Assessment of pedometer-determined physical activity in Danish adults: the importance of non-ambulatory activities

Purpose To estimate mean values of steps/day in a representative sample of Danish adults (15-75 years) using two different conversion methods for non-ambulatory (non-step) activities. Methods A simple random sample comprising 229 adults (52% men) from the Danish National Survey of Dietary Habits and Physical Activity 2007-08, wore a pedometer (Yamax SW-200 Tokyo, Japan) and recorded daily steps and non-ambulatory activities for seven consecutive days. Time spent on non-ambulatory activities was converted to step equivalents using 1) a simple conversion method (SCM) adding 200 step equivalents/min, and 2) a more complex conversion method (CCM) adding activity-specific step equivalents/min (assuming that 3 METS equals 100 steps/min). Very similar conversion methods have been suggested by Miller et al. 20061. Moreover, data from a Danish pilot study (n=28) were used to adjust for double-counting during cycling. When adding steps for time spent cycling, the mean number of steps recorded during cycling, found in the pilot study, was subtracted from the additional steps. The addition of >10000 step equivalents/day was truncated to 10000 step equivalents/day to avoid overestimation. Results 53% (45% of men, 62% of women) engaged in non-ambulatory activities during the registration period. The most frequently reported non-ambulatory activity was cycling, especially as transportation, which was reported by 39% (men: 31%, women: 48%) with a mean of 125 min/week (men: 107, women: 138 min/week). Our pilot study showed a mean recording of 40 steps/min during cycling. For each conversion method truncation was carried out for 4-5% of all days. At group level the conversion methods added 1482-1494 step equivalents/day corresponding to a 17% increase. For men 1126–1138 step equivalents/day were added (13-14% increase) vs. 1875–1886 step equivalents/day for women (22% increase), thus significantly higher for women compared to men, p=0.03) Conclusion In populations like the Danish, where cycling and other non-ambulatory activities are popular, it will be relevant to account for these activities when assessing pedometer-determined physical activity. Adding activity-specific step equivalents/min, or simply adding 200 step equivalents/min, provides very similar results. Furthermore, when accounting for cycling an adjustment for double-counting should be considered.

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