Development of the Vestibular Disorders Activities of Daily Living Scale

Helen S. Cohen, EdD, OTR; Kay T. Kimball, PhD

Background: Existing scales of self-perceived disablement in patients with vestibular impairment either are too broad to detect the subtle deficits in this population or omit some important daily life tasks.

Objectives: To develop a scale to assess self-perceived disablement in patients with vestibular impairment and to describe the development and initial testing of this new assessment tool.

Design: A list of items was developed, sent to a panel of expert therapists for review, and then revised to yield the preliminary 31-item, 10-point scale that was administered to subjects. The scale was revised again, yielding the final 28-item scale, which was administered to a new group of subjects.

Setting: Data were collected from patients in an outpatient clinic of a tertiary care center.

Participants: Patients diagnosed as having benign paroxysmal vertigo and patients diagnosed as having chronic vestibulopathy, excluding Ménière disease, postsurgical vertigo, and postconcussion vertigo.

Results: The final scale has 3 subscales: functional, ambulation, and instrumental. It has good face validity, high internal consistency ($\alpha=0.90$), and high test-retest reliability ($r_c=0.87$). Scale ratings ranged from 1 (independent) to 10 (ceasing to participate in the activity), but median scores for most subjects were 4 or less. From 41% (39/94) to 44% (41/94) of subjects considered themselves to be independent on those tasks.

Conclusions: This scale has good face validity, high internal consistency, and high test-retest reliability. It may be useful for evaluating functional limitation and perceived handicap or disability before and after intervention and for helping patients become more realistic in understanding their own capabilities.


People with vestibular disorders complain of vertigo, disequilibrium, and other symptoms. These complaints and the underlying impairments can lead to functional limitations or deficits in performing routine daily life tasks known as activities of daily living (ADL). Previous work has shown that people with vestibular impairments have deficits in these skills.

Different authors use different words to describe the various levels of physiological and performance problems. Cohen has described the history of this language discussion and has illustrated the application of these terms to otolaryngology. The operational definitions described by Cohen are used in this article: impairment refers to the loss of function at the organ level; functional limitation refers to reduced ADL performance; disability refers to reduced performance within the social environment; handicap is sometimes used synonymously with disability; and disablement, by contrast, includes all of these effects.

Activities of daily living can be categorized in many ways. Reed divided them into self-maintenance, productivity, and leisure. Self-maintenance comprises activities performed to maintain the person’s health and well-being, including self-care, communication, and home management. Productivity comprises activities with economic value, which are performed to enable individuals to support themselves, their families, and society. These activities include paid employment, volunteer work, and hobbies. Leisure comprises activities performed for the intrinsic reward of enjoyment and psychological renewal; such occupations are important but are not required for physical self-maintenance and have no direct economic value.
SUBJECTS AND METHODS

FACE VALIDITY AND SELECTION OF ITEMS

The scale developed in this study, known as the Vestibular Disorders Activities of Daily Living Scale, was based on Cohen’s 1992 ADL scale. This scale was used in a previous study of the effectiveness of some vestibular rehabilitation techniques. Subjects in the previous study stated that the scale was not sufficiently detailed to describe their problems accurately. Some subjects suggested other levels of the scale that should have been included. Therefore, the 1992 scale was expanded by breaking down some self-care and mobility tasks further and by eliminating items that were shown to be at normal levels in vestibularly impaired patients. The resulting list of 30 questions was sent to a panel of occupational therapists and physical therapists (n=20; mean ±SD experience, 20.3 ± 5.8 years). They determined if each question was important for an ADL scale and suggested the placement of each question in a list of possible subscales. Based on their answers, the scale was modified; some questions were eliminated, some were added, and questions were organized by subscales. The new list of items was sent to a second panel of experienced occupational therapists and physical therapists (n=11; mean ±SD experience, 21.5 ±7.3 years) who also rated each item on its value in the scale and its placement in a list of possible subscales. Items that were included by at least 2 therapists were retained. This procedure yielded an initial list of 30 items. They were divided into 3 subscales: functional, ambulation, and instrumental. The functional subscale included items about self-care and intimate activities. The ambulation subscale included items about walking and stair climbing. The instrumental subscale included items about home management, productivity, and leisure activities.

