TABLE E-1 Items retained for the QuickDASH. The first column represents the domains of the full DASH questionnaire, the second column contains the items retained in the QuickDASH, and the third column describes the rationale for selecting that particular item for the QuickDASH, or the rationale for excluding that domain. The goal was to reach the smallest number of items possible (n=11) while retaining a high Cronbach’s alpha (0.90).

<table>
<thead>
<tr>
<th>Domain (Hudak, 1996)</th>
<th>Item retained for QuickDASH</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>daily activities</td>
<td>open tight, new jar</td>
<td>highest ranking of importance + difficulty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>unanimous inclusion vote by content experts</td>
</tr>
<tr>
<td>house/yard work</td>
<td>doing heavy household chores</td>
<td>highest ranking of importance + difficulty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>more applicable than gardening item</td>
</tr>
<tr>
<td>shopping</td>
<td>carry shopping bag</td>
<td>only shopping item in DASH</td>
</tr>
<tr>
<td>recreation</td>
<td>recreation requiring force</td>
<td>highest item-total correlation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>highest ranking of importance + difficulty</td>
</tr>
<tr>
<td>self care</td>
<td>wash back</td>
<td>deemed most applicable of self-care items across regions of the extremity, high ranking in difficulty to patients</td>
</tr>
<tr>
<td>sex</td>
<td>not included in QuickDASH</td>
<td>low acceptability in short questionnaire</td>
</tr>
<tr>
<td>eating</td>
<td>use knife to cut food</td>
<td>only DASH item in this domain</td>
</tr>
<tr>
<td>sleep</td>
<td>difficulty sleeping</td>
<td>only DASH item in this domain</td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
</tr>
<tr>
<td>friends</td>
<td>socializing with family and friends</td>
<td>only DASH item in this domain</td>
</tr>
<tr>
<td>family care</td>
<td>not included in QuickDASH</td>
<td>considered conceptually similar to socializing with family and friends</td>
</tr>
<tr>
<td>work</td>
<td>limited in work</td>
<td>only DASH item in this domain</td>
</tr>
<tr>
<td>Self image</td>
<td>not included in QuickDASH</td>
<td>different concept than function/symptoms</td>
</tr>
<tr>
<td>Pain</td>
<td>severity over past week</td>
<td>likely to capture most symptoms/types of pain</td>
</tr>
<tr>
<td>Stiffness</td>
<td>not included in QuickDASH</td>
<td>will likely have pain too, dropped</td>
</tr>
<tr>
<td>Weakness</td>
<td>not included in QuickDASH</td>
<td>will likely have pain too, dropped</td>
</tr>
<tr>
<td>Tingling/numbness</td>
<td>tingling in arm</td>
<td>will pick up nerve entrapments, retained</td>
</tr>
</tbody>
</table>
TABLE E-2 Four top-ranked items in terms of correlations with dichotomous markers of thresholds set at the 25th, 50th, and 75th percentile points in the distribution of overall DASH scores. The top four items were listed for each, and the item with the lowest correlation overall (item 23 on the DASH) was dropped to make the final item count eleven.

<table>
<thead>
<tr>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Heavy household chores (0.68)</td>
<td>5. Push open a heavy door (0.64)</td>
<td>4. Prepare a meal (0.65)</td>
</tr>
<tr>
<td>8. Garden/yardwork (0.64)</td>
<td>9. Make a bed (0.71)</td>
<td>10. Carry a shopping bag (0.68)</td>
</tr>
<tr>
<td>18. Recreational activity with force through arm (0.59)</td>
<td>11. Carry heavy objects (0.67)</td>
<td>13. Wash/dry hair (0.65)</td>
</tr>
<tr>
<td>23. Do usual work (0.58)</td>
<td>14. Wash back (0.65)</td>
<td>17. Recreational activity, light (0.65)</td>
</tr>
</tbody>
</table>
TABLE E-3 Results of the item-response theory (one parameter, Rasch) approach to item reduction. Items are ranked according to their Rasch item weight, going from items where difficulty is rarely encountered unless one is quite disabled to items which are more likely to be difficult even with minor disability.

