American Journal of Alzheimer's Disease & Other Dementias®
2014, Vol. 29(4) 326-332

DOI: 10.1177/1533317513517039
aja.sagepub.com
SAGE

Basic Physical Capability Scale: Psychometric Testing With Cognitively Impaired Older Adults

Barbara Resnick, PhD, CRNP[1], Elizabeth Galik, PhD, CRNP[1], and Marie Boltz, PhD, CRNP[2]

Abstract

The purpose of this study was to evaluate the reliability and validity of the Basic Physical Capability Scale when used with older adults having moderate to severe cognitive impairment and consider the utility of the measure in establishing function-focused care (FFC) goals for these individuals. The study was a secondary data analysis using data from 2 intervention studies testing FFC interventions in older adults with moderate to severe cognitive impairment in nursing homes and assisted living settings. Participants included 96 recruited from 4 assisted living facilities and 103 older adults from 4 nursing homes. There was support for validity of the measure based on construct validity and hypothesis testing, internal consistency (Cronbach's α of .79), and utility of the measure. Recommendations are provided for additional items that might help better differentiate individuals with moderate to severe cognitive impairment who are particularly high or low in basic physical capability.

Keywords

moderate to severe cognitive impairment, physical capability, function-focused goals, Rasch analysis, measurement

Physical capability is defined as the individual's capacity to perform activities of daily living[1,2] and includes having the skills and underlying abilities an individual needs to be able to engage in those activities.[3] Physical capability reflects the individual's receptive communication, motor function, and addresses not only what the individual does but also what he or she *should be able to do* with regard to functional skills. Thus, basic physical capability should be assessed to establish what the older individual could be expected to do during a care interaction. For example, if assessment of basic physical capability indicates that the older individual can follow a 1-step command and has full upper extremity active range of motion, he or she should be able to participate in personal hygiene (eg, brushing teeth or combing hair) with verbal cueing or role modeling. By assessing physical capability, nurses and other health care providers can best guide and engage patients and residents in functional tasks that match their ability. This will prevent frustration on the part of older individuals and keep them from experiencing a sense of failure by trying to perform tasks that are beyond their physical capability. Conversely, matching functional tasks and setting activity goals to underlying physical capability will assure that older individuals are engaging in activities at their highest functional ability and that nurses, family members, or other providers are not completing tasks that older individuals have the underlying ability to perform. Performing care activities for an individual who is able to perform them himself or herself can foster dependency and result in avoidable functional decline.

The Basic Physical Capability Scale[3] was developed to be appropriate for clinical assessment of older adults across all levels of care and all types of physical and cognitive abilities (joint mobility, muscle performance and balance, and cognition). The measure includes 16 items addressing a variety of functional tasks (eg, range of motion in upper and lower extremities, following a 1-, 2-, and 3-step command, getting up from a chair). The measure is completed through direct observation of the older individual with a point given for completion of each activity. The measure can be completed in 5 to 10 minutes by a nurse at the bedside. A total score is then summed and can range from 0 to 16.

The Basic Physical Capability Scale has been used in numerous studies to evaluate the underlying capability of older individuals.[4-6] These assessments were performed to describe the physical capability of the participants[4,5] and guide the nurse interventionist in developing functional and physical activity goals for participants randomized to treatment in studies testing function-focused care (FFC) interventions.[6,7] Function-focused

[1] University of Maryland School of Nursing, Baltimore, MD, USA
[2] New York University College of Nursing, New York, NY, USA

Corresponding Author:
Barbara Resnick, PhD, CRNP, University of Maryland School of Nursing, 655 West Lombard Street, Baltimore, MD 21201, USA.
Email: barbresnick@gmail.com

care is a philosophy of care that values maximizing function and self-direction. The FFC approaches acknowledge the person's capability with regard to function and physical activity and optimize and maintain functional abilities and increase time spent in physical activity. A major goal in FFC interventions is to teach nurses to evaluate older adults' underlying capability with regard to function and physical activity and help them optimize and maintain functional abilities and increase time spent in physical activity.[8] Once implemented, FFC has been noted to increase the amount and intensity of physical activity (by survey and actigraphy), improve and/or maintain physical function, decrease the number of falls, and decrease the number of transfers to a higher level of care (eg, acute care) for nonfall-related problems among residents living in long-term care facilities.[6,7]

