Test-retest reliability and internal consistency of The Nordic Assisted Mobility Evaluation (NAME 1.0)

Åse Brandt, PhD¹, Charlotte Löfqvist, MSc,², Inga Jónsdottir, B.Sc.³, Terje Sund, MSc ⁴, Anna-Liisa Salminen, PhD⁵, Monica Werngren-Elgström, PhD², Susanne Iwarsson, PhD²

¹Department of Research & Development, Danish Centre for Assistive Technology, Århus, Denmark
²Department of Health Sciences, Lund University, Lund, Sweden
³Assistive Technology Centre, Kópavogur, Social Insurance Administration, Reykjavik, Iceland
⁴The Special Units Department, Section for Assistive Technology Centres, Norwegian Labour and Welfare service, Oslo, Norway
⁵The Social Services division, Stakes, Helsinki, Finland

Short title: Reliability of NAME 1.0

Corresponding author:

Åse Brandt

Department of Research & Development, Danish Centre for Assistive Technology

P. P. Ørumsgade 11, bygning 3, stuen

DK-8000 Århus C, Denmark

Tel. +45 87 412 407, Fax. +45 87 412 426, E-mail: aab@hmi.dk
Abstract

Objectives: To investigate the test-retest reliability and the internal consistency of NAME 1.0.

Methods and materials: The instrument comprises four scales and one summed index. Two test-retest interviews with seven days interval involved 147 mobility device users (mean age 60 years) with a broad range of impairments, living in private residences.

Results: For two scales and the summed index the reliability was substantial or almost perfect (κ 0.71/κW 0.76/ICC=0.93; CI=0.90-0.95). The reliability of one scale was moderate (κW 0.41), but after reduction of grades and combination with another scale, it was substantial (κW 0.66). The reliability of the fourth scale was moderate (κW 0.55). The internal consistency of three scales varied from α .063 to 0.76. It could not be computed for the fourth scale.

Conclusion: The test-retest reliability of NAME 1.0 is substantial to almost perfect except from one scale with moderate reliability. This was probably due to the high complexity of the relationship between outdoor participation while using mobility devices and accessibility to the outdoor physical environment. The instrument’s internal consistency and feasibility are good. Still, the instrument has to be revised; more research on the concept of mobility-related participation and the psychometric qualities of the instrument is required.

Keywords: Mobility Limitation, Assistive Devices, Outcome Assessment, Rehabilitation, Psychometrics
Journal of Rehabilitation Medicine

Principal author
Åse Brandt
Department of Research & Development
Danish Centre for Assistive Technology
P. P. Ørumsgade 11, bygn. 3
DK-8000 Århus C
Denmark
Tel. +45 87 412 407
Fax. +45 87 412 426
E-mail: aab@hmi.dk
Introduction

The demand for evidence-based praxis in health care is increasing, but studies on the effectiveness of assistive technology are still scarce. A large proportion of the assistive devices being used consists of mobility devices aiming at making participation in everyday life and society possible for persons with mobility impairments (1,2). Even though several studies on mobility device outcomes have been carried out, most of them are laboratory studies investigating the efficacy of the devices focusing on functional outcomes, and only a few studies target effectiveness regarding real life situations, i.e. participation in everyday life and society. Such studies are vital, since they may shed light upon how and to which degree mobility devices assist the users in living an active life and thereby whether mobility contribute to fulfilling political ambitions of providing people with disability equal opportunities for participation in society (3). Reasons for the lack of participation outcome studies are most likely that assistive technology outcome evaluation still is in its infancy, and that only few outcome evaluation instruments are applicable (4). Furthermore, before the launch of the International Classification of Functioning, Disability and Health (ICF) (5), in which participation is a central component, the concept was generally seldom in focus for outcome evaluation.

In order to define the eventual need for a new instrument targeting participation outcomes of mobility device interventions, a search in the CINAHL, Sociofile, PubMed, Pedro, Cochrane, and Amed databases was accomplished in 2003, resulting in no hits. Some instruments targeted participation in general, but were considered too broad for mobility device outcome evaluation, e.g. the LIFE-H (6), ‘Impact of participation and autonomy’ (IPA) (7), and ‘Craig Handicap Scaling and Reporting Technique (CHART) (8). Other instruments had been specifically developed for assessment of assistive technology interventions, e.g. the ‘Individually prioritised
problems analysis’ (IPPA) (9) and the ‘Functional evaluation in a wheelchair’ (FEW) (10), but did not target the outcome dimension of interest.

