impairment to balance and walking ability.[4–7] As a result, these sequelae often become the primary focus of physical therapy interventions, whereas perceptions of ability are largely ignored. Nevertheless, it is well known that sudden health events have psychological consequences that may independently restrict functioning.[8–14] One such consequence is impaired self-efficacy. Self-efficacy is defined as a judgment of one's ability to organize and execute given types of performances.[15] Evaluation of the role of self-efficacy in motor recovery poststroke has been limited to falls self-efficacy, defined as the degree of confidence a person has in performing activities essential to daily living without falling.[16] Individuals report low levels of falls self-efficacy after an acute stroke,[17–20] and as expected, persons with severe impairment in voluntary movement, balance, or mobility report lower levels of self-efficacy than those with mild deficits.[17,19] Falls self-efficacy may also improve with individualized gait training in persons more than 1 year poststroke.[21] What is not widely known is that falls self-efficacy at discharge from rehabilitation appears to be a stronger predictor than balance capacity of mobility and functioning in activities of daily living 10 months after stroke,[17] reflecting previous findings in seniors[10,11] and in persons with cardiac disease.[12–14] The independent

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Nancy M. Salbach received a fellowship from the Canadian Institutes of Health Research to conduct this study. Operating funds were provided by the Quebec Réseau provincial de recherche en adaptation-réadaptation, the Heart and Stroke Foundation of Canada, and the Canadian Stroke Network.

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0002-8614/05/$15.00

influence of self-efficacy on community functioning underlines the value of enhancing self-efficacy as an intermediate outcome of stroke rehabilitation.

A postulated mechanism for enhancing self-efficacy is through mastery experience, which refers to the experience of success when performing a specific task.[22,23] The results of many randomized, controlled trials have shown that participation in exercise-based interventions may enhance self-efficacy in maintaining balance[24–26] or performing functional activities,[27–31] but the generalizability of these results to individuals with stroke is unknown. Preliminary research indicates that individuals who progress in their motor function, balance, and walking capacity after stroke also experience improvement in the perception of their ability to perform activities of daily living without falling.[18] Accordingly, interventions that are efficacious in enhancing these motor abilities may also benefit self-efficacy.

Data on balance self-efficacy, operationalized as the level of confidence a person has in performing activities without losing balance or becoming unsteady, were available from a randomized, controlled trial that was designed to evaluate the efficacy of a task-oriented intervention in enhancing walking ability in community-dwelling persons with stroke.[32] These data were used in the current study to contribute evidence of the efficacy of the walking intervention in improving balance self-efficacy. It was hypothesized that gains in balance self-efficacy after the 6-week intervention would be significantly greater in persons assigned to receive walking exercises than in persons assigned to receive upper extremity (UE) exercises. Secondary objectives were to determine whether effects were task-specific, influenced by the baseline level of self-efficacy, and associated with changes in walking and balance capacity. Because the trial was not designed a priori to address these objectives, the analyses were considered exploratory and were subject to limitations, such as reduced power, inherent in post hoc analyses.

METHODS

Overview

In this two-center, stratified, block-randomized, controlled trial,[32] 91 individuals were randomly allocated to receive a 6-week intervention that targeted walking or UE function. Trained research personnel, who were unaware of the group assignment, conducted evaluations in a hospital setting at baseline and on completion of the intervention. The walking intervention was associated with gains in walking distance and speed that were significantly greater than those observed after the UE intervention.

Subjects

Inclusion criteria were clinical diagnosis of a first or recurrent stroke; residual walking deficit; mental competency evaluated using the Telephone Version of the Mini-Mental State Examination (MMSE);[33] ability to walk 10 m independently, using an aid or orthotic, with or without supervision; ability to comprehend the instructions for the testing procedures; residence in the community; discharge from physical rehabilitation; and interval of 1 year or less between the most recent stroke and recruitment. Reasons for exclusion were neurological deficit caused by metastatic disease; recovery of walking ability, defined as the achievement of age- and sex-specific norms[34] on the Six-Minute Walk Test[35] (SMWT); residence in a permanent-care facility; or comorbidity precluding participation in either intervention.