<table>
<thead>
<tr>
<th>Item</th>
<th>Rasch Weight (logit)</th>
<th>Infit Z score</th>
<th>Outfit Z score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing transportation needs</td>
<td>1.18</td>
<td>-0.3</td>
<td>-1.1</td>
</tr>
<tr>
<td>Using a key</td>
<td>1.09</td>
<td>2.4</td>
<td>2.2</td>
</tr>
<tr>
<td>Using a knife</td>
<td>0.70</td>
<td>1.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Preparing a meal</td>
<td>0.51</td>
<td>-2.5</td>
<td>-2.9</td>
</tr>
<tr>
<td>Making a bed</td>
<td>0.15</td>
<td>-4.2</td>
<td>-3.9</td>
</tr>
<tr>
<td>Washing hair</td>
<td>0.08</td>
<td>1.5</td>
<td>1.1</td>
</tr>
<tr>
<td>Carrying shopping bag</td>
<td>0.02</td>
<td>-1.2</td>
<td>-0.9</td>
</tr>
<tr>
<td>Opening heavy door</td>
<td>-0.30</td>
<td>-1.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Doing usual work</td>
<td>-1.00</td>
<td>2.2</td>
<td>3.4</td>
</tr>
<tr>
<td>Lifting heavy objects</td>
<td>-1.04</td>
<td>-0.7</td>
<td>-1.1</td>
</tr>
<tr>
<td>Doing household chores</td>
<td>-1.39</td>
<td>-1.6</td>
<td>-2.4</td>
</tr>
</tbody>
</table>
Table E-4. Item level responses to the different versions of the *QuickDASH* at baseline of cohort (n=200).

<table>
<thead>
<tr>
<th>QuickDASH Item</th>
<th>Missing or n/a</th>
<th>Response: % of time having difficulty doing item</th>
<th>Mean (1-5 scale)</th>
<th>Item to total correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 no diff. 2 3 4 5 unable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QuickDASH-concept</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Opening a jar</td>
<td>1</td>
<td>18 24.5 18.5 21.5 16.5</td>
<td>2.9</td>
<td>0.65</td>
</tr>
<tr>
<td>2 Doing heavy household chores</td>
<td>2.5</td>
<td>13 16 22.5 21.5 24.5</td>
<td>3.3</td>
<td>0.81</td>
</tr>
<tr>
<td>3 Carrying a shopping bag</td>
<td>1.5</td>
<td>25.5 21 29 13.5 9.5</td>
<td>2.6</td>
<td>0.77</td>
</tr>
<tr>
<td>4 Washing your back</td>
<td>1.5</td>
<td>18.5 17 14 25 24</td>
<td>3.2</td>
<td>0.70</td>
</tr>
<tr>
<td>5 Using a knife</td>
<td>2</td>
<td>18 21 11.5 3.5</td>
<td>2.1</td>
<td>0.69</td>
</tr>
<tr>
<td>6 Recreational activities w force</td>
<td>6</td>
<td>7 10 16.5 25 35.5</td>
<td>3.8</td>
<td>0.65</td>
</tr>
<tr>
<td>7 Sleeping</td>
<td>0</td>
<td>21 22.5 28.5 23.5 4.5</td>
<td>2.7</td>
<td>0.62</td>
</tr>
<tr>
<td>8 Socializing with friends/family</td>
<td>1</td>
<td>32.5 27 20.5 16 3</td>
<td>2.3</td>
<td>0.71</td>
</tr>
<tr>
<td>9 Doing usual work</td>
<td>0</td>
<td>19.5 23.5 27 23 7</td>
<td>2.7</td>
<td>0.73</td>
</tr>
<tr>
<td>10 Pain severity</td>
<td>.50</td>
<td>4.5 24 36.5 27.5 7</td>
<td>3.1</td>
<td>0.70</td>
</tr>
<tr>
<td>11 Numbness/tingling severity</td>
<td>.50</td>
<td>39.5 21 24 11 4</td>
<td>2.2</td>
<td>0.46</td>
</tr>
</tbody>
</table>

**QuickDASH - EITC** Cronbach’s Alpha = 0.95

<p>| QuickDASH - EITC              |                |                                                  |                  |                          |
|-------------------------------|----------------|--------------------------------------------------|                  |                          |
| 1 Making a meal               | 1              | 35.5 31 21.5 8.5 2.5                             | 2.1              | 0.77                     |
| 2 Opening a heavy door         | 2              | 20.5 23 24 22 8.5                              | 2.7              | 0.84                     |
| 3 Doing heavy household chores| 2.5            | 13 16 22.5 21.5 24.5                           | 3.3              | 0.87                     |
| 4 Doing yardwork               | 6              | 11.5 18 22.5 19.5 22.5                         | 3.3              | 0.86                     |
| 5 Making a bed                 | 2              | 29.5 20.5 30 13.5 4.5                        | 2.4              | 0.82                     |</p>
<table>
<thead>
<tr>
<th></th>
<th>Activity</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Carrying a shopping bag</td>
<td>1.5</td>
<td>25.5</td>
<td>21</td>
<td>29</td>
<td>13.5</td>
<td>9.5</td>
<td>2.6</td>
<td>0.83</td>
</tr>
<tr>
<td>7</td>
<td>Lifting heavy objects</td>
<td>2.5</td>
<td>14</td>
<td>19</td>
<td>21</td>
<td>22</td>
<td>21.5</td>
<td>3.2</td>
<td>0.84</td>
</tr>
<tr>
<td>8</td>
<td>Washing your hair</td>
<td>2</td>
<td>24.5</td>
<td>22</td>
<td>22</td>
<td>21</td>
<td>8.5</td>
<td>2.7</td>
<td>0.79</td>
</tr>
<tr>
<td>9</td>
<td>Washing your back</td>
<td>1.5</td>
<td>18.5</td>
<td>17</td>
<td>14</td>
<td>25</td>
<td>24</td>
<td>3.2</td>
<td>0.72</td>
</tr>
<tr>
<td>10</td>
<td>Recreational activities - light</td>
<td>2</td>
<td>26.5</td>
<td>14.5</td>
<td>6.5</td>
<td>4.5</td>
<td>1.9</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Recreational activities - w force</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>16.5</td>
<td>25</td>
<td>35.5</td>
<td>3.8</td>
<td>0.68</td>
</tr>
</tbody>
</table>