With the intention of closing this gap a new instrument for outcome evaluation of mobility device interventions was developed in cooperation between Denmark, Finland, Iceland, Norway, and Sweden, ‘The Nordic Assisted Mobility Evaluation’ (NAME 1.0). The instrument evaluates mobility device interventions in terms of ‘mobility-related participation’ (11), meaning that only participation aspects involving mobility are targeted. The theoretical basis for development of the instrument was the ICF framework, stating that assistive devices are environmental factors that along with other environmental factors, personal factors, and the person’s body functions influence participation. Items were selected on basis of the ICF list of activities and participation and were subsequently qualified by discussions with groups using mobility devices, assistive technology experts and researchers. Pilot versions of the instrument underwent content validation and feasibility tests in all five countries, with satisfactory results. As part of the ongoing instrument optimisation process, the objective of this study was to investigate the test-retest reliability and internal consistency of NAME 1.0.

Materials and methods

The NAME 1.0 Instrument

At the initiation of this study, NAME 1.0 was available in five Nordic languages, and in addition to the instrument a manual is provided. The instrument had a structured interview format and consisted of a baseline questionnaire to be used just before the user gets his/her mobility device, and a follow-up questionnaire. Each version had an optional, descriptive part (Part A) and a mandatory outcomes part (Part B). Part A comprised items concerning demographics, functional limitations,
living conditions, means of transportation, etc. Part B constituted the core of the instrument and was identical in the baseline- and the follow-up versions (Figure 1). A short version of Part B of the instrument is enclosed in Appendix A. It consisted of two sets of items, each to be rated with two different scales. In addition, one of the scales constituted was used for building up a summed index:

Four items about mobility in different environments:

- **Dependence in mobility** scale with ‘yes’/’no’/’does not know’ response categories
- **Extent of assistance in mobility** scale offering response options on a 5-graded ordinal scale ranging from ‘very little assistance’ to ‘very much assistance’.

Twenty-two items about mobility-related participation:

- **Frequency of mobility-related participation** scale offering response options on a 9-graded scale going from ‘at least once a day’ to ‘never’. In addition a ‘does not know’ was offered.
- **Ease/difficulty in mobility during participation** scale offering response options on a 5-graded ordinal scale ranging from ‘very easy’ to ‘very difficult’. In addition a ‘does not know’ was offered.
- **Mobility-related participation repertoire** index, i.e. a sum of the number of participation aspects performed, based on the responses of the ‘Frequency of mobility-related participation scale’.

**Participants**

The study participants were mobility device users from the five Nordic countries, selected by municipality therapists aiming at reaching variation in terms of age, sex, mobility device use, civil status, and urban / rural environments. Inclusion criteria were: mobility device use for at least four months; a stable mobility device situation; at least 18 years of age; sufficient cognitive function for study participation; private residence. Exclusion criteria were: insufficient communication abilities;
mobility device motive other than mobility and participation (e.g. to alleviate pain); mobility-related participation not possible (e.g. because of hospitalisation).

A total of 172 persons were asked to participate. Of these 17 declined, mostly because they generally did not wish to participate in studies. During the study six participants dropped out, mainly because of illness, leaving us with 147. The participants represented the variation aimed for concerning demographics and device use, except that only few used walking frames or transportation wheelchair (Table I).

[Table I in here]

**Data collection**

Part A of the baseline version of NAME 1.0 was used only for retrieving descriptive participant information. In addition, questions about self-reported diagnosis based on the WHO International Classification of Diseases ICD-10 (12) were developed and used for descriptive purposes; the participants reported their predominant diagnoses; at most three could be reported.

In order to test Part B for test-retest reliability and internal consistency, two interviews with seven days interval (SD= 4) were accomplished at home visits, except from seven participants who were interviewed at the interviewers’ offices, at a rehabilitation centre, or in the participant’s office. Before the second interview it was ensured that no major changes in prerequisites for mobility had occurred since the first interview. The interviews were undertaken by occupational therapists, physiotherapists, or by a person with another type of academic background. All were trained in administration of NAME 1.0. by members of the project team (author constellation). Data were entered in a SPSS 14.0 datasheet according to project-specific guidelines, followed by quality control.
Data analysis

