Development and evaluation of a new assistive device for low back load reduction in caregivers: an experimental study

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Supplementary table S1: Crude mean and standard deviation in each period and intervention

| Dependent variables                        |   | D                          |   | M                          |
|--------------------------------------------|---|----------------------------|---|----------------------------|
|                                            | Period | n   | Mean | SD  | n   | Mean | SD  |
| **Time of trunk flexion [s]**              | (> 45°) | 1   | 14   | 66.5 | 38.0 | 14   | 114.9 | 64.6 |
|                                            |         | 2   | 14   | 87.7 | 46.1 | 14   | 92.2  | 53.2 |
|                                            |         |     | overall | 28  | 77.1 | 42.8 | 28   | 103.5 | 59.2 |
| **% time of trunk flexion [%]**            | (> 45°) | 1   | 14   | 25.3 | 13.6 | 14   | 54.4  | 26.0 |
|                                            |         | 2   | 14   | 32.8 | 17.1 | 14   | 49.6  | 27.0 |
|                                            |         |     | overall | 28  | 29.0 | 15.6 | 28   | 52.0  | 26.1 |
| **Average trunk flexion angle [°]**        |         | 1   | 14   | 33.8 | 5.6  | 14   | 44.5  | 7.8  |
|                                            |         | 2   | 14   | 35.2 | 6.2  | 14   | 43.7  | 6.9  |
|                                            |         |     | overall | 28  | 34.5 | 5.8  | 28   | 44.1  | 7.2  |
| **Maximum trunk flexion angle [°]**        |         | 1   | 14   | 65.0 | 12.5 | 14   | 73.1  | 11.3 |
|                                            |         | 2   | 14   | 70.8 | 9.0  | 14   | 75.2  | 12.8 |
|                                            |         |     | overall | 28  | 67.9 | 11.1 | 28   | 74.1  | 11.9 |
| **Frequency of trunk flexion maintenance** | (> 45°, > 4s) | 1   | 14   | 5.1  | 3.2  | 14   | 6.5   | 3.9  |
|                                            |         | 2   | 14   | 7.6  | 5.1  | 14   | 6.6   | 4.5  |
|                                            |         |     | overall | 28  | 5.8  | 3.6  | 28   | 7.1   | 4.8  |
| **Maximum flexion maintenance time [s]**   | (> 45°) | 1   | 14   | 9.6  | 5.6  | 14   | 26.5  | 22.2 |
|                                            |         | 2   | 14   | 13.0 | 8.1  | 14   | 14.8  | 11.7 |
|                                            |         |     | overall | 28  | 11.3 | 7.0  | 28   | 20.6  | 18.4 |
| **Working time [s]**                       |         | 1   | 14   | 255.0 | 32.1 | 14   | 218.3 | 68.4 |
|                                            |         | 2   | 14   | 272.2 | 54.4 | 14   | 177.8 | 31.4 |
|                                            |         |     | overall | 28  | 263.6 | 44.7 | 28   | 198.0 | 56.2 |
| **Body fatigue**                           |         | 1   | 14   | -2.8 | 16.4 | 14   | 15.8  | 18.1 |
|                                            |         | 2   | 14   | -10.7 | 15.8 | 14   | 18.6  | 16.6 |
|                                            |         |     | overall | 28  | -6.6 | 16.3 | 28   | 17.2  | 17.1 |
| **Low back fatigue**                       |         | 1   | 14   | 6.9  | 13.1 | 14   | 17.3  | 24.8 |
|                                            |         | 2   | 13   | -14.3 | 18.2 | 14   | 18.1  | 16.6 |
|                                            |         |     | overall | 27  | -3.3 | 18.9 | 28   | 17.7  | 20.7 |

D, device method; M, manual method; SD, standard deviation.
### Supplementary table S2: Sensibility analysis via a linear mixed model

| Dependent variables | Independent variables | df | F-value | p-value |
|---------------------|-----------------------|----|---------|---------|
| Time of trunk flexion [s] (> 45°) | Period | 1 | 0.01 | 0.907 |
|                     | Intervention | 1 | 6.21 | 0.018 |
|                     | Intervention-by-period | 1 | 1.42 | 0.245 |
| % Time of trunk flexion [%] (> 45°) | Period | 1 | 0.17 | 0.683 |
|                     | Intervention | 1 | 12.60 | 0.001 |
|                     | Intervention-by-period | 1 | 0.66 | 0.424 |
| Average trunk flexion angle [°] | Period | 1 | 0.12 | 0.734 |
|                     | Intervention | 1 | 18.14 | <.001 |
|                     | Intervention-by-period | 1 | 0.23 | 0.635 |
| Maximum trunk flexion angle [°] | Period | 1 | 4.92 | 0.036 |
|                     | Intervention | 1 | 3.48 | 0.070 |
|                     | Intervention-by-period | 1 | 0.22 | 0.641 |
| Frequency of trunk flexion maintenance (> 45°, > 4s) | Period | 1 | 0.11 | 0.747 |
|                     | Intervention | 1 | 2.57 | 0.117 |
|                     | Intervention-by-period | 1 | 0.69 | 0.414 |
| Maximum flexion maintenance time [s] (> 45°) | Period | 1 | 2.36 | 0.137 |
|                     | Intervention | 1 | 10.99 | 0.002 |
|                     | Intervention-by-period | 1 | 3.01 | 0.094 |
| Working time [s] | Period | 1 | 1.70 | 0.203 |
|                     | Intervention | 1 | 3.90 | 0.055 |
|                     | Intervention-by-period | 1 | 3.15 | 0.088 |
| Body fatigue | Period | 1 | 0.38 | 0.544 |
|                     | Intervention | 1 | 8.58 | 0.005 |
|                     | Intervention-by-period | 1 | 1.20 | 0.284 |
| Low back fatigue | Period | 1 | 3.80 | 0.062 |
|                     | Intervention | 1 | 2.15 | 0.148 |
|                     | Intervention-by-period | 1 | 5.09 | 0.033 |

D, device method; M, manual method; SD, standard deviation; df, degrees of freedom.