This process expanded the original 5-point rating scale to a 10-point scale plus a category of not applicable. The individual levels were similar to the standard ratings in existing ADL scales, but were expanded for finer distinctions based on comments of participants in the 1992 study and a subsequent study. Each level of the scale was defined in words and with a number to reduce possible ambiguities in interpretation. The rating scale was written on the scale vertically and was repeated on a separate page of text for ease of reading. The final form of the scale is given in Figure 1.

Unlike Reed, Gresham and Dittmar divided ADLs into 2 categories: basic, including self-care and locomotion; and instrumental, including community living skills, work-related tasks, and other occupational role tasks. Early in the 20th century, Hall and Meyer each wrote influential articles suggesting that essential ADLs include purposeful occupations. Those comments have been followed by many other erudite discussions in the literature about daily life activity as a type of occupation, ie, goal-directed activity or that which occupies one’s time (M. Frances Baxter, MA, OTR, oral communication, 1999). Some writers consider locomotion to be a separate activity; others consider it to be merely a performance component. (Hill provides an overview of the arguments, which are beyond the scope of this article.) As a practical matter, however, many clinicians approach mobility skills as a separate category from self-care.

The literature has many assessments of ADL performance (eg, the Functional Independence Measures, the Klein-Bell Scale, and the Barthel Index), but most instruments are designed for the type of patients usually referred to rehabilitation centers, ie, people with head injuries, spinal cord injuries, other severe neurologic problems, or significant orthopedic disorders. Using any of these assessments, the functional limitations of patients with a wide range of diagnoses can be compared.
Cohen reported on the ADL performance of vestibularly impaired patients using a scale similar to those used in the clinic by many occupational therapists working with other patient populations. Using a 5-point qualitative scale, patients rated their performance on daily life tasks ranging from bed mobility tasks, such as rolling over, to instrumental tasks, such as grocery shopping, before developing an inner ear problem, by checking one of the columns in the center of the page. Pick the answer that most accurately describes how you perform the task.

### Instructions

This scale evaluates the effects of vertigo and balance disorders on independence in routine activities of daily living. Please rate your performance on each item. If your performance varies due to intermittent dizziness or balance problems please use the greatest level of disability. For each task indicate the level which most accurately describes how you perform the task. If you never do a particular task, please check the box in column NA. The rating scales are explained on bottom of page.

### Vestibular Disorders Activities of Daily Living Scale

<table>
<thead>
<tr>
<th>Name/ID</th>
<th>Rater</th>
<th>Date</th>
</tr>
</thead>
</table>

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**Independence Rating**

<table>
<thead>
<tr>
<th>Independence</th>
<th>Uncomfortable, No Change in Performance</th>
<th>Decrease in Ability, No Change in Manner of Performance</th>
<th>Slower, Cautious, More Careful, More Efficient</th>
<th>Using an Ordinary Object for Help</th>
<th>Must Use Special Equipment</th>
<th>Need Physical Assistance</th>
<th>Dependent</th>
<th>Too Difficult, No Longer Perform</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>2</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>3</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>4</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>5</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>6</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>7</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>8</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>9</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
</tr>
<tr>
<td>10</td>
<td>Independent</td>
<td>Uncomfortable, No Change in Performance</td>
<td>Decrease in Ability, No Change in Manner of Performance</td>
<td>Slower, Cautious, More Careful, More Efficient</td>
<td>Using an Ordinary Object for Help</td>
<td>Must Use Special Equipment</td>
<td>Need Physical Assistance</td>
<td>Dependent</td>
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<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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</table>

**Explanation of Independence Rating Scale**

This scale will help us to determine how inner ear problems affect your ability to perform each task. Please indicate your current performance on each task, as compared to your performance before developing an inner ear problem, by checking one of the columns in the center of the page. Pick the answer that most accurately describes how you perform the task.

