Is the presence of sedentary behaviour or the absence of physical activity responsible for fat mass and appetite dysregulation? Preliminary results from the DAPHNE project.

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Is the presence of sedentary behaviour or the absence of physical activity responsible for fat mass and appetite dysregulation? Preliminary results from the DAPHNE project.

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Background
• It is well established that moderate-to-vigorous physical activity (MVPA) contributes to the prevention of non-communicable diseases. More recently, sedentary behaviour has been linked with deleterious health outcomes independent of the amount of MVPA performed1, 2.

• Sedentary behaviour has also been linked to unhealthy dietary intake but little is known about the association between objectively measured sedentary behaviour and appetite control3.

Aim
• The present study employed an innovative validated device for the objective measurement of sedentary and active behaviour to investigate whether measures of sedentary and active behaviours were associated with body composition or appetite dysregulation.

Methods
• 58 participants (13 males, 45 females) visited the Human Appetite Research Unit on two occasions (age 37.0 ± 13.8 years, BMI 28.6 ± 4.9 kg/m²).

Visit 1:
- BedP& and anthropometrics
- PA and SB questionnaires
- Appetite questionnaires
- SenseWear and PA diary
- 2–3 hours

7 days measurement of free-living physical activity

Visit 2:
- Appetite questionnaires
- PA and SB questionnaires
- Remove SenseWear and collect PA diary
- Psychological and eating questionnaires
- 2–3 hours

Table 1. Measurement methods.

<table>
<thead>
<tr>
<th>Free-living PA</th>
<th>Body composition</th>
<th>Cardiovacular fitness</th>
<th>Resting metabolic rate</th>
<th>Appetite dysregulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senswear mini</td>
<td>Bodpod</td>
<td>Indirect calorimetry</td>
<td>Indirect calorimetry</td>
<td>Three-Factor Eating Questionnaire; Binge Eating Scale</td>
</tr>
</tbody>
</table>

Table 2. Correlation between active and sedentary behaviours and indices of adiposity.

<table>
<thead>
<tr>
<th>Body mass</th>
<th>BMI</th>
<th>Fat mass</th>
<th>% fat mass</th>
<th>WC</th>
<th>SED1</th>
<th>MVPA1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary behaviour2</td>
<td>-0.04</td>
<td>-0.22</td>
<td>-0.24</td>
<td>-0.35</td>
<td>-0.16</td>
<td></td>
</tr>
<tr>
<td>MVPA2</td>
<td>-0.37</td>
<td>-0.61 †</td>
<td>-0.60 †</td>
<td>-0.68 †</td>
<td>-0.52 †</td>
<td></td>
</tr>
<tr>
<td>Binge eating1</td>
<td>0.45 †</td>
<td>0.50 †</td>
<td>0.53 †</td>
<td>0.49 †</td>
<td>0.52 †</td>
<td>-0.14</td>
</tr>
<tr>
<td>MVPA2</td>
<td>0.56</td>
<td>0.69</td>
<td>0.65</td>
<td>0.61</td>
<td>0.61</td>
<td>-0.14</td>
</tr>
<tr>
<td>n55, data are Pearson correlations (r); 1 controlled for % fat mass (n=55); 2 controlled for sedentary time in minutes. *p&lt;0.05; †p&lt;0.01. Waist circumference (WC); SED (sedentary behaviour); energy expenditure (EE).</td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Table 3. Correlation between indices of adiposity, active and sedentary behaviours and appetite dysregulation.

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<tr>
<td>n58, data are Pearson correlations (r); 1 controlled for % fat mass (n=55); 1p&lt;0.01. Waist circumference (WC); SED (sedentary behaviour); energy expenditure (EE).</td>
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Conclusion
• The absence of MVPA may be more important than the presence of sedentary behaviour for the accumulation of body fat.

• Higher adiposity was associated with markers of appetite dysregulation (Disinhibition and Binge Eating).

• After controlling for adiposity, physical activity and sedentary behaviour were not associated with appetite dysregulation.

• Further research will investigate the relationships amongst physical activity, sedentary behaviour and appetite control using a robust methodological platform over a 14 week period.

References

Acknowledgements
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