Prior to the analysis the frequency of ‘does not know’ responses was computed, since a high frequency might mean that the ‘does not know’ data had to be included in the analysis, in turn implying that the ordinal scales would have to be analysed as categorical data. Since the frequency of ‘does not know’ responses was low (13% - 64% of all possible responses), they were not included further in the analysis. Percent agreement and kappa coefficients were calculated to examine response consistency (agreement) between the two interviews (13,14). For categorical data, i.e. the Dependence in mobility scale, kappa (κ) was computed, and for the remainder scales consisting of ordered categorical data, weighted kappa (κw) was used. The intraclass correlation coefficient (ICC) with 95% confidence limits was used for the Mobility-related participation repertoire summed score. The strength of agreement was interpreted according to Landis and Koch’s guidelines (16): kappa values <0.00 = poor agreement; 0.00-0.20 = slight; 0.21 – 0.40 = fair; 0.41 – 0.60 = moderate; 0.61 – 0.80 = substantial; 0.81 – 1.00 = almost perfect agreement. The ICC was interpreted in the same way. For analysis of internal consistency Cronbach’s Alpha (α) was used. Levels of .70 to .90 were considered optimal, since they suggest internal consistency without redundancy of items (15,16). The results for the two interviews were very similar, thus the final internal consistency analysis was based on data from both interviews. Analysis was accomplished for the entire study population and for sex and age subgroups. A country subgroup analysis was considered but not computed because of small sample sizes (17).

During the process of data analysis, the agreement of the Extent of assistance in mobility scale and the Ease/difficulty in mobility during participation scale appeared to be insufficient. In order to optimise the scales they were stepwisely transformed into fewer grades, followed by renewed analysis. In addition, the Extent of assistance scale was combined with the
Dependence in mobility scale into one scale, thereby reducing the total number of scales from four to three.

The SAS (for kappa) or SPSS 14.00 software (for all other analysis) were used.

Ethics

All principles in ethical guidelines for human research were meticulously followed. In Iceland formal ethical consent was sought and granted, while not required in the other countries. In Norway formal ethical consent is usually necessary, but the Norwegian Work and Welfare Service has a general permission to perform surveys as long as they are intended to improve the services to the study participants.

Results

The reliability of the four scales and the summed score varied from moderate to nearly perfect (Table II). That is, the reliability of the Dependence in mobility and the Frequency of mobility-related participation scales was substantial, and for the Mobility-related participation repertoire summed score, it was almost perfect. The reliability of the Extent of assistance in mobility scale was moderate, barely exceeding the cut-off to be interpreted as fair. Changing the scale into a three-grade scale did not improve the level of agreement. However, after the construction of a new four-grade scale based on the three-graded version in combination with the Dependence in mobility scale, labelled Extent of dependence, the level of agreement improved to substantial. For the Ease/difficulty in mobility during participation scale the reliability was moderate. Reduction of the number of grades into three-graded or dichotomous scales changed the weighted kappa coefficient only slightly, while the percent agreement rose to some extent (Table II).
The results for the subgroup analysis concerning sex and age were similar to those for the entire sample (Table III). To sum up, the reliability of the scales was substantial to moderate after having reduced the number of grades for one scale, which was further combined with another scale, resulting in three scales and a summed score with almost perfect reliability.

The levels of internal consistency of the two original scales Dependence in mobility and Extent of assistance in mobility were less than optimal and optimal, respectively. After merging the two scales into the new Extent of dependence scale, the internal consistency was optimal. It was also optimal for the Frequency of mobility-related participation scale. Because of too few cases, it was not possible to analyse internal consistency for the Ease/difficulty in mobility during participation scale (Table II).

Discussion

The present study reports the first step of investigation of a new instrument’s psychometric properties. After scale optimisation it revealed mostly positive results, but also important areas for further improvement of NAME 1.0. This instrument is intended for assessment of mobility-related participation outcomes of mobility device interventions, developed in a Nordic context. The structured interview format targets mobility and mobility-related outcome dimensions concerning ease/difficulty, assistance, and types and frequency of performance. That is, different scales representing dimensions that as a whole can be regarded as relevant in studies on outcomes of mobility device interventions. Other studies have found that the choice of scale for assessing disability may impact the findings substantially and that difficulty scales were the most sensitive for
catching disability, indicating that the NAME 1.0 ease/difficulty scale is a core scale of the
document (18-20).