1. **I am not disabled**, perceive no change in performance from before developing an inner ear impairment.
2. **I am uncomfortable** performing the activity but **perceive no difference** in the quality of my performance.
3. **I perceive a decrement** in the quality of my performance, **but have not changed** the manner of my performance.
4. **I have changed** the manner of my performance, eg, I do things more slowly or carefully than before, or I do things without bending.
5. **I prefer using an ordinary object** in the environment for assistance (eg, stair railing) but I am not dependent on the object or device to do the activity.
6. **I must use an ordinary object** in the environment for assistance, but I have not acquired a device specifically designed for the particular activity.
7. **I must use adaptive equipment** designed for the particular activity (eg, grab bars, cane, reachers, bus with lift, wedge pillow).
8. I require another person for **physical assistance** or, for an activity involving 2 people, I need unusual physical assistance.
9. **I am dependent** on another person to perform the activity.
10. **I no longer perform** the activity due to vertigo or a balance problem.

**NA. I do not usually perform this task or I prefer not to answer this question.**

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**Figure 1.** The final form of the Vestibular Disorders Activities of Daily Living Scale.
and after participating in a vestibular rehabilitation program. Subjects reported having decrements in all performance areas. Later studies with modified versions of the scale suggested that patients with Menière disease have significant functional limitations while having Menière attacks, and patients in the acute phase of recovery from acoustic neuroma resection also have significant limitations. Unfortunately, the psychometric characteristics of the scale were not documented, limiting its usefulness for future research by investigators and for treatment planning by clinicians.

Two normed scales of self-perceived functional limitation have been developed for patients with vestibular and balance disorders. The Dizziness Handicap Inventory was originally developed to assess the functional problems of patients with Menière disease but has also been used with people who have other vestibular impairments. The Activities-specific Balance Confidence Scale was developed for elderly people with disequilibrium. Both self-administered scales measure individuals’ perceptions of their own abilities. Powell and Myers use the term self-efficacy to describe this perception of one’s own capabilities within a particular domain of activities. They suggest that self-efficacy affects the individual’s decision of whether to participate in particular activities. Other factors, such as social constraints, also influence the extent of an individual’s participation in various ADLs. Nevertheless, self-efficacy is an important variable and should be measured.

The Dizziness Handicap Inventory was the first scale of ADL self-efficacy developed for the vestibularly impaired population, and it has filled an important niche in the evaluation battery. It addresses a wide range of needs and behaviors, from self-care to psychosocial interactions. The 25-item, 3-point qualitative scale sums the scores to obtain subscores and total scores. Unfortunately, the use of a 3-point scale limits the possible sensitivity of the middle rating; indeed, many patients have commented that the definition of level 2, “sometimes,” is variable. Also, because the domain of the scale is broad, it gives an overview rather than dealing with particular domains in depth. In contrast, the 16-item, 10-point qualitative Activities-specific Balance Confidence Scale has items more specific to balance.

Many functional assessments use multilevel scales. The Activities-specific Balance Confidence Scale uses an 11-level scale from 0% (no confidence) to 100% (complete confidence) in 10% gradations. The Canadian Occupational Performance Measure, a well-documented scale that has received accolades from therapists, has the client use 10-point scales to rate self-efficacy, satisfaction with self-efficacy, and level of importance of the task to the individual’s life. The disability scale in the International Classification of Impairments, Disabilities, and Handicaps is also a 10-point rating, which is supplemented by a 10-point scale of outlook, ie, prognosis for recovery. The levels of the scales in the Activities-specific Balance Confidence Scale and the Canadian Occupational Performance Measure are merely qualitative and not defined, and indicate self-efficacy, whereas the International Classification of Impairments, Disabilities, and Handicaps has specific definitions for each level of disability within each specific domain, and the ratings are given by the evaluator. The operational definitions of the levels of the scales differ across domains. The 10-point scale used in the study described herein is based on the precedents set by these previous scales.