*QuickDASH - Rasch*  
Cronbach’s Alpha = 0.95

<table>
<thead>
<tr>
<th></th>
<th>Activity</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Managing transportation needs</td>
<td>4.5</td>
<td>19.5</td>
<td>19.5</td>
<td>9.5</td>
<td>1</td>
<td>2.0</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Using key</td>
<td>1</td>
<td>19.5</td>
<td>19.5</td>
<td>9</td>
<td>1</td>
<td>1.9</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>using a knife</td>
<td>2</td>
<td>18</td>
<td>21</td>
<td>11.5</td>
<td>3.5</td>
<td>2.1</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>preparing a meal</td>
<td>1</td>
<td>35.5</td>
<td>31</td>
<td>21.5</td>
<td>8.5</td>
<td>2.5</td>
<td>2.1</td>
<td>0.82</td>
</tr>
<tr>
<td>5</td>
<td>making a bed</td>
<td>2</td>
<td>29.5</td>
<td>20.5</td>
<td>30</td>
<td>13.5</td>
<td>4.5</td>
<td>2.4</td>
<td>0.81</td>
</tr>
<tr>
<td>6</td>
<td>washing hair</td>
<td>2</td>
<td>24.5</td>
<td>22</td>
<td>22</td>
<td>21</td>
<td>8.5</td>
<td>2.7</td>
<td>0.77</td>
</tr>
<tr>
<td>7</td>
<td>carrying shopping bag</td>
<td>1.5</td>
<td>25.5</td>
<td>21</td>
<td>29</td>
<td>13.5</td>
<td>9.5</td>
<td>2.6</td>
<td>0.83</td>
</tr>
<tr>
<td>8</td>
<td>pushing open heavy door</td>
<td>2</td>
<td>20.5</td>
<td>23</td>
<td>24</td>
<td>22</td>
<td>8.5</td>
<td>2.7</td>
<td>0.85</td>
</tr>
<tr>
<td>9</td>
<td>doing usual work</td>
<td>0</td>
<td>19.5</td>
<td>23.5</td>
<td>27</td>
<td>23</td>
<td>7</td>
<td>2.7</td>
<td>0.69</td>
</tr>
<tr>
<td>10</td>
<td>lifting heavy object</td>
<td>2.5</td>
<td>14</td>
<td>19</td>
<td>21</td>
<td>22</td>
<td>21.5</td>
<td>3.2</td>
<td>0.82</td>
</tr>
<tr>
<td>11</td>
<td>doing heavy household chores</td>
<td>2.5</td>
<td>13</td>
<td>16</td>
<td>22.5</td>
<td>21.5</td>
<td>24.5</td>
<td>3.3</td>
<td>0.82</td>
</tr>
</tbody>
</table>
Table E5. Univariate description of scores on the various versions of the QuickDASH and the full DASH

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>QuickDASH -concept</th>
<th>QuickDASH -EITC</th>
<th>QuickDASH-Rasch</th>
<th>Full DASH</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (number of scores available)</td>
<td>195</td>
<td>189</td>
<td>192</td>
<td>191</td>
</tr>
<tr>
<td>mean</td>
<td>45.3</td>
<td>45.6</td>
<td>37.9</td>
<td>43.9</td>
</tr>
<tr>
<td>standard deviation</td>
<td>23.2</td>
<td>26.2</td>
<td>25.1</td>
<td>22.9</td>
</tr>
<tr>
<td>75th</td>
<td>63.6</td>
<td>63.6</td>
<td>55</td>
<td>61.7</td>
</tr>
<tr>
<td>50th (median)</td>
<td>45.5</td>
<td>47.7</td>
<td>36.4</td>
<td>44.6</td>
</tr>
<tr>
<td>25th</td>
<td>25</td>
<td>22.7</td>
<td>15.9</td>
<td>25</td>
</tr>
<tr>
<td>Range of scores</td>
<td>0-93.2</td>
<td>0-100</td>
<td>0-93</td>
<td>0-93</td>
</tr>
<tr>
<td>Correlation with full DASH</td>
<td>0.98</td>
<td>0.98</td>
<td>0.97</td>
<td>1.00</td>
</tr>
</tbody>
</table>