

## Reliability and Validity of the ActivPAL activity monitor for office-based tasks

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### Abstract text

The ActivPAL physical activity monitor has been previously reported as a reliable and valid tool to measure everyday physical activities. The aim of this study was to examine the reliability and validity of the ActivPAL during typical office-based activities. A convenient sample of 10 adults participated in this study with two ActivPAL units attached to the participant's right thigh. Participants completed 6 minutes of specific office-based tasks such as typing an email, writing on a whiteboard, collecting printing and running a small errand with instructions provided through an audio recording. Each bout was filmed with time of sitting, standing and walking visually assessed using the same categories provided by the ActivPAL analysis. Reliability between ActivPAL recordings was assessed via Wilcoxon comparisons and intraclass correlation coefficients (ICC). Relative error was calculated as the difference between visual observations and ActivPAL recordings. Validity was assessed via Wilcoxon comparisons between ActivPAL recordings and video observations. There were no significant differences between ActivPAL units for sitting ( $196.2 \pm 5.0$  vs.  $195.9 \pm 5.1$  seconds), standing ( $121.8 \pm 4.8$  vs.  $122.3 \pm 6.9$  seconds) or walking ( $42.0 \pm 6.1$  vs.  $41.9 \pm 7.1$  seconds) activities. Significant ICC were detected for sitting (0.928), standing (0.849) and walking (0.849) time. In contrast, the ActivPAL recordings for sitting, standing and walking time were significantly different to visual observations ( $p < 0.05$ ) with an average relative error of  $>3.8\%$ ,  $>24.5\%$  and  $>54.1\%$ , respectively. The current study has identified ActivPAL units as reliable tools to document physical activity. However, the ActivPAL underestimated sitting and walking time, and overestimated standing time during office-based tasks.