Unfortunately, very little research has been done to help guide or evaluate the development of functional and physical activity goals in older adults. Moreover, the studies that have been done tend to be focused on the specificity, proximity, and difficulty of goals.[9] Goal specificity refers to the level of detail that goes into the goal, proximity is whether or not the goal can be achieved within a short time frame, and goal difficulty is related to how challenging the goal is for the individual.[10] For exercise-related goals, physical activity guidelines are often utilized such as those from the American College of Sports Medicine and American Heart Association.[11,12] Older adults, particularly those with cognitive impairment and multimorbidity, may need these goals to be modified as they may not have the underlying ability to, for example, perform 30 minutes daily of moderate-level physical activity (eg, they may need a goal that focuses on participating in a seated exercise program or one that provides physical cueing to accommodate receptive communication deficits).

Goal delineation is particularly challenging for older adults with cognitive impairment as these individuals cannot provide accurate information with regard to their current function and physical activity. Individuals with cognitive impairment may report functional skills and ability that exceed their current status or they may underreport skills and capability, especially if they are depressed. The capability of the person with cognitive impairment is often underrecognized by caregivers (formal and informal) due to a lack of appreciation of underlying strengths. This can result in missed opportunities to maintain and/or restore function and promote quality of life. Further, due to changes in frontal lobe function, older adults with cognitive impairment may need help to articulate personal goals.[13] For these individuals, understanding their physical capability is especially useful so that goals developed are clinically relevant, realistic, and measurable.

Although prior testing of the Basic Physical Capability measure has supported the reliability and validity of the measure when used with older adults,[3] the reliability and validity measure was not tested among individuals with moderate to severe dementia. It is possible, for example, that some of the items on the Basic Physical Capability measure may be difficult for those with moderate to severe impairment to follow and thus they may guess what to do or seem unable to perform the activity. Moreover, the potential usefulness of the measure in terms of how it might help guide in the development of goals has not been established. Therefore, the purpose of this study was to provide support for the reliability and validity of the Basic Physical Capability Scale when used with older adults who have moderate to severe cognitive impairment and consider whether there was an association between physical capability of residents and the type/difficulty of goals established. Once this association is established, future work can focus on matching physical capability with specific goals so as to help guide nurses and other health care providers in the development of relevant FFC goals for residents.

Methods

This study was a secondary data analysis that included data from 2 studies testing an FFC intervention. One study tested the intervention with residents having moderate to severe cognitive impairment in 4 nursing homes and the other studied this approach with residents having moderate to severe impairment in 4 assisted living settings.[6] These studies were approved by a university institutional review board. Both studies were randomized controlled trials with sites randomized to treatment or control. Participants were followed for 6 months with testing done at baseline, 3, and 6 months postintervention. Details of the methods and intervention activities have been described elsewhere.[6]

Sample

In both studies, residents were eligible to participate if they were 65 years of age or older and had a Mini-Mental State Examination (MMSE) score of 15 or below. A score of 15 or below was selected as our goal to focus on those with moderate to severe dementia.[14,15] Residents were excluded if they were enrolled in hospice or received skilled rehabilitation services. Residents who were willing to participate in the study but unable to pass the Evaluation to Sign Consent were asked to sign an assent form. For residents who were unable to provide their own consent, the legally authorized representative was contacted to provide consent. Of the consented residents who met initial eligibility criteria, 199 were enrolled in these 2 studies, 96 were from assisted living settings, and 103 were from nursing homes.

The FFC for Cognitively Impaired Intervention

Briefly, the FFC for cognitively impaired (FFC-CI) intervention was coordinated and implemented by a research FFC Nurse. The FFC Nurse worked with an identified in-house nurse champion in each treatment facility 10 hours/week for 6 months. Working with the champions, the FFC Nurse implemented the 4 components of FFC-CI: (1) Environment Assessments and Policy/Procedure Assessments; (2) Education of Staff and Families; (3) Developing FFC Goals; and (4) Mentoring and Motivating, which are all described briefly in Table 1.

Table 1. Description of the Intervention Function-Focused Care for Cognitively Impaired (FFC-CI).