Since publication of the Dizziness Handicap Inventory, other scales have become available to assess the effect of vestibular impairments on psychosocial function, such as those developed by Yardley and colleagues. Lacking from the literature, however, has been an assessment more directed to specific basic and instrumental activities. Such a scale should use a multi-level rating and focus on ADL. The goal of this study was to develop such an assessment.

**RESULTS**

The preliminary version of the scale included 30 items. Preliminary analyses showed that most subjects responded “not applicable” to a question about riding the bus or train, probably because in this geographic area the bus system is not widely used and no trains are available. Therefore, the transportation question was expanded to include buses or cars. This question was tested with 34 additional subjects who took the preliminary version of the scale.

This scale uses the median to summarize the total and subscale scores, which avoids the bias that can be introduced into a sum if a subject omits an answer or uses the not applicable rating. Unlike the mean, the median is not unduly influenced by extreme answers that do not
agree with the remainder of the subject’s assessment. Also, the median gave summary scores on the individual assessment that were more similar to an occupational therapist’s qualitative evaluation than the mean score.

The Cronbach α coefficient was calculated to determine the reliability based on internal consistency.31 Item-rest correlations were used to detect items that fit poorly with the rest of the items on the scale or subscale. Several additional questions were eliminated, and the subscales were reorganized as a result of these analyses. The final scale had 28 items. Internal consistency on the final scale is high on the Total Scale and on the subscales: Total Scale α, .97; functional subscale α, .92; ambulation subscale α, .96; and instrumental subscale α, .91. Tables 1, 2, 3, and 4 list the item-rest correlations and α coefficients for the Total Scale and for each subscale for the final scale. The highest item-rest correlations in each table indicate the items that best represent scores on that portion of the scale. For the Total Scale, those items are F-1 (sitting up from lying down), F-11 (meal preparation), A-14 (going up steps), and A-17 (walking in narrow spaces). For the functional subscale, those items are F-4 (dressing the lower body), F-5 (putting on socks or stockings), and F-10 (reaching down). For the ambulation subscale, those items are A-14 (walking on uneven surfaces), A-17 (walking in narrow spaces), and A-19 (walking in crowds). For the instrumental subscale, those items are I-24 (light household chores) and I-25 (heavy household chores).

Scores on the final version of the scale ranged from 1 to 8 on the Total Scale, from 1 to 5 on the functional subscale, from 1 to 8 on the ambulation subscale, and from 1 to 10 on the instrumental subscale. The distribution of subjects’ scores on each scale showed that most subjects scored from 1 to 4 (Figure 2). Many subjects scored 1 on the Total Scale and the subscales. The median score on each subscale was 1. For the Total Scale, 41% (39/94) of the subjects had a median score of 1; functional subscale, 41% (39/94); ambulation subscale, 44% (41/94); and instrumental subscale, 38% (36/94).

To determine test-retest reliability during evaluation of the original version of the scale, 17 subjects with chronic vertigo who were participants in an ongoing study of vestibular rehabilitation took the test 2 hours apart, before and after testing, on the same day. The Lin concordance coefficient32 and the limits-of-agreement procedures of Bland and Altman13 were used to measure agreement between the test and retest results of the subjects. The Lin coefficient measures the accuracy (the concordance coefficient) and precision (the confidence interval [CI]) of agreement between the observed measurements and the line of perfect concordance (a line with an intercept of 0 and a slope of 1). The limits-of-agreement procedure of Bland and Altman complements the Lin concordance coefficient in that it reports the average difference and the 95% CI.

Concordance correlations were high for the Total Scale score (rC = 1.00; 95% CI, 0.99 to 1.00) and for each subscale: functional (rC = 0.87; 95% CI, 0.67 to 0.95), ambulation (rC = 0.95; 95% CI, 0.87 to 0.98), and instrumental (rC = 0.97; 95% CI, 0.92 to 0.99). Likewise, the actual differences were small and not statistically significant for the Total Scale score (rC = 0.03; 95% CI, −0.09 to 0.03) and for each subscale: functional (rC = 0.12; 95% CI, −0.28 to 0.52), ambulation (rC = 0.15; 95% CI, −0.14 to 0.43), and instrumental (rC = 0.12; 95% CI, −0.16 to 0.40).

