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Defining stepping bouts in free-living activities: Mind the breaks in walking

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Background: Body-worn devices have been used to measure ambulatory (walking/stepping) activities like the activPAL™. It has been validated for measuring step counts and cadence. Physical activity guidelines suggest that adults should engage in 30 minutes of moderate intensity physical activity in continuous bouts of at least 10 minutes. It has been shown that uninterrupted continuous walking can be difficult to achieve in free-living settings. Compliance to physical activity guidelines is measured on how continuous walking is defined but there is limited evidence on defining interruptions in continuous walking events. The aim of this study was to use an event-based approach to define what constitute a break in continuous walking by cadence definition of moderate-to-vigorous physical activity (MVPA).

Methods: Twenty-four university staff wore an activPAL™ activity monitor for seven days. The activPAL™ quantified the cadence of walking events and the time spent walking. The walking event files were extracted using a MATLAB script code and the duration, number of steps, and cadences of walking periods were calculated. MVPA was defined as a cadence of 100 steps/min. Average cadence was calculated by stitching two or more stepping events together; only the resulting average cadences that were above the specified value of MVPA was included in further analysis. Only preliminary results are presented in this abstract.

Results: The total time spent in MVPA increased from 4700 minutes to 5090 minutes for all participants, when breaks were included. Only 16.7% (4 participants) did not achieve the minimum requirement of engaging in at least 30 minutes of moderate intensity activity per day.

Conclusions: Walking should be considered continuous, including breaks in walking, as long as it does not fall below the minimum average cadence because it increases the amount of time spent in MVPA. There is need for standardised methods for interpretation and reporting of what constitutes a break in continuous walking.