Supplementary Digital Content 2: Associations of average acceleration and MVPA with body fatness (Sample 1 and 2) and physical function (Sample 2).

### Model 1  
**Coefficient**  |  **95% CI**  
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SAMPLE 1 (Adolescent girls)  
Pairwise N= 1527 to 1638 |  
MODEL 1  
**Coefficient**  |  **95% CI**  
--- | ---
MVPA TOTAL  
Average acceleration (mg)  
-0.09  |  -0.13, -0.05  
Body mass index z-score  
Average acceleration (mg)  
-0.01  |  -0.01, 0.00  
Sit-to-stand 60 (repetitions)  
Average acceleration (mg)  
0.25  |  0.11, 0.40  
#### Generalised estimating equations

**Percent body fat**  
Average acceleration (mg)  
-0.09  |  -0.13, -0.05  
Body mass index z-score  
Average acceleration (mg)  
-0.01  |  -0.01, 0.00  
Average grip strength (kg)  
Average acceleration (mg)  
0.12  |  -0.03, 0.28  
Sit-to-stand 60 (repetitions)  
Average acceleration (mg)  
0.25  |  0.11, 0.40  
#### Model 2  
**Coefficient**  |  **95% CI**  
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MODEL 2  
**Coefficient**  |  **95% CI**  
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MVPA TOTAL (min)  
Average acceleration (mg)  
-0.03  |  -0.05, -0.02  
Body mass index z-score  
Average acceleration (mg)  
-0.00  |  -0.01, 0.00  
Average grip strength (kg)  
Average acceleration (mg)  
0.04  |  -0.00, 0.08  
Sit-to-stand 60 (repetitions)  
Average acceleration (mg)  
0.06  |  0.03, 0.10  
#### Model 3*  
**Coefficient**  |  **95% CI**  
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MODEL 3*  
**Coefficient**  |  **95% CI**  
--- | ---
MVPA TOTAL (min)  
Average acceleration (mg)  
0.02  |  -0.01, 0.06  
Body mass index z-score  
Average acceleration (mg)  
0.01  |  -0.00, 0.01  
Average grip strength (kg)  
Average acceleration (mg)  
0.09  |  -0.04, 0.23  
Sit-to-stand 60 (repetitions)  
Average acceleration (mg)  
0.06  |  0.02, 0.09  
#### Independent effect*  
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<table>
<thead>
<tr>
<th>Activity Metric</th>
<th>Model 1 Coefficient</th>
<th>95% CI</th>
<th>Model 2 Coefficient</th>
<th>95% CI</th>
<th>Model 3* Coefficient</th>
<th>95% CI</th>
<th>Independent effect*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average acceleration (mg)</td>
<td>0.06</td>
<td>0.03, 0.09</td>
<td>0.04</td>
<td>0.01, 0.07</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>bMVPA TOTAL (min)</td>
<td>0.02</td>
<td>0.01, 0.02</td>
<td>0.01</td>
<td>0.00, 0.02</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Percent body fat</strong></td>
<td></td>
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</tr>
<tr>
<td>Average acceleration (mg)</td>
<td>-0.13</td>
<td>-0.26, -0.00</td>
<td>-0.15</td>
<td>-0.26, -0.05</td>
<td>-0.12</td>
<td>-0.25, 0.01</td>
<td>X</td>
</tr>
<tr>
<td>bMVPA bouts (min)</td>
<td>-0.08</td>
<td>-0.16, -0.01</td>
<td>-0.06</td>
<td>-0.12, 0.00</td>
<td>-0.04</td>
<td>-0.10, 0.02</td>
<td>X</td>
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<tr>
<td><strong>Body mass index (kg.m^2)</strong></td>
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<tr>
<td>Average acceleration (mg)</td>
<td>-0.13</td>
<td>-0.21, -0.05</td>
<td>-0.15</td>
<td>-0.23, -0.08</td>
<td>-0.10</td>
<td>-0.19, 0.00</td>
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<tr>
<td>bMVPA bouts (min)</td>
<td>-0.05</td>
<td>-0.09, -0.01</td>
<td>-0.06</td>
<td>-0.10, -0.01</td>
<td>-0.04</td>
<td>-0.08, 0.02</td>
<td>X</td>
</tr>
<tr>
<td><strong>Average grip strength (kg)</strong></td>
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</tr>
<tr>
<td>Average acceleration (mg)</td>
<td>0.12</td>
<td>-0.03, 0.28</td>
<td>0.09</td>
<td>-0.04, 0.23</td>
<td><strong>0.15</strong></td>
<td><strong>0.00, 0.30</strong></td>
<td>✓</td>
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<tr>
<td>bMVPA bouts (min)</td>
<td>0.03</td>
<td>-0.05, 0.11</td>
<td>-0.01</td>
<td>-0.07, 0.05</td>
<td>-0.04</td>
<td>-0.10, 0.02</td>
<td>X</td>
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<tr>
<td><strong>Sit-to-stand 60 (repetitions)</strong></td>
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<tr>
<td>Average acceleration (mg)</td>
<td><strong>0.25</strong></td>
<td><strong>0.11, 0.40</strong></td>
<td><strong>0.22</strong></td>
<td><strong>0.06, 0.38</strong></td>
<td><strong>0.15</strong></td>
<td>-0.07, 0.37</td>
<td>X</td>
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<tr>
<td>bMVPA bouts (min)</td>
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<td>-0.02, 0.16</td>
<td>0.07</td>
<td>-0.02, 0.16</td>
<td>0.05</td>
<td>-0.04, 0.14</td>
<td>X</td>
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<tr>
<td><strong>Short Physical Performance Battery (SPPB)</strong></td>
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<tr>
<td>Average acceleration (mg)</td>
<td>0.06</td>
<td>0.03, 0.09</td>
<td>0.04</td>
<td>0.01, 0.07</td>
<td>0.04</td>
<td>-0.00, 0.07</td>
<td>X</td>
</tr>
<tr>
<td>bMVPA bouts (min)</td>
<td>0.02</td>
<td>-0.00, 0.03</td>
<td>0.01</td>
<td>-0.00, 0.02</td>
<td>0.00</td>
<td>-0.01, 0.02</td>
<td>X</td>
</tr>
</tbody>
</table>

**aMVPA TOTAL**: Total accumulated moderate-to-vigorous physical activity (MVPA) for adolescent girls (>200 mg) and adults with type 2 diabetes (>125 mg)

**bMVPA bouts**: MVPA accumulated in 10-min bouts (>100 mg).

Model 1 adjusted for clustering at school level only (sample 1) or unadjusted (sample 2). Model 2 adjusted for potential co-variates. Model 3 further adjusted for alternate activity metric.

95% CI = 95% confidence interval

*The final column indicates whether the associations with each activity metric were independent of the other metric (from Model 3). A dash (-) indicates multicollinearity was evident (VIF > 5) preventing the estimation of independent effects.

Significant associations are denoted in bold.