This 28-item, 10-point, self-administered scale of self-perceived independence in ADLs has excellent internal

<table>
<thead>
<tr>
<th>Table 2. Correlations of Items on the Functional Subscale</th>
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<tbody>
<tr>
<td><strong>Item</strong></td>
</tr>
<tr>
<td>F-1 (sitting up from lying down)</td>
</tr>
<tr>
<td>F-2 (standing up from sitting on the bed or chair)</td>
</tr>
<tr>
<td>F-3 (dressing the upper body)</td>
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<tr>
<td>F-4 (dressing the lower body)</td>
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<tr>
<td>F-5 (putting on socks or stockings)</td>
</tr>
<tr>
<td>F-6 (putting on shoes)</td>
</tr>
<tr>
<td>F-7 (moving in or out of the bathtub or shower)</td>
</tr>
<tr>
<td>F-8 (bathing yourself in the bathtub or shower)</td>
</tr>
<tr>
<td>F-9 (reaching overhead)</td>
</tr>
<tr>
<td>F-10 (reaching down)</td>
</tr>
<tr>
<td>F-11 (meal preparation)</td>
</tr>
<tr>
<td>F-12 (intimate activity)</td>
</tr>
<tr>
<td>Test</td>
</tr>
</tbody>
</table>

* Ellipses indicate data not applicable.

<table>
<thead>
<tr>
<th>Table 3. Correlations of Items on the Ambulation Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item</strong></td>
</tr>
<tr>
<td>A-13 (walking on level surfaces)</td>
</tr>
<tr>
<td>A-14 (walking on uneven surfaces)</td>
</tr>
<tr>
<td>A-15 (going up steps)</td>
</tr>
<tr>
<td>A-16 (going down steps)</td>
</tr>
<tr>
<td>A-17 (walking in narrow spaces)</td>
</tr>
<tr>
<td>A-18 (walking in open spaces)</td>
</tr>
<tr>
<td>A-19 (walking in crowds)</td>
</tr>
<tr>
<td>A-20 (using an elevator)</td>
</tr>
<tr>
<td>A-21 (using an escalator)</td>
</tr>
<tr>
<td>Test</td>
</tr>
</tbody>
</table>

* Ellipses indicate data not applicable.

<table>
<thead>
<tr>
<th>Table 4. Correlations of Items on the Instrumental Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item</strong></td>
</tr>
<tr>
<td>I-22 (driving a car)</td>
</tr>
<tr>
<td>I-23 (carrying things while walking)</td>
</tr>
<tr>
<td>I-24 (light household chores)</td>
</tr>
<tr>
<td>I-25 (heavy household chores)</td>
</tr>
<tr>
<td>I-26 (active recreation)</td>
</tr>
<tr>
<td>I-27 (occupational role)</td>
</tr>
<tr>
<td>I-28 (traveling around the community)</td>
</tr>
<tr>
<td>Test</td>
</tr>
</tbody>
</table>

* Ellipses indicate data not applicable.
patients believe their functional skills are not affected or affected significantly.

Table tendency for this type of qualitative data. In this way, the measured parameter on the subscales and the Total Scale is the median scale and within the Total Scale. The measured parameter within each subscale and the Total Scale has excellent internal consistency within each subscale and the Total Scale.

As described earlier, the use of a multilevel scale is well-grounded in precedents in the literature. The not applicable rating was included because some subjects preferred not to answer all questions or thought that some questions were not relevant to their lifestyles. For example, some subjects said that they did not engage in meal preparation or heavy household chores because their spouses or adult children with whom they lived performed those tasks. Some subjects said they did not engage in active recreational activities although they did engage in quiet recreation. Also, some subjects preferred not to answer the question about intimate activities or were widowed and said that such activities were no longer part of their lives. Nevertheless, all of these activities are important ADLs and the panel of therapists who were surveyed to obtain information about face validity said that these activities should be included.