Component	Description of the Intervention
Component I: environmental and policy assessments	The facility champion and the research nurse evaluated the environment and policy/procedures using Environment and Policy/Procedures for Function and Physical Activity Evaluation Forms.[8] Interventions were then recommended to alter the environment or revise policies and procedures to optimize function and physical activity.
Component II: education	Education of nursing staff, other members of the interdisciplinary team (eg, social work and physical therapy), and families about function-focused care was done by the research nurse
Component III: establishing FFC goals	The research nurse and facility champion completed Physical Capability Assessments and Goal Attainment Forms with each resident. Goals were established based on capability assessments, communication with other members of the team and input from residents, and made accessible to staff to be used during care interactions.
Component IV: mentoring and motivating	The research nurse worked with the facility champion to motivate all caregivers to provide function-focused care by (1) observing care interactions and providing positive and constructive feedback to staff; (2) reinforcing benefits of function-focused care for residents and staff; (3) highlighting role models (other caregivers who successfully provide FFC); and (4) helping to implement motivational techniques for residents to facilitate their willingness to engage in function and physical activity.

Table 2. Function-Focused Care Goal Form.

Resident Goal	Caregiver Role to Assist	Scoring[a]
Activities of daily living		
Example: Resident will participate in AM/PM care	Example: Provide cueing during am/pm care to assist the resident to brush teeth, wash face, get dressed	0—hand over hand or physical hands on cueing/help
Example: Resident will self-feed	Example: Place food in resident's hand and provide cueing during meals	1—role modeling needed 2—verbal cueing needed 3—verbal encouragement needed 4—reminding needed
Exercise/ROM		
Example: Resident will attend exercise class 3 times per week	Example: Encourage resident to attend exercise class 3 times per week	0—one-on-one assistance to go to and stay in class 1—assistance needed to take to class 2—cueing needed to walk with individual to class 3—encouragement needed to go to class 4—reminding needed verbally only to go to class

Abbreviation: ROM, range of motion.
[a]Goal difficult is evaluated such that higher scores indicate a more challenging goal and a higher level of capability and functioning/engagement.

The facilities randomized to the attention control intervention received FFC-Education only. The education material was identical to that provided to the treatment group. When implementing FFC interventions in long-term care settings, nurses are taught how to assess the physical capability of the resident and then use this information to guide the development of individualized goals for each resident (Table 2). Examples of specific FFC interactions included things such as using modeling of behavior and/or verbal cues during basic care activities so that the older individual engaged in the activity rather than having the nurse complete the task; walking to meals; going to an exercise class; or self-propelling a wheelchair.

Measures

Follow-up assessments were obtained by research evaluators who were graduate nursing students and nonnurses with experience in assessment of older adults in long-term care settings. In addition to the Basic Physical Capability Scale,[3] age, gender, marital status, years of education, and number of comorbidities based on the Charlson comorbidity index[16] were obtained from medical records.

The Basic Physical Capability Scale, described briefly previously, includes the following 16 items: upper extremity flexion, external and internal rotation; ankle flexion and extension; knee flexion; ability to march; chair rise (with and without the use of arms); ability to come to a stand; ability to follow a 1-step verbal command (pick up the towel); ability to follow a 2-step verbal command (pick up the towel and fold it in half); ability to follow a 3-step verbal command (pick up the towel, fold it in half and put it on the table); ability to follow a 1-step activity with visual cueing (the evaluator demonstrates picking up the towel); ability to follow a 2-step activity with visual cueing (the evaluator demonstrates picking up the towel

and folding it in half); and ability to follow a 3-step activity with visual cueing (the evaluator demonstrates picking up the towel, folding it in half, and putting it on the table).

Initial reliability and validity testing of the measure was done using a sample of 203 older adults, 93 recruited from acute care settings and 110 from long-term care facilities.[3] The sample included individuals who were generally intact cognitively with a MMSE score of 27.0 (standard deviation [SD] = 2.6)[15]. In addition, participants ranged in terms of function to include those who were dependent on activities of daily living to those who were independent. Prior testing provided support for the construct validity of the measure based on the fit of the items to the scale and support for hypothesis testing. Specifically, physical function of the participants was significantly associated with physical capability as measured by the Basic Physical Capability Scale. There was evidence for internal consistency of the scale with Cronbach's αs ranging from .77 to .83. There was also evidence of interrater reliability with significant correlations (intraclass correlation of .81, confidence interval of 0.71-0.87, $P < .05$) between evaluations completed by research evaluators and staff nurses (registered nurses, licensed practical nurses, and direct care workers [DCWs], commonly referred to as nursing assistants in long-term care settings).

