The contribution of commuting to total daily moderate-to-vigorous physical activity

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Background

- Physical inactivity is one of the most associated risk factors for chronic, non-communicable diseases.
- One of the factors contributing to low levels of physical activity is the decrease in the use of active modes of transport.
- Commuting to and from work can increase moderate-to-vigorous physical activity (MVPA) and increase adherence to physical activity guidelines.
- There is lack of evidence on the contribution of different modes of commute and continuous stepping bouts to physical activity while commuting.
- Most commuting studies have employed the use of self-reported physical activity measures.

Project Objectives

- To objectively determine the contribution of MVPA during commuting to total MVPA, using a cadence definition to quantify MVPA
- To explore how the length of stepping bouts affects adherence to physical activity guidelines.

Methods

- Twenty-seven office workers at the University of Salford were recruited.
- Participants wore an activity monitor, the activPAL, for 7 days and filled a daily activity diary.
- Activity diaries collected information on commute times and modes of commute.
- Data from the activPAL provided the duration and cadence of all walking bouts for the entire recorded period.
- MVPA was defined as walking bouts with a cadence of more than 100 steps/min.
- Modes of commute were categorised as: car, walking and mixed mode.
- Tests were carried out to determine if there was a relationship between commute MVPA and total MVPA accumulated.

Results

- Twenty-three of the 27 participants completed the study.
- The average total time per day spent in MVPA was 53.1 (±30.2) minutes.
- Commuting contributed 33% or 17.7 (±14.7) minutes to total time spent in MVPA.
- The highest percentage contribution to total MVPA was the walking commuters (54%), followed by mixed mode commuters (41%) and car commuters (21%).
- At a cadence of over 110steps/min, there was a far greater proportion of stepping during commuting compared to other cadence bands (Figure 1)

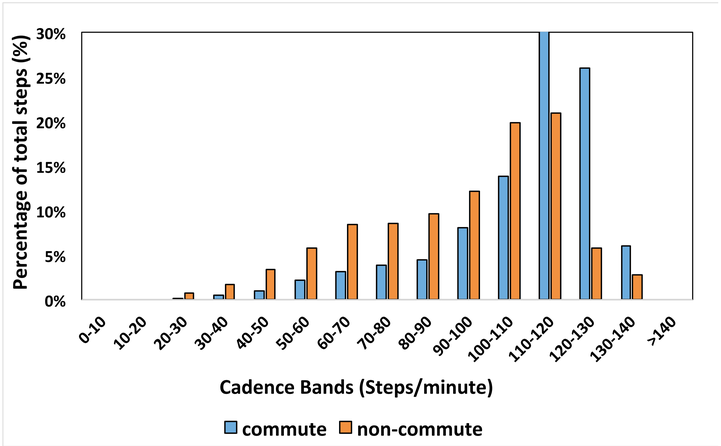

Figure 1: Cadence Distribution of commute and non-commute steps

- Stepping bouts of greater than 210 seconds were only undertaken whilst commuting, with a much higher number of steps accumulated in bouts over 300 seconds (Figure 2).

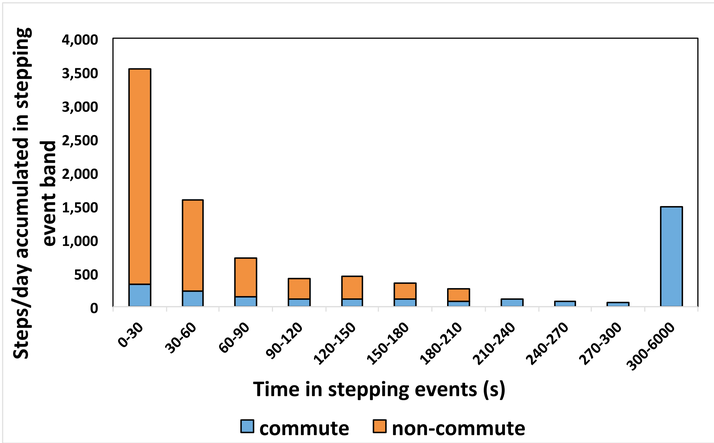

Figure 2: Stepping bout distribution of commute and non-commute steps

- Seventeen of the 23 participants achieved more than 30 minutes of MVPA per day, with five achieving this in their commute alone; irrespective of the length of stepping bouts.
- Compliance to physical activity guidelines reduced among the participants when a minimum stepping bout of 10 minutes was applied, with only seven participants achieving an average of 30 minutes of MVPA per day.
- A significant positive association was found between commute time spent in MVPA and total MVPA ($p<0.001$).

Conclusions and Recommendations

- Commuting to and from work can provide a significant contribution to total MVPA accumulated during the day.
- Mode of commuting has an important effect on the amount of MVPA accumulated during commuting.
- Public health recommendations should encourage active or mixed-mode commuting.

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