The Vestibular Disorders Activities of Daily Living Scale has excellent internal consistency within each subscale and within the Total Scale. The measured parameter on the subscales and the Total Scale is the median score. Use of the median provides a valid measure of central tendency for this type of qualitative data. In this way, if the subject fails to answer a question, the score is not affected significantly.

The distribution of subjects' scores suggests that most patients believe their functional skills are not affected or are minimally affected, while a few report noticeable effects. Differences could be affected by diagnosis, personality type, constraints of the individual's lifestyle, and many other issues. Nevertheless, the finding that many patients use safety guarding for many daily life tasks has clinical significance for treatment planning and for understanding the effects of vestibular disorders on the quality of life. Performance on instrumental ADLs is more variable than on the other domains, probably because of the wider variety of tasks and roles in this category. The functional and ambulation tasks, such as bathing, donning clothes, and moving from place to place, are almost all universally essential tasks. The class of instrumental tasks, however, is more variable.

The scale also has excellent test-retest reliability within the 2-hour period used. Subjects could have remembered their original answers, but within the context of this study this issue could not be resolved further. All participants had already been diagnosed as having vestibular disorders and were referred to one of us (H.S.C.) for therapy. All subjects expected to be and were treated for their vestibular disorders before the end of the visit on the day they participated in the study, and some participants also underwent vestibular rehabilitation home programs. Therefore, to have asked subjects to have returned for subsequent testing on another day was not possible because their answers would have been confounded by having received therapy.

To meet the requirements for making a test meet the standards of the American Psychological Association, further research must be done on this instrument. Future work should address several issues, including test-retest reliability over a longer period, other tests of validity, the relation of the test to objective diagnostic tests and to existing ADL scales, and several other problems beyond the scope of this initial article.

A self-administered scale has some limitations. Self-efficacy, or self-perceived ability, is not the same as actual ability. Patients' perceptions may not correspond well to their actual performance abilities, although those perceptions undoubtedly color their willingness to attempt some tasks. Self-efficacy is also confounded by personality factors, past experience with illness or disability, psychological needs, and the demands of significant others for care, attention, or performance. For example, an elderly woman with moderate vertigo who stopped working to be a full-time mother, whose husband is busy with his career, and who employs a maid to care for the house and a nanny to care for the baby may perceive herself as inconvenienced but capable because she must be able to meet her husband's needs. In contrast, a young woman with mild vertigo who stopped working to be a full-time mother, whose husband is busy with his career, and who employs a maid to care for the house and a nanny to care for the baby may perceive herself as inconvenienced but capable because she must be able to meet her husband's needs. Nevertheless, the finding that many patients use safety guarding for many daily life tasks has clinical significance for treatment planning and for understanding the effects of vestibular disorders on the quality of life. Performance on instrumental ADLs is more variable than on the other domains, probably because of the wider variety of tasks and roles in this category. The functional and ambulation tasks, such as bathing, donning clothes, and moving from place to place, are almost all universally essential tasks. The class of instrumental tasks, however, is more variable.

The scale also has excellent test-retest reliability within the 2-hour period used. Subjects could have remembered their original answers, but within the context of this study this issue could not be resolved further. All participants had already been diagnosed as having vestibular disorders and were referred to one of us (H.S.C.) for therapy. All subjects expected to be and were treated for their vestibular disorders before the end of the visit on the day they participated in the study, and some participants also underwent vestibular rehabilitation home programs. Therefore, to have asked subjects to have returned for subsequent testing on another day was not possible because their answers would have been confounded by having received therapy.

To meet the requirements for making a test meet the standards of the American Psychological Association, further research must be done on this instrument. Future work should address several issues, including test-retest reliability over a longer period, other tests of validity, the relation of the test to objective diagnostic tests and to existing ADL scales, and several other problems beyond the scope of this initial article.