The MMSE,[15] which is a screening tool for cognitive impairment, was used to describe the cognitive status of the participants. The Barthel index[17] was used to describe the functional status (activities of daily living such as bathing, dressing, and ambulation) of residents. Completion of the Barthel index was done by the DCW working with the individual on the day of testing. Prior research has established reliability and validity of the measure when completed in this manner.[18] For a subset of 66 participants living in facilities randomized to treatment, resident goals were evaluated with regard to what the resident was expected to be capable of doing (Table 2). Goals were developed for activities of daily living and exercise for each participant. A scoring guide was used to evaluate the difficulty of the goal. Specifically, difficulty was scored based on the individual's ability to complete the activity with hands-on assistance/one-on-one assistance needed (score of 0); role modeling (score of 1); verbal cueing (score of 2); verbal encouragement (score of 3); or reminding to perform the activity (score of 4). Scores for both goals were summed, and higher scores were indicative of more difficult or challenging goals for the resident to achieve.

Reliability and Validity Testing and Data Analysis

Descriptive analyses were done to describe the samples. Construct validity of the Physical Capability Scale was evaluated using a Rasch measurement model and the Winsteps statistical program.[19] Information on the fit of each item to the model was based on INFIT and OUTFIT statistics, which are reported as mean-square fit statistics (MNSQ). The MNSQ scores reflect the size of the randomness, that is, the amount of distortion of the item. A score of 1.0 is the ideal value, and values less than 1.0 indicate that observations are too predictable (ie, are redundant) and values greater than 1.0 indicate unpredictability (error such as guessing or misunderstanding of the item). Along with the mean-square statistic, the standardized fit statistic (or ZSTD) was reported. The ZSTD is *t* tests of the hypothesis "Do the data fit the model (perfectly)?" and reflect significance. Mean square statistic scores were considered acceptable if they fell between 0.5 and 2.0 and had ZSTD scores ranging between −2.00 and 2.00.[19-21]

The INFIT and OUTFIT scores were also calculated and are considered acceptable if they range from 0.6 to 1.4.[20,21] The INFIT statistics are considered sensitive to unexpected behavior affecting responses to items near the persons' ability level (ie, the individual who has the ability to get up from the chair with no hands would be more likely to be able to stand for a full minute than a person who cannot get up without using his or her hands). The OUTFIT statistic is outlier sensitive and more sensitive to unexpected observations by an individual (ie, the individual who can follow a 3-step verbal command but was not able to complete a 1-step verbal command). The INFIT and OUTFIT values outside of the acceptable ranges indicate that the item does not define the same construct as the rest of the items in the instrument, is poorly constructed or ambiguously defined, and thus may have been misunderstood by the participant.[19-21]

We also considered item mapping to establish whether the items comprehensively addressed the concept of physical capability. Item mapping via the Rasch model transforms raw item difficulties and raw person scores to equal interval measures of logits on a line in a "meter stick." The equal interval measures are transformed and used to map items onto a linear (interval) scale and thereby establish the difficulty of each item.[20] Finally, with regard to validity testing, we considered hypothesis testing. We hypothesized that controlling for age, race, gender, and number of comorbidities, the scores on the Basic Physical Capability Scale would improve between baseline assessment and 6-month follow-up among those residents living in treatment sites.

Reliability testing considered both person and item reliability. Using Rasch analysis, person reliability was based on the person separation reliability index.[20,21] Person reliability gives an indication of how well the measure can discriminate people based on their physical ability. The person separation reliability index is interpreted like a Cronbach's α in true score theory. Item reliability is used to establish how well items can be discriminated from one another on the basis of their difficulty. This is also interpreted as one would interpret a Cronbach's α. The closer the reliability is to 1.0 the less measurement error in the measure.[20] A 0.70 or greater on item or person reliability was considered sufficient evidence of reliability.[20]

To consider whether or not the Basic Physical Capability Scale could be useful in guiding the development of functional and physical activity goals for residents, we tested the association between the Basic Physical Capability Scale and the difficulty of the goals developed for each resident. Specifically, we hypothesized that, controlling for age, gender, race, and

Table 3. Baseline Sample Descriptive Findings (N = 199).

Variable	Minimum	Maximum	Mean	Std Deviation
Goal score[a]	3.00	11.00	6.57	2.35
Age	58	105	84.67	8.76
MMSE total score	0	15	7.32	4.68
Physical Capability Scale	0	13	8.27	3.51
Barthel index at baseline	0	98	54.06	29.69

Abbreviations: MMSE, Mini-Mental State Examination.
[a]Subsample of 66 participants from the treatment group.

comorbidities, basic physical capability would explain the variance in the difficulty of resident goals. Using SPSS, we performed a linear regression analysis using a block approach. A $P < .05$ level of significance was used for all analyses.

