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Authors	Gbadamosi, AR, Clarke-Cornwell, AM, Sindall, PA and Granat, MH
Type	Conference or Workshop Item
URL	This version is available at: http://usir.salford.ac.uk/id/eprint/50992/
Published Date	2019

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Contribution of commuting to total daily moderate-to-vigorous physical activity

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Background: Commuting to and from work can increase moderate-to-vigorous physical activity (MVPA) and increase adherence to physical activity guidelines; however, there is lack of evidence on the contribution of different modes of commute and continuous stepping bouts to physical activity. Many commuting studies employ the use of self-reported physical activity measures. The aim of this study was to objectively determine the contribution of MVPA during commuting to total MVPA, using cadence to define MVPA and to explore how the length of stepping bouts affects adherence to physical activity guidelines.

Methods: Twenty-seven university staff wore an activPAL activity monitor for seven days and kept an activity diary; the activity diary collected information of commute times and modes of commute. The activPAL quantified the cadence and length of stepping bouts. MVPA was defined as stepping with a cadence of more than 100 steps/min.

Results: Twenty-three participants had valid data and were included in the analysis. The average total time per day spent in MVPA was 53.1 (± 30.2) minutes with commuting contributing 33% or 17.7 (± 14.7) minutes. Walking (32.2 (± 9.6) minutes) and mixed-mode (27.2 (± 15.3) minutes) commuters spent more time in MVPA than car commuters (9.1 (± 8.3) minutes). Seventeen of the 23 participants achieved more than 30 minutes of MVPA per day, with five achieving this in their commute alone. At a cadence of over 110 steps/min, there was a far greater proportion of stepping during commuting compared to other cadence bands (Figure 1) and stepping bouts of greater than 210 seconds were only undertaken whilst commuting. A significant positive association was found between commute time spent in MVPA and total MVPA ($p < 0.001$).

Conclusion: Commuting can be a major contributor to total MVPA, with the mode of commute having a significant role in the level of this contribution to total MVPA and public health messages should encourage active or mixed-mode commuting.