Measurement

Balance self-efficacy was measured using the 16-item Activities-specific Balance Confidence (ABC) scale.[36] Each item describes an activity that requires position change or walking. Subjects are asked to rate their level of confidence in performing each activity without losing their balance or becoming unsteady on an 11-point scale that ranges from 0% (no confidence) to 100% (complete confidence). The average of the item scores yields a total score ranging from 0 to 100, with higher scores reflecting a greater degree of balance self-efficacy.

Additional measures of functional walking capacity, walking speed, functional mobility, and balance included the SMWT,[35] the 5-m walk[37,38] performed at a comfortable and maximum pace, the Timed "Up and Go,"[39] and the Berg Balance Scale.[40] The Geriatric Depression Scale[41] was used to classify individuals as having no (0–9 points), mild (10–19 points), or severe (20–30 points) depressive symptoms. Sociodemographic and clinical information were obtained from the medical chart or by interview.

Randomization

Procedures for stratification, using comfortable walking speed, and block randomization are described elsewhere.[32] Persons not involved in the study prepared randomization envelopes, which were provided to the evaluator when a new subject was scheduled for assessment.

Interventions

Study interventions have been previously described in detail.[32] Briefly, subjects in each group were asked to participate in 18 training sessions given three times a week for 6 weeks in a hospital setting. The walking intervention was a progressive program of 10 tasks: walking on a treadmill; standing up, walking to, and sitting down on a chair; kicking a soccer ball against the wall; walking along a balance beam; performing step-ups; walking an obstacle course; walking while carrying an object; walking at maximal speed; walking backwards; and walking up and down stairs. The control intervention involved the practice of functional UE tasks while sitting.

Statistical Methods

Data were analyzed based on intention to treat. Treatment effects on the change in balance self-efficacy from baseline to postintervention were estimated. Unless stated otherwise, change in balance self-efficacy for all analyses was measured using the percentage of proportional change, computed as:

$$\frac{(ABC_{final} - ABC_{initial}) \times 100}{(ABC_{initial} - ABC_{final})/2.}$$ [42]

This estimator of proportional change was selected because it reduces the effect of regression to the mean by accounting for the influence of the initial score on measured change.[42]

The effect of the walking intervention was expressed as the group difference in the mean change in balance self-efficacy with associated 95% confidence intervals (CIs). An overall effect size (group difference in mean change divided by the pooled standard deviation[43]) was computed. Treatment effects were also estimated for strata defined by the baseline level of self-efficacy using previously reported[44] cutoff values of less than 50, 50 to 80, and more than 80 points, as well as for each ABC scale item.

Multiple linear regression was then used to enhance the accuracy or precision of estimation of the treatment effect through adjustment for prognostic variables[45] in a model containing group assignment and change in balance self-efficacy. Potential prognostic variables included correlates of self-efficacy, such as age,[44,46,47] sex,[44,47,48] comorbidity,[44] educational level,[44] income,[48] depressive symptoms,[11,49–51] balance,[17,19] and walking capacity,[17,44] reported for persons with stroke or for other populations, as well as type of stroke, side of hemiplegia, occurrence of multiple strokes, number of days poststroke, cohabitation, and cognition. Variables that related to change in balance self-efficacy ($P < .10$) in a simple linear regression model were considered prognostic and were adjusted for in the final model, given the likelihood of group imbalance in covariates after randomization procedures in small samples.[45] If adjustment for a variable narrowed the width of the 95% CI for the estimated treatment effect, thus improving the precision of estimation, the variable was also kept in the final model.[45] Dummy variables were created for ordinal and categorical variables. Interactions between group assignment and age, sex, comorbidity, and depressive symptoms were evaluated, and if significant ($P < .05$), the interaction term was kept in the final model.

Pearson correlation coefficients with associated 95% CIs[52] were computed to estimate associations between change in balance self-efficacy and change in walking and balance capacity. The statistical software used for the analysis was SAS version 8.02 (SAS Institute, Inc., Cary, NC).