A self-administered scale has some limitations. Self-efficacy, or self-perceived ability, is not the same as actual ability. Patients' perceptions may not correspond well to their actual performance abilities, although those perceptions undoubtedly color their willingness to attempt some tasks. Self-efficacy is also confounded by personality factors, past experience with illness or disability, psychological needs, and the demands of significant others for care, attention, or performance. For example, an elderly woman with moderate vertigo who stopped working to be a full-time mother, whose husband is busy with his career, and who employs a maid to care for the house and a nanny to care for the baby may perceive herself as inconvenienced but capable because she must be able to meet her husband's needs. In contrast, a young woman with mild vertigo who stopped working to be a full-time mother, whose husband is busy with his career, and who employs a maid to care for the house and a nanny to care for the baby may perceive herself as inconvenienced but capable because she must be able to meet her husband's needs.
surgery, or rehabilitation. Many subjects reported that filling out the scale was thought provoking because considering each item individually made them realize that they were either more or less independent than they had considered themselves. For example, several subjects who began the session by stating that the vertigo was “ruining my life” or similar comments discovered that they were more functional and less helpless than they had considered themselves to be. This change in self-image was probably therapeutic. The items also provoked discussion with significant others (eg, spouses) and provided a basis for discussion of practical issues to be addressed in therapy, discussed with the physician, or mentioned to family members and coworkers.

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REFERENCES

5. Gresham GE, Dittmar SS. Instruments used to assess function and measure outcomes in physical rehabilitation. In: Dittmar SS, Gresham GE, eds. Functional Assessment and Outcome Measures for the Rehabilitation Professional. Gai-
6. Lawton MP, Brody EM. Assessment of older people: self-maintaining and in-
man’s Occupational Therapy. 8th ed. Philadelphia, Pa: JB Lippincott; 1993:192-
206.
12. Granger CV, Hamilton BB, Gordon WA, Raszer NA. Advances in functional as-
14. Cohen H. Functional improvements and vestibular rehabilitation following acous-
tic neuroma resection. In: Abstracts of the XIXth Barany Society Satellite Meet-
15. Jacobson GP, Newman CW. The development of the Dizziness Handicap Inven-
17. Law M, Baptiste S, McCoIl M, Opzoomer A, Polatjako H, Pollock N. The Cana-
dian Occupational Performance Measure: an outcome measure for occupa-
sociation of Occupational Therapists; 1991.
22. Yardley L, Verschuer C, Masson E, Luxon L, Haake N. Somatic and psycho-
23. Cohen H, Kane-Wimeland M, Miller LV, Hatfield CL. Occupation and visual/ 
1995;112:526-532.
24. Zane RS, Rauhut MM, Jenkins HA. Vestibular function testing: an evaluation of 
25. Alford BR. Ménière’s disease: criteria for diagnosis and evaluation of therapy for 
26. Pearson BW, Brackmann DE. Committee on hearing and equilibrium guidelines 
27. Baloh RW, Honrubia V, Clinical Neurophysiology of the Vestibular System. 2nd 
28. Schessell DA, Nedzelski JM. Ménière’s disease and other peripheral vestibular 
disorders. In: Harker LA, ed. Ear and Cranial Base. 2nd ed. St Louis, Mo: Mosby-
Year Book Inc; 1993:3152-3176.
29. DIX MR, Hallpike CS. The pathology, symptomatology and diagnosis of certain com-
mon disorders of the vestibular system. Proc R Soc Med. 1952;45:341-
354.
30. Baloh RW, Honrubia V, Jacobson K. Benign positional vertigo: clinical and ocu-
32. Lin LI-K. A concordance correlation coefficient to evaluate reproducibility. Bio-
33. Bland JM, Altman DG. Statistical methods for assessing agreement between two 
34. Standards for Educational and Psychological Testing. Washington, DC: Ameri-
can Psychological Association; 1985.
35. Brown C, Moore WP, Hemman D, YuneK A. Influence of instrumental activities 
of daily living assessment method on judgments of independence. Am J Occup 