The reliability test-retest involved a considerable sample size, including participants
with a relevant variation of functional limitations, diagnoses, and device use in the five Nordic
countries. The fact that only few used walking frames or transportation wheelchairs and that their
self-rated health was lower than in the general population in the same age groups (21) is regarded as
typical for the NAME 1.0 target group. Even though the present study did not target feasibility, the
data collected supported the positive results of the pilot tests accomplished prior to the current study
(unpublished data). That is, the proportions of ‘does not know’ responses were very low, indicating
that the target group was able to answer the questions included in the instrument.

The study took place in a Nordic context among mobility device users representing a
relevant variety of characteristics, indicating ecological validity. While the total sample size was
sufficiently large for overall test-retest analysis and for age and sex subgroup analysis, it was too
small for valid country subgroup analysis.

The reliability was substantial to almost perfect except from one scale, namely
Ease/difficulty in mobility during participation. There may be several explanations why the
reliability of this scale was only moderate. One is that kappa statistics is affected by asymmetrical
data distributions, that is when the prevalence of a response is very low or high, the kappa value
may be artificially lowered (22,23). Since data for most items of the Ease/difficulty in mobility
during participation scale was asymmetrical, this is a possible explanation, while data inspection
revealed that the items showing asymmetrical data did not present lower kappa values than other
items. In addition, the percent agreement was not very high supporting the assumption that data
asymmetry probably was not the correct explanation. Another explanation may be that some items
consisted of more than one mobility-related participation aspect, e.g. to use services such as the
chemist, post office, library, bank or to receive treatment at physician, physiotherapist or dentist, making the items ambiguous. However, these kinds of questions did not display markedly low kappa values. A third explanation may be the complexity of the insufficiently explored relationship between outdoor participation and accessibility problems; a relationship that is challenged while moving about using a mobility device (2,24). The ease/difficulty in mobility-related participation may depend on the accessibility to and usability of the physical environment, i.e. involving the person with his/her functional limitations, the mobility devices and the environmental barriers at the place where participation takes place (11,25). Given that e.g. shopping is performed in different shops and the ease/difficulty perceived depends on the environmental barriers present outside and in the shop, it may be difficult to consistently assess how easy/difficult it is to get around while shopping. Based on our experiences through the process of instrument development in this field, the complexity just described constitutes the major challenge for coming up with optimally valid and reliable instruments for assessment of mobility-related participation. This is supported by the fact that the level of test-retest reliability of several other instruments for assessment of outdoor participation or of outdoor environments is similar to that of the Ease/difficulty in mobility during participation scale. One example is the LIFE-H, which is used for assessment of life habits and handicap, concepts close to that of participation. The overall reliability for adults with SCI assessed by ICC was 0.74, but for the mobility category it was only 0.59 (26). Another example is Okochi et al who studied the test-retest reliability of ICF codes and qualifiers in geriatric care. The mean $\kappa_W$ value for mobility in the ‘Activity and participation’ domain was 0.50 for older people living at home, but when supplementing the instrument with illustrations of different environments, the mean $\kappa_W$ value increased to 0.76 (27). This supports the assumption that respondents may think of specific places when asked about mobility-related participation, posing demands on specification of the environment to reduce ambiguity and improve instrument reliability. As concerns the NAME
instrument, adding instructions to participants to think about preferred locations for each participation aspect may increase the reliability of the *Ease/difficulty in mobility during participation*. Turning to instruments for self-assessment of aspects of the physical environment, challenges similar to those we experienced in the current study prevail. For example the ‘Usability in My Home’ (UIMH) with $\kappa_W$ ranging from 0.57 to 0.83 for six specific items; the lowest value concerned accessibility outdoors (28). Another example is the ‘Home and Community Environment’ instrument. For this instrument the mean kappa value for community mobility was 0.47 (range 0.20-0.64) and for home mobility 0.66 (range 0.28-1.0) at test-retest. In all – even though kappa values cannot be compared directly – it seems as if it is more difficult to obtain high reliability for assessments outdoors than indoors. Summing up on reliability in instruments targeting aspects of participation, this kind of research is challenging. Based on the results of the current study, and not least on our practical experiences and discussions along the process of development of NAME 1.0, the concept of mobility-related participation is particularly challenging. The limitations as concerns reliability must be kept in mind when using the instrument for outcome evaluation, since lower instrument reliability requires larger sample sizes (16).