The institutional review board of McGill University and the research ethics committees in each of the hospital centers approved the study protocol. Subjects provided voluntary, informed, written consent.

RESULTS

Participant Flow and Treatment of Missing Data

In the recruitment period from May 2000 to February 2003, 91 of 344 eligible individuals consented to participate and were randomized to receive the walking intervention (n = 44) or the UE intervention (n = 47). Four subjects (two in each group) experienced difficulty completing the ABC scale because of cognitive or language deficits, and this resulted in missing scores. Four subjects discontinued the intervention because of ill health (3 in the UE group and 1 in the walking group). Thus, analyses were based on 83 subjects with complete self-efficacy data. Table 1 presents characteristics of the final study sample at baseline. Subjects were aged 38 to 90 (mean ± standard deviation = 71 ± 11) and were between 57 and 386 days poststroke (227 ± 80) at study entry. The mean cognitive score out of 22 on the Telephone Version of the MMSE was 19 ± 3 in the walking group, and 20 ± 3 in the UE group. The two treatment arms appeared comparable in terms of sociodemographic and stroke characteristics and comfortable walking speed. The average total score on the ABC scale was 56.6 ± 21.6 points (range 18.8–97.5) for the walking group and 62.6 ± 19.7 points (range 20.6–98.8) for the UE group. There was a higher frequency of severe depressive symptoms in the walking group than the UE group.

Subject Compliance

In the walking group, 38 subjects (86%) attended 17 or 18 of the 18 treatment sessions, and an average of nine of 10 tasks were completed each session. In the UE group, 34 subjects (72%) attended 17 or 18 sessions.

Outcome

Table 2 presents the change in balance self-efficacy from baseline to postintervention by treatment group and treatment effects with associated 95% CIs. The walking intervention was associated with a positive and significant average effect of 7.6 points (95% CI = 0.6–14.6) or 13.9% of proportional change (95% CI = 0.1–27.8) on the ABC scale and an overall effect size of 0.4.

Table 2 also presents the change in self-efficacy for subgroups defined by baseline level of self-efficacy. Greater improvement was observed in the walking group than the UE group in each stratum, but none of the treatment effects was significant. In both groups, persons with low (<50 points) initial balance self-efficacy made the greatest gains in self-efficacy.

Positive treatment effects were observed for 13 of 16 items on the ABC scale. The largest effects between 25.0% and 51.0% of proportional change were observed for seven items, listed here in order of diminishing effect: walk on icy sidewalks, walk in crowded mall, walk up or down stairs, step onto/off escalator holding rail, walk in crowd/bumped, walk up or down ramp, and stand on chair and reach. The three remaining items describing walking tasks ranked 10th to 12th in order of decreasing treatment effect, and the smallest positive effect (12.2%) was observed for sweep the floor. Negative treatment effects in favor of the UE intervention were observed for get in/out of the car (−1.9%), reach at eye level (−4.6%), and reach overhead on tiptoes (−22.2%).

In the multivariable analysis, the level of baseline depressive symptoms appeared to modify the effect of the walking intervention on change in balance self-efficacy. Table 3 presents the change in balance self-efficacy and in functional walking capacity (SMWT distance) by group and baseline level of depressive symptoms. In persons with normal mood (n = 35) or mild depressive symptoms (n = 35), the walking intervention did not have a strong effect on change in balance self-efficacy and was associated with respective average effects of 1.9% (95% CI = −24.1 to 28.0) and 0.4% (95% CI = −18.5 to 19.2) of proportional change on the ABC scale after adjusting for age, sex, comorbidity, number of days poststroke, and baseline functional mobility (Timed "Up and Go" score). In contrast, the walking intervention led to a substantial average effect in persons with severe depressive symptoms at baseline (n = 12) of 82.6% (95% CI = 42.8–122.3) of proportional change on the ABC scale after adjusting for the same

