THE DEVELOPMENT OF A SCOTTISH PHYSICAL ACTIVITY QUESTIONNAIRE FOR STUDENTS:

A TOOL FOR USE IN POPULATION STUDIES.

C. Bulley, M. Donaghy, A. Payne & N. Mutrie
Why Monitor Physical Activity?

• PA participation - physical and psychological health benefits
• High levels of inactivity in Britain
• Need for physical activity promotion
• Need for valid epidemiological assessment tools
Measurement Methods

- Objective
- Subjective
Objective Measurement

- Doubly-Labelled Water
- Accelerometry/Pedometry
- Heart Rate Monitoring/Oxygen Consumption Testing

- Advantages
- Disadvantages
Subjective Measurement

• Physical Activity Recall Questionnaires
• Physical Activity Log

• Advantages
• Disadvantages
Development of the Scottish Physical Activity Questionnaire

- Developed from Stanford 7-day Recall Questionnaire by Loughlan & Mutrie (1995) and Lowther et al (1999)
- Measurement of leisure and occupational PA in minutes per week (moderate and vigorous PA)
- Includes SEBCS categorical scale
- Previous work - community sample
Validating the SPAQ in Female Students

• Is the SPAQ valid for use in a female student population?
  – Selecting an objective method for validating the SPAQ
Choice of Objective Measure

• HRM
  – piloting
  – strong positive association with energy expenditure during PA (Haskell et al, 1992)
  – comparable units (minutes)
Trial 1 - Method

- 24 subjects, female students
- Recordings of HR for 3 waking days
- Completion of SPAQ
- Calibration for HR at light, moderate and vigorous intensity activity
Trial 1 - Analysis

- Histogram demonstrating time spent at different intensities of activity during one waking day

<table>
<thead>
<tr>
<th>Physical activity intensity (HR range)</th>
<th>Time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>resting: &lt;110.5</td>
<td>800</td>
</tr>
<tr>
<td>light: 110.5 to 125.8</td>
<td>0</td>
</tr>
<tr>
<td>moderate: 125.8 to 145.3</td>
<td></td>
</tr>
<tr>
<td>vigorous: &gt;145.3</td>
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</tbody>
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**Notes:**
- The histogram shows the distribution of time spent at different intensities of activity, with the y-axis representing time in minutes and the x-axis showing the physical activity intensity categories (resting, light, moderate, vigorous) and the corresponding heart rate ranges.
Trial 1 - Results

- Histogram comparing the differences between means of 3 days of estimations of physical activity by the SPAQ and HRM.
Trial 1 - Results

- T test: 0.019
  \( t = -2.52; \ df = 23; \ 95\% \ CI = -87.21, -8.52 \)
- Cronbach’s Alpha: 0.34
- Limits of Agreement Analysis: higher levels of PA appear to be associated with poorer agreement between methods (SPAQ>HRM)
Trial 1 - Focus Groups

- 53% (16) of study participants
- ~ 50% completed the SPAQ for the previous complete week (Mon-Sun)
- Few utilised a strategy in calculating time spent in physical activity
- Most difficult category to complete: leisure walking, occupational activity
- Negative visual impact
Conclusions and SPAQ Modification

- Specific examples given
- Rearrangement of questions
- Graphic design
Trial 2 - Method & Results

• Method:
  – Subjects - N=22; Protocol as before;

• Results:
  – T test: 0.526
    (t=-0.64; df=21; CI=-31.89, 16.80)
  – Cronbach’s Alpha: 0.58
  – Limits of Agreement Analysis: greater agreement between the measures; (95% limits of agreement: -114.24 to 129.12)
Trials 1 & 2 - Comparison

- Histogram comparing the differences between mean estimations of physical activity by the SPAQ and HRM in Trials 1 & 2.
Conclusions

• Improvement in agreement between subjective and objective data.

• SPAQ - a potentially useful tool for use in student population studies.

• Cautions: situation specific, subjects were motivated.

• Future work: reliability work; use in population studies.