The internal consistency for the *Frequency of mobility-related participation* scale was optimal, and so was the subsequently developed *Extent of dependence* scale. Internal consistency is often regarded as a measure of reliability, but since Cronbach’s Alpha describes how well a group of items focuses on a single concept, this coefficient may instead be regarded as a first expression of an instrument’s construct validity (13). Nevertheless, in order to investigate to which degree NAME 1.0 evaluates mobility-related participation as expected, and whether each scale assesses one single dimension, there is a need for in-depth studies on construct validity.

When it comes to use of NAME 1.0 for outcome measurement purposes, it should be kept in mind that the scales like most instruments for evaluation of human performance and
opinions are ordinal. A further development of the instrument could be application of Rasch analysis, thereby changing the scales into interval data and improving the instrument’s psychometric quality (29). Also the instrument’s sensitivity should be investigated, i.e. its ability to detect changes between groups of mobility device users and its responsiveness, i.e. ability to detect changes resulting from mobility device interventions. Prior to further psychometric testing, the instrument (Appendix A) should be revised based on the findings of the present study. A main change required is to replace the two scales on dependence in mobility in different environments with one new scale. Further, some items should be revised and the instructions made more specific, in particular when it comes to specification of environments in focus for the rating.

In conclusion, this article reports an investigation of the test-retest reliability and internal consistency of NAME 1.0. The reliability of the scales and the summed score building up the instrument varied from moderate to nearly perfect. We demonstrated that it was possible to improve reliability by means of scale optimisation, resulting in concrete strategies for further revisions of the instrument. Still, further psychometric testing is required. We discussed reasons for challenges to reliability in this kind of instruments, suggesting that they may be due to the complexity of the concept of mobility-related participation. A particular challenge for instruments targeting use of mobility devices for outdoor mobility and participation is to deal with the complex person-environment relationship, involving mobility devices as part of the environmental component.

Acknowledgements

We wish to thank P. Kotiranta, Stakes, Finland; K. B. Laursen, Århus University, Denmark; and V. Horstmann and B. Slaug at Lund University, Sweden, for contributions in different phases of this project. Thanks also to consortium members participating in the first project phase and to all the
mobility device users, data collectors, and the municipality staff who identified mobility device users for the study. We are grateful to the Nordic Development Centre for Rehabilitation Technology; The Danish Association of Occupational Therapists; The Swedish Research Council; The Social Insurance Administration, Iceland; The National Insurance Administration; The Swedish Handicap Institute; Stakes, Finland; and The Danish Centre for Assistive Technology for funding the research. This paper was prepared in the context of the Centre for Ageing and Supportive Environments, CASE, at Lund University, funded by The Swedish Research Council.
References


(11) Brandt Å. Outcomes of rollator and powered wheelchair interventions. User satisfaction and participation. [Dissertation]. Lund, Sweden: Faculty of Medicine, Division of Occupational Therapy, Lund University, 2005.


Appendix: NAME 1.0 Part B

Dependence and extent of assistance in mobility

1a. Are you dependent on other persons in order to get about in your home?
   - Yes
   - No
   - Does not know

1b. If yes – how much assistance do you need?
   - Very little assistance
   - Little assistance
   - Some assistance
   - Much assistance
   - Very much assistance

*The response categories are identical for the next three items.*

2. Are you dependent on other persons in order to get out of or into your home?

3. Are you dependent on other persons in order to get about indoors at other places than in your home?

4. Are you dependent on other persons in order to get about outdoors? (Regarding getting about walking or similar, not using means of transportation).

Frequency of mobility-related participation and ease/difficulty in mobility during participation

5a. How often do you work in the kitchen (cooking/dishwashing/laying the table, etc.)
   - Daily
   - Several times a week
   - About once a week
   - Several times a month
   - About once a month
   - Several times a year
   - About once a year
   - Never
   - Does not know

5b. How easy / difficult is it for you to get about when you work in the kitchen? (Is not asked to persons who answer ‘Never’ or ‘Does not know’ to the ‘a’ question).

---

1 The instrument has been translated into English for publication purposes. If, however, the instrument is to be used for outcomes evaluation it must be translated according to standards for instrument translation.
The response categories are identical for the following items.