Table 1. Characteristics of Study Subjects

Characteristic	Walking Training (n = 41)	Upper Extremity Training (n = 42)
Age, n (%)		
<65	12 (29)	6 (14)
65–74	14 (34)	19 (45)
≥75	15 (37)	17 (40)
Male, n (%)	25 (61)	27 (64)
Living with, n (%)		
Spouse	24 (59)	26 (62)
Other	9 (22)	7 (17)
Alone	8 (20)	9 (21)
Education level completed, n (%)		
None/primary	14 (34)	11 (26)
Secondary	15 (37)	15 (36)
College/university	12 (29)	16 (38)
Income, n (%)*		
Insufficient	9 (24)	6 (15)
Adequate	10 (26)	12 (31)
Ample	19 (50)	21 (54)
Comorbid conditions at baseline, n (%)		
0–1	9 (22)	13 (31)
2–3	18 (44)	15 (36)
4–9	14 (34)	14 (33)
Type of stroke, n (%)		
Ischemic	37 (90)	36 (86)
Hemorrhagic	4 (10)	6 (14)
Number of strokes, n (%)		
1	37 (90)	37 (88)
>1	4 (10)	5 (12)
Side of hemiplegia, n (%)		
Left	16 (39)	21 (50)
Right	25 (61)	20 (48)
Bilateral	0	1 (2)
Days poststroke at baseline, mean ± SD (range)	238 ± 86 (86–374)	217 ± 74 (57–386)
Balance self-efficacy (/100), mean ± SD (range)	56.6 ± 21.6 (18.8–97.5)	62.6 ± 19.7 (20.6–98.8)
Comfortable walking speed, m/s, mean ± SD (range)	0.66 ± 0.33 (0.10–1.41)	0.62 ± 0.36 (0.08–1.90)
Functional mobility, seconds, mean ± SD (range)	22.7 ± 16.5 (7.9–82.8)	24.1 ± 19.4 (7.0–100.0)
Depressive symptoms, n (%)†		
None	13 (33)	22 (52)
Mild	18 (45)	17 (40)
Severe	9 (23)	3 (7)

* Subjects indicated whether, at the end of each month, they had not enough money to make ends meet (insufficient), just enough to make ends meet (adequate), or some money left over (ample). Data were missing for six subjects who refused to answer the question.
† Score was missing for one subject who was too upset to complete the questionnaire.
SD = standard deviation.

covariates. Of these covariates, younger age (<65), a longer interval poststroke, better functional mobility, low comorbidity (0–1 comorbid conditions), severe depressive symptoms, and female sex were prognostic of improvement in balance self-efficacy (variables listed in order of decreasing prognostic strength). Demographic and stroke-related variables such as educational level, income, cohabitation, type of stroke, side of hemiplegia, the occurrence of multiple strokes, and cognition were unrelated to change in balance self-efficacy in the current study.

Table 4 presents the level of correlation (and associated 95% CIs) between change in balance self-efficacy and change in measures of walking and balance capacity. In the walking group, a fair[53] correlation was observed between change in balance self-efficacy and change in functional walking capacity (correlation coefficient = 0.45, 95% CI = 0.16–0.68), and the association was significantly stronger in the walking group than in the UE group ($P < .05$). Fair level correlations were also observed between change in balance self-efficacy and change in maximum walking speed and in functional mobility, but the 95% CIs for these associations included 0. No correlation with change in balance capacity was observed.

DISCUSSION

This study is among the first conducted in persons with stroke to evaluate the effect of a rehabilitation intervention on self-efficacy. The primary finding is that a 6-week, outpatient, task-oriented walking intervention enhanced

Table 2. Change in Balance Self-Efficacy from Baseline to Postintervention by Treatment Group