Results

The majority of the participants were female (74%), white (62%), and unmarried (81%). As shown in Table 3, the mean age of the study participants was 84.67 (SD = 8.76), and the mean MMSE was 7.32 (SD = 4.68). They had fair capability in terms of engaging in functional activities with a mean Basic Physical Capability score of 8.27 (SD = 3.51, range 0-13) and moderate functional impairment with a mean Barthel index score of 54.06 (SD = 29.69, range 0-100). The participants had mean goal difficulty scores of 6.57 (SD = 2.36, range 3-11), with higher scores indicative of more difficult or challenging goals (eg, a goal of going to exercise class with verbal reminding to do so vs a goal of cueing or hands on help to complete the exercise activity once at the class).

Validity Testing

Rasch model testing indicated that the items fit the model based on INFIT statistics and OUTFIT statistics, with the exception of an OUTFIT statistic for item 9 (MNSQ = 4.03, ZSTD of 3.7; Table 4). Item mapping, specifically the order difficulty among the items, is provided in Table 4. Getting up from a chair without using arms was the most difficult item. The next most difficult item reflected the cognitive impairment in the group and involved following a verbal 3-step command. Next was getting up from a chair and standing for a minute or following a 3-step command with just cueing. The next most difficult was trying to get up from a chair or following a 2-step verbal command. Placing hands in the small of the back was the next most difficult item and then ranging arms over the head. Next was putting the hands behind the head or following a 1-step cue. The easier items then followed and included ability to complete a 1-step verbal command, marching, then flexing and extending the ankle, and finally bending the knees was the easiest item. There were 12 participants (approximately 6% of the sample) that were high in basic physical capability and not well differentiated by the measure. There were 15 (8%) participants in the sample that were so low in basic physical capability and they were not well differentiated by the items included in the scale.

As hypothesized, when controlling for age, gender, race, and number of comorbidities, those in the treatment group demonstrated an improvement in capability over 6 months (mean 8.15 [SD = 3.3] increased to a mean of 8.28 [SD = 3.6], $F = 6.53$, $P = .01$) while those in the control group declined (mean of 8.66 [SD = 3.6] to a mean of 7.63 [3.61]). With regard to the association of basic physical capability with goal difficulty, controlling for age, gender, race, number of comorbidities, physical capability was significantly associated with FFC goals ($F = 5.87$, $P < .01$) and explained 27% of the variance in goals. Functional status based on the Barthel index (F change 3.39, $P = .07$) and cognitive status based on the MMSE (F change 2.02, $P = .16$) did not significantly add to the variance in difficulty of goals.

Reliability

There was evidence of person and item reliability of the Basic Physical Capability Scale. Specifically, person reliability testing resulted in a Cronbach's α of .79, and item reliability resulted in a Cronbach's α of .96.

Discussion

The findings from this study provide evidence that the Basic Physical Capability Scale is a valid and reliable tool to evaluate the physical capability among older adults with moderate to severe dementia. As noted, there was prior evidence of validity of this scale when used with older adults across a broad range of cognitive ability.[3] Findings from prior testing[3] also reported that item 9 (which is the item focused on having the individual get up from a chair without the use of arms), when used with patients in acute care settings, had a high OUTFIT statistic. In the current study, there was a poor fit based on high OUTFIT statistics of items 6 (this item asked the participant to march when in a sitting position) and 9 (OUTFIT statistics are less relevant than INFIT statistics with regard to validity of a measure as they are unweighted and more sensitive to anomalous responses by individuals who are generally very high or very low in a trait (ie, very high or low capability).[20,21] High or low OUTFIT statistics are indicative of guesses or misunderstanding of the question. It is likely that these 2 items fit poorly due to misunderstanding of directions or distractions during testing.

Additional evaluation of items 6 and 9 using a Rasch differential item functioning (DIF) analysis confirmed that there were differences in responses based on cognition further supporting concerns that lack of understanding on the part of the participant may have influenced the validity of the item DIF analysis indicated that responses on item 9 were significantly different between those with a MMSE score of less than 7 (the median score on the MMSE) versus those with a score of greater than 7 (DIF measure of 4.86 vs 3.06, $P = .01$). Those with a score of less than 7 found the item to be more difficult to perform. There was not, however, a significant difference

Table 4. Rasch Model Testing Fit Statistics.