6. How often do you wash clothes or garments (clothes, bedding, etc., incl. drying and ironing)?
7. How often do you clean (light and heavy cleaning ranging from dusting to vacuum)?
8. How often do you take care of children or other household members in your home?
9. How often do you attend restaurants, pubs, or cafés?
10. How often do you go to the hairdressers, chiropodists, etc.?
11. How often do you do grocery shopping?
12. How often do you shop in small shops?
13. How often do you shop in department stores?
14. How often do you use services such as the chemist, post office, library, and bank?
15. How often do you receive treatment (e.g. at physician, physiotherapist, dentist)?
16. How often do you participate in social life in associations, in church, etc.?
17. How often do you attend cultural or sports arrangements (e.g. cinema, theatre, football match)?
18. How often do you engage in hobbies, fitness or sports outside your home?
19. How often do you bring or fetch children from day-care centre, school, etc.?
20. How often do you go for a walk (including trips in wheelchair)?
21. How often do you visit friends and family?
22. How often do you go on holidays, to summer cottage, etc.?
23. How often do you use public transportation?
24. How often do you work or study outside your home?
25. How often do you do gardening, clear away snow, etc.?
26. Do you do any other activity, which requires you move about?
Table I. Characteristics of participants involved in the reliability testing of the NAME 1.0 (N=147).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong>, mean years (range)</td>
<td>60 (19 – 93)</td>
</tr>
<tr>
<td><strong>Sex</strong>, men/women (n)</td>
<td>62/85</td>
</tr>
<tr>
<td><strong>Living alone/cohabiting (n)</strong></td>
<td>72/75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>30</td>
</tr>
<tr>
<td>Finland</td>
<td>32</td>
</tr>
<tr>
<td>Iceland</td>
<td>25</td>
</tr>
<tr>
<td>Norway</td>
<td>30</td>
</tr>
<tr>
<td>Sweden</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mobility device&lt;sup&gt;a&lt;/sup&gt;</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sticks / crutches</td>
<td>40</td>
</tr>
<tr>
<td>Walking frame</td>
<td>2</td>
</tr>
<tr>
<td>Rollator</td>
<td>31</td>
</tr>
<tr>
<td>Manual wheelchair</td>
<td>34</td>
</tr>
<tr>
<td>Transportation wheelchair</td>
<td>5</td>
</tr>
<tr>
<td>Powered wheelchair</td>
<td>15</td>
</tr>
<tr>
<td>Electric scooter</td>
<td>17</td>
</tr>
<tr>
<td>Other (working chair)</td>
<td>3</td>
</tr>
<tr>
<td>No. of devices, median</td>
<td>2</td>
</tr>
<tr>
<td>Functional limitation</td>
<td>%</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----</td>
</tr>
<tr>
<td>Lower extremities</td>
<td>95</td>
</tr>
<tr>
<td>Balance / dizziness</td>
<td>64</td>
</tr>
<tr>
<td>Upper extremities</td>
<td>56</td>
</tr>
<tr>
<td>Stamina</td>
<td>50</td>
</tr>
<tr>
<td>Tiredness</td>
<td>50</td>
</tr>
<tr>
<td>Coordination</td>
<td>33</td>
</tr>
<tr>
<td>Vision</td>
<td>31</td>
</tr>
<tr>
<td>Incontinence</td>
<td>27</td>
</tr>
<tr>
<td>Hearing</td>
<td>22</td>
</tr>
<tr>
<td>Memory</td>
<td>14</td>
</tr>
<tr>
<td>Head / neck</td>
<td>12</td>
</tr>
<tr>
<td>Extreme height / weight</td>
<td>7</td>
</tr>
</tbody>
</table>

**Most prevalent self-reported diagnoses were diseases of the:**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nervous system</td>
<td>31</td>
</tr>
<tr>
<td>Circulatory system</td>
<td>24</td>
</tr>
<tr>
<td>Musculoskeletal system</td>
<td>21</td>
</tr>
<tr>
<td>and connective tissue</td>
<td></td>
</tr>
<tr>
<td>Injury, poisoning and</td>
<td>17</td>
</tr>
</tbody>
</table>
certain other consequences
of external causes

Respiratory system  7

<table>
<thead>
<tr>
<th>General health, mean (SD)</th>
<th>43 (25)</th>
</tr>
</thead>
</table>