	Change from Baseline to Postintervention, Mean (± SD)						Treatment Effect A – B (95% Confidence Interval)	
	Walking training – A			Upper extremity training – B				
Balance Self-Efficacy	n	Difference (Final-Initial)	% Proportional Change*	n	Difference (Final-Initial)	% Proportional Change	Difference (Final-Initial)	% Proportional Change
ABC (/100)	41	8.2 ± 18.6	13.0 ± 37.5	42	0.6 ± 13.7	− 0.9 ± 26.0	7.6 (0.6–14.6)	13.9 (0.1–27.8)
Baseline < 50	10	16.9 ± 24.5	30.5 ± 52.9	15	8.4 ± 15.5	9.4 ± 38.3	8.5 (− 9.6–26.6)	21.1 (− 17.1–59.2)
Baseline 50 to < 80	22	4.0 ± 14.4	3.6 ± 24.0	18	− 0.5 ± 13.8	− 3.4 ± 23.8	4.5 (− 4.6–13.6)	7.0 (− 7.9–21.8)
Baseline ≥ 80	10	1.4 ± 4.0	1.4 ± 4.9	8	− 4.8 ± 8.5	− 6.0 ± 10.6	6.2 (− 0.7–13.2)	7.3 (− 0.7–15.3)

* % Proportional change is computed as $\frac{(ABC_{final}-ABC_{initial})\times 100}{(ABC_{initial}-ABC_{final})/2}$

ABC = Activities-specific Balance Confidence Scale; SD = standard deviation.

balance self-efficacy better than an intervention of UE exercises. The overall benefit, observed in a group of ambulatory, community-dwelling individuals between 2 and 12 months after stroke, was similar to gains reported after rehabilitation interventions in other clinical populations.[24,44,46] Improvement in balance self-efficacy was associated with improvement in functional walking capacity but not in balance capacity. This is because treatment effects were task-specific; the walking intervention had little effect on the capacity to balance when performing the activities in the Berg Balance Scale that do not require walking. In comparison, items describing walking and stepping tasks dominate the ABC scale, and the largest effects of walking training in the current study were restricted to these items. Given the association between gains in walking capacity and in self-efficacy, it would appear that mastery experiences were partially responsible for these effects. Success with a task at one level of difficulty may have strengthened self-efficacy beliefs and enabled individuals to attempt higher levels of task difficulty, perhaps even in the home and community environment. Thus, the progressive nature of the walking training was likely a key component.

Gains in self-efficacy were not uniform. Large improvement after walking training seemed to be limited to persons with low initial balance self-efficacy, consistent with previous findings in older people.[44] For individuals with baseline self-efficacy ratings in the middle or high end of the range, walking training appeared to have little effect. Additional strategies combined with task-specific training may enhance balance self-efficacy in these subgroups to a greater extent than task-specific training alone. Strategies might include training in a group setting to permit the observation of peers achieving success, regular verbal encouragement regarding capabilities, and discussions aimed at identifying and explaining troubling physiological signs or symptoms.[22,23,54,55] Members of the control group with low initial self-efficacy also made gains in self-efficacy. This may have been partly due to the beneficial effect of UE training on ABC scale items that describe reaching tasks. Additionally, walking practice during travel to the study site and testing procedures[56] may have enhanced self-efficacy. The decrease in self-efficacy observed in the control group in persons with high baseline ABC scores is also of concern, although findings of these subgroup analyses must be interpreted with caution and confirmed in future studies.

Study results highlighted prognostic indicators of improvement in balance self-efficacy that included age, duration of time poststroke, functional mobility, comorbidity, depressive symptoms, and sex. Moreover, the baseline level of depressive symptoms appeared to modify the effect of the walking intervention on self-efficacy. The sizable treatment effect that was observed in persons with severe initial depressive symptoms was the combined result of improvement in the walking group and deterioration in the UE

Table 3. Change in Trial Outcomes from Baseline to Postintervention by Level of Baseline Depressive Symptoms and Treatment Group

	Percentage of Proportional Change, Mean ± Standard Deviation					
	Normal Mood		Mild Depressive Symptoms		Severe Depressive Symptoms	
Outcome Measure	Walking (n = 13)	UE (n = 22)	Walking (n = 18)	UE (n = 17)	Walking (n = 9)	UE (n = 3)
Activities-specific Balance Confidence Scale	7.9 ± 17.3	− 0.7 ± 18.6	0.6 ± 36.4	6.3 ± 26.4	45.1 ± 47.3†	− 43.8 ± 37.4†
Six-Minute Walk*	10.6 ± 13.3	− 3.7 ± 23.1	18.1 ± 23.9†	− 12.6 ± 47.4†	15.6 ± 34.2	5.6 ± 10.3

Note: One depression score was missing for a subject who was too upset to complete the questionnaire.