Item	Rasch Analysis Results		Item Mapping[a]
	INFIT MNSQ (ZSTD)	OUTFIT MNSQ (ZSTD)	
1. UE flexion: hands over head	0.88 (−1.4)	0.86 (−0.6)	9
2. UE external rotation: hands behind head	0.88 (−1.2)	0.75 (−1.0)	10
3. UE internal rotation: hands in small of back	0.77 (−3.0)	0.58 (−2.6)	8
4. Ankle flexion	0.89 (−0.7)	0.69 (−0.8)	14
5. Ankle extension	0.86 (−0.9)	0.56 (−1.2)	15
6. Knee flexion	0.79 (−1.4)	0.45 (−1.5)	16
7. Marching	0.92 (−0.6)	0.73 (−0.7)	13
8. Tries doing chair rise	0.93 (−0.9)	0.82 (−1.1)	5
9. Uses arms during chair rise	1.37 (2.0)	4.03 (3.7)	1
10. Able to come to stand	0.79 (−2.6)	0.77 (−1.3)	3
11. Follows 1-step verbal command	1.28 (2.1)	1.19 (0.7)	12
12. Follows 2-step verbal command	1.20 (2.4)	1.16 (1.0)	6
13. Follows 3-step verbal command	1.47 (4.7)	1.62 (2.9)	2
14. Follows 1-step cueing	1.18 (1.1)	1.31 (1.2)	11
15. Follows 2-step cueing	1.00 (0.1)	0.88 (−0.2)	7
16. Follows 3-step cueing	1.01 (0.1)	1.00 (0.2)	4

Abbreviations: MNSQ, mean-square fit statistics; UE, upper extremity.
[a]1 is the most difficult item to do correctly, and higher numbers indicate less difficulty.

in responses between those with a MMSE of less than 7 versus greater than 7 on item 6. Given the small variation in the OUTFIT score from the recommended acceptable score on item 6 (score of 0.45 varying from the recommended 0.50), this lack of a significant difference is not surprising.

Overall, the items had a fairly good spread across the continuum of basic physical capability. As was noted previously in testing the Basic Capability Scale,[3] additional items might be helpful at the upper and lower levels of difficulty. Given the challenges that individuals with moderate to severe cognitive impairment have with understanding directions, additional items should include simple directions yet evaluate more complex physical activities. Possible useful additional items might include those that require the individual to eat some type of finger food independently, walk a specific distance, or go up and down stairs.

The primary purpose and use of the Basic Physical Capability measure is to guide nurses and other health care providers in the development of FFC goals for older adults. The significant association between scores on the Physical Capability Scale and degree of difficulty of the FFC goals established provides some preliminary support for the utility of the measure. The Barthel index, an observed measure of overall function and measurement of cognitive status based on the MMSE, did not significantly add to the explanation of goals. Moreover, the completion of the Barthel index is more difficult to perform as ideally it requires direct observation of the resident while performing activities of daily living. The advantage of the Physical Capability Scale is that it combines some functional tasks and cognitive ability in short, easily observed activities and thus allows for the use of a single measure rather than multiple measures to evaluate residents and establish appropriate FFC goals. Future research, using a larger sample, will need to be done to consider associations between ability to perform specific items and/or group of items and what goals may be relevant to older adults.

Limitations

This study intentionally included only those with moderate to severe dementia and thus findings cannot be generalized to those who are more intact cognitively. The determination of moderate to severe dementia, however, was based only on a single screening tool the MMSE and thus may have resulted in inaccurate categorization of some residents. Another limitation in the study was that the Barthel index was based on verbal report from the DCWs rather than doing direct observation of the resident by the research team. Although DCWs have demonstrated accurate, nonbiased assessment of functional status in other research,[18,22] it is possible that our results may have been biased by the views of the DCWs. We did not specifically evaluate residents for adequate vision or hearing, and thus their performance may have been influenced by sensory changes. In addition, the subjective scoring method of the goal form may impact results. Despite these limitations, the Basic Physical Capability Scale is generally reliable and valid when used with moderate to severely impaired older adults. Revisions of the measure should consider adding some items that can differentiate individuals at the upper and lower range of basic physical capability.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship and/or publication of this article: This work was

supported by the John A. Hartford Foundation's Building Academic Geriatric Nursing Capacity Award Program; the Rehabilitation Nurses Foundation; the Robert Wood Johnson Foundation INQIRI program and Nurse Faculty Scholars Program; and the Alzheimer's Association.