^aSome users had more than one device

^bAs measured and calibrated according to the SF-36 guidelines. A score of ‘0’ constitutes the worst possible health and ‘100’ the best.
<table>
<thead>
<tr>
<th>Scale</th>
<th>Number of items</th>
<th>Test-retest reliability</th>
<th>Internal consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Dependence in mobility scale$^a$</td>
<td>4</td>
<td>147</td>
<td>0.89</td>
</tr>
<tr>
<td>Extent of assistance in mobility scale</td>
<td>4</td>
<td>35*</td>
<td>0.42</td>
</tr>
<tr>
<td>The original 5-graded scale$^b$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A modified 3-graded scale$^c$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A new modified 4-graded scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>including the Dependence in mobility scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extent of dependence scale$^d$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of mobility-related</td>
<td>21</td>
<td>140</td>
<td>0.72</td>
</tr>
<tr>
<td>Participation scale</td>
<td>Ease/difficulty of mobility during participation scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>The original 5-graded scale</td>
<td>84*</td>
<td>0.64</td>
<td>0.55 (0.09)</td>
</tr>
<tr>
<td>A modified 3-graded scale, version 1</td>
<td>84*</td>
<td>0.70</td>
<td>0.55 (0.09)</td>
</tr>
<tr>
<td>A modified 3-graded scale, version 2</td>
<td>84*</td>
<td>0.81</td>
<td>0.51 (0.14)</td>
</tr>
<tr>
<td>Modified dichotomous response categories, version 1</td>
<td>84*</td>
<td>0.84</td>
<td>0.52 (0.14)</td>
</tr>
<tr>
<td>Modified dichotomous response categories, version 2</td>
<td>84*</td>
<td>0.80</td>
<td>0.57 (0.09)</td>
</tr>
</tbody>
</table>

| Mobility-related participation repertoire summed index | | 21 | 146 | 0.93 | n.a. |

^a1=yes/2=no/3=does not know

^b1=very little assistance/2=little assistance/3=some assistance/4=much assistance/5=very much assistance
1 = very little assistance or little assistance; 2 = some assistance; 3 = much assistance or very much assistance

d1 = no assistance (‘no’ answers from the ‘dependence on assistance’ scale); 2 = very little assistance or little assistance; 3 = some assistance; 4 = much assistance or very much assistance

e1 = daily; 2 = several times a week; 3 = once a week; 4 = several times a month; 5 = once a month; 6 = several times a year; 7 = once a year; 8 = never.

A ‘does not know’ response option is offered, but not included in the analysis

f1 = very easy; 2 = easy; 3 = neither easy nor difficult; 4 = difficult; 5 = very difficult. A ‘does not know’ response option is offered, but not included in the analysis.

g1 = very easy or easy; 2 = neither easy nor difficult; 3 = difficult or very difficult

h1 = very easy or easy or neither easy nor difficult; 2 = difficult; 3 = very difficult

i1 = very easy or easy or neither easy nor difficult; 2 = difficult or very difficult

j1 = very easy or easy; 2 = neither easy nor difficult or difficult or very difficult

*mean number: the number of responses differed since only those who answered the previous question positively were to answer the questions

§ consisted of data from both 1st and 2nd interviews

n.p. = not possible to analyse because of too few cases
Table III. Subgroup analysis of test-retest reliability of the NAME 1.0 (N=147).

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Dependence in mobility</th>
<th>Extent of assistance</th>
<th>Frequency of mobility-related participation</th>
<th>Ease/difficulty in mobility during participation</th>
<th>Mobility-related participation repertoire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean $\kappa$</td>
<td>Mean $\kappa_W$</td>
<td>Mean $\kappa_W$</td>
<td>Mean $\kappa_W$</td>
<td>ICC (CI)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;76 years, n=111</td>
<td>0.72</td>
<td>0.38</td>
<td>0.76</td>
<td>0.54</td>
<td>0.93 (0.90-0.95)</td>
</tr>
<tr>
<td>≥76 years, n=36</td>
<td>0.72</td>
<td>0.50</td>
<td>0.67</td>
<td>0.53</td>
<td>0.93 (0.90-0.95)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men, n=62</td>
<td>0.75</td>
<td>0.30</td>
<td>0.74</td>
<td>0.54</td>
<td>0.92 (0.87-0.95)</td>
</tr>
<tr>
<td>Women, n=85</td>
<td>0.69</td>
<td>0.45</td>
<td>0.76</td>
<td>0.52</td>
<td>0.94 (0.91-0.96)</td>
</tr>
</tbody>
</table>
Legend Figure 1:

Figure 1. The NAME 1.0 structure and outcomes scales