* Six-Minute Walk scores were missing for three subjects who failed the medical screen at baseline.

† Significant treatment effect, $P < .05$.

UE = upper extremity.

Table 4. Correlation Between Change on Measures of Walking or Balance Capacity and Change in Balance Self-Efficacy by Treatment Group

	Correlation with Change on Activities-specific Balance Confidence Scale			
Measure	n*	Walking Group *r* (95% CI)	n*	Upper Extremity Group *r* (95% CI)
Six-Minute Walk Test	38	0.45† (0.16–0.68)	40	0.20† (− 0.12–0.48)
Maximum Walking Speed	40	0.30 (− 0.01–0.56)	41	0.02 (− 0.29–0.33)
Timed "Up and Go"	40	− 0.26 (− 0.53–0.05)	41	− 0.03 (0.34–0.28)
Comfortable Walking Speed	40	0.17 (− 0.15–0.46)	41	0.16 (− 0.16–0.44)
Berg Balance Scale	40	− 0.05 (− 0.36–0.26)	41	− 0.06 (− 0.36–0.25)

Note: Change measured using percentage proportional change.
* Three subjects were missing baseline Six-Minute Walk scores because they failed the medical screen for this test; two subjects who withdrew were missing data for measures of walking or balance capacity.
† Correlations were significantly different between groups, $P < .05$.
r = correlation coefficient for bivariate analysis; CI = confidence interval.

group. It would appear that persons with severe depressive symptoms may be particularly responsive to therapeutic intervention and particularly vulnerable when none is offered. Confirmation of this finding in future studies powered to test this hypothesis is warranted. As the time interval poststroke lengthened, greater improvement in balance self-efficacy was observed. Individuals who have had more time to readjust to community living may more readily attempt challenging activities as their walking skills improve than persons with a more recent stroke, leading to greater gains in balance self-efficacy.

There were limitations to this study. Analyses were based on data from a completed trial and were not powered to detect treatment effects in subgroups. The study outcome was measured using percentage of proportional change to enhance the internal validity of the results, but it is difficult to interpret. Also, self-efficacy is a somewhat challenging concept to grasp, and this led to difficulties in administering the ABC scale to persons with minimal impairment in cognition or speech. Moreover, the positive influence of the UE intervention on the reaching and sweeping items of the ABC scale may have diminished the overall estimated effect of the walking intervention. A measure of walking self-efficacy would have been more appropriate, but such a measure was unavailable for the current study.

In this single-blind trial, it was not possible to blind subjects to the intervention that they received. Some individuals revealed their group assignment during outcome evaluations. Nevertheless, adjustment for the occurrence of unblinding in the multivariable analysis showed that unblinding did not influence the estimated magnitude of the treatment effect. In this study, the immediate effect of walking training on self-efficacy was examined. The sustainability of treatment effects is unknown and requires further study. The generalizability of the results is limited to community-dwelling individuals who are able to walk independently and who have completed formal rehabilitation. Further investigation will be necessary to delineate the effect of rehabilitation interventions on self-efficacy in persons with more-severe deficits and at earlier stages of recovery.

Rehabilitation interventions may enhance the reengagement of meaningful life activities by improving not only physical capacity, but also self-efficacy. This study has shown that practicing a series of relatively straightforward walking activities is beneficial to balance self-efficacy in community-dwelling persons with chronic stroke. It is likely that the progression of subjects to more challenging levels in each walking task was a vital component of the intervention. This study was exploratory, and the results highlighted many factors to consider in future investigations. These include the adequate measurement of prognostic and effect-modifying variables; the design of a comparable intervention to control for the potential benefits to self-efficacy of travel, evaluations, and attention; and the selection of an appropriate measure of self-efficacy that reflects the aim of the intervention. The availability of self-efficacy measures that cover important domains of stroke rehabilitation will facilitate future research in this area.

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