References

1. Cooper R, Kuh D, Cooper C, Gale C, et al.;The FALCon and HALCyon Study Teams. Objective measures of physical capability and subsequent health: a systematic review. *Age Ageing*. 2011; 40(1):14-23.
2. Cooper R, Kuh D, Hardy R; Mortality Review Group. Objectively measured physical capability levels and mortality: a systematic review and meta-analysis. *BMJ*. 2010;341:c4467. http://www.bmj.com/highwire/section-pdf/9091/8/1. Accessed June 16, 2013.
3. Resnick B, Boltz M, Galik E, Wells C. Reliability and validity of the physical capability assessment. *Clin Nurs Res*. 2013;3(1):7-29.
4. Boltz M, Resnick B, Capezuti E, Shabbat N, Secic M. Function-focused care and changes in physical function in Chinese American and non-Chinese American hospitalized older adults. *Rehab Nurs*. 2011;36(6):233-240.
5. Boltz M, Resnick B, Capezuti E, Shuluk J, Secic M. Functional decline in hospitalized older adults: Can nursing make a difference? *Geriatr Nurs*. 2012;33(4):272-279.
6. Galik E, Resnick B, Hammersla M, Brightwater J. Optimizing function and physical activity among nursing home residents with dementia: testing the impact of function focused care [published online October 3, 2013]. *Gerontologist*. 2013.
7. Resnick B, Galik E, Gruber-Baldini A, Zimmerman S. Testing the impact of function focused care in assisted living. *J Am Geriatr Soc*. 2011;59(12):2233-2240.
8. Resnick B, Galik E, Boltz M, Pretzer-Aboff I. *Implementing Restorative Care Nursing in All Setting*. 2nd ed. New York, NY: Springer Publications; 2011.
9. Walker ER, Wexler B, Dilorio C, Escoffery C, McCarty F, Yeager KA. Content and characteristics of goals created during a self-management intervention for people with epilepsy. *J Neurosci Nurs*. 2009;41(6):312-321.
10. Bandura A. *Self-Efficacy: The Exercise of Control*. New York, NY: W.H. Freeman and Company; 1997.
11. American College of Sports Medicine and the American Heart Association. Guidelines for physical activity; 2013. http://www.heart.org/HEARTORG/GettingHealthy/PhysicalActivity/StartWalking/American-Heart-Association-Recommendations-for-Physical-Activity-in-Adults_UCM_307976_Article.jsp. www.americanheart.org. Accessed September 24, 2012.
12. Garber CE, Blissmer B, Deschenes MR, et al. American college of sports medicine. American college of sports medicine position stand. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Med Sci Sports Exerc*. 2011;43(7): 1334-1359.
13. Resnick B, Galik E, Pfetzer-Aboff I. Restorative care: measurement challenges and effectiveness in special populations. *Gerontologist*. 2007;47(1):162.
14. Mungas D. In-office mental status testing: a practical guide. *Geriatrics*. 1991;46(7):54-58, 63, 66.
15. Folstein M, Folstein SE, McHugh PR. Mini-mental state. A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res*. 1975;12(3):189-198.
16. Charlson ME, Pompei P, Ales KL, MacKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: prognostic development and validation. *J Chron Dis*. 1987;40(5):373-383.
17. Mahoney F, Barthel D. Functional evaluation: the Barthel index. *MD State Med J*. 1965;14(2):61-66.
18. Resnick B, Galik E. Reliability and validity testing of the physical activity survey in long term care (PAS-LTC). *J Aging Phys Act*. 2007;15(4):439-458.
19. Winsteps an Facets Rasch Analysis Sofware. www.winsteps.com/. Accessed September 1, 2013.
20. Linacre J. Rasch model estimation: further topics. *J Appl Meas*. 2004;5(1):95-110.
21. Smith E, Smith RM. *Introduction to Rasch Measurement*. Maple Grove, MN: JAM Press; 2004.
22. Hartig M, Engle VF, Graney MJ. Accuracy of nurse aides' functional health assessments of nursing home residents. *J Gerontol A Biol Sci Med Sci*. 1997;52(3):M142-M148.