**The distribution of activPAL postural and stepping classifications within ActiGraph activity classifications**

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**Objective:** Guidelines of physical activity (PA) and sedentary behaviour (SB) are dependent on how we define and quantify physical behaviour. It is therefore important to understand the validity of objective measures of PA and SB. This study aimed to evaluate the activity classifications of the ActiGraph GT3X+ (AG), using activPAL3 (AP) postural and stepping classifications as a criterion reference, in a free-living environment.

**Methods:** A convenience sample of 30 university employees (females (66.67%); age 40.47±10.95 years; BMI 23.93±2.46 kg/m²) were asked to wear the AG and AP simultaneously during waking hours for 7 days. Data were downloaded in 1-minute epochs and non-wear time was removed, using information from activity diaries and the Troiano algorithm for AG counts. The data were categorised using the Freedson activity cut-points for sedentary, light, moderate, and vigorous physical activity (≤99, 100-1951, 1952-5724, ≥5725): for each of these categories, the percentage of activity (sitting/lying, standing and stepping) from the AP was calculated for each AG category.

**Results:** After data reduction, participants provided on average 11h 58 min of data per day. The majority of these minutes (64.4%) were classified as SB from the AG, 30.5% light physical activity (LPA), and 5.1% moderate to vigorous physical activity (MVPA). The AG count distribution, median (interquartile range:range), for AP minutes that were wholly classified as sedentary was, 1 (0-30:0-9808); standing, 5 (0-39:0-4452); stepping, 3990 (2968-4882:0-13247). The AG sedentary category contained 16.8% standing; LPA contained 35.9% sitting/lying; (85.4%) of MVPA categories were accumulated in steps (figure).

**Conclusions:** The misclassification of standing within the AG sedentary classification, and the high percentage of sitting/lying within the AG LPA category, supports recent evidence that the 100 cutpoint for SB can over or under estimate sedentary time depending on the underlying population.