INTRODUCTION

- Recent evidence shows that sedentary behavior (SB) is detrimental to health. However, the majority of the evidence is based on observational studies that use self-report questionnaires.
- Those studies using objective activity monitors to assess SB have primarily used the ActiGraph accelerometer and defined sedentary as a count value less than 100 counts/min. This count value was not empirically derived and has not been validated.
- It is not known if existing measurement tools are sensitive to detect reductions in sitting time or if they can differentiate patterns of SB and light-intensity activity.
- The purpose of this study was to compare self-report and objective measurement tools in distinguishing SB and light-intensity activity following a one-week prescription to reduce SB.

METHODS

Participants
- 19 healthy volunteers completed the study (3 males).
- Average age was 47.5 (9.67) years, BMI was 34.1 (5.72) kg/m².
- All participants were non-exercising, ambulatory and had occupations that required sitting for extended periods of time.

Study Protocol
- Participants completed SB questionnaires at visits 2 and 3 and wore the activity monitors during all waking hours for the duration of the study.
- Sedentary condition:
  - Participants instructed to maintain habitual activity
- Light-intensity condition:
  - Participants received a prescription to reduce sitting time and were given a step-goal of 7500 steps/day.

Measure of Sedentary Behavior
- Stand-up questionnaire:
  - Average overall sitting
  - Average TV watching
- Brown Questionnaire:
  - Average overall sitting (5 domains)
  - Average TV watching
- ActiGraph GT3X Monitor:
  - Initialized to sample in 1 second epochs
  - Sedentary, light, moderate, and vigorous intensities using Freedson cut-points and 100 count/min cut-off to define SB

RESULTS

- The activPAL recorded significantly higher standing time and the Omron steps per day were significantly higher in the light-intensity compared to the sedentary condition.
- No other differences were significant.
- Participants took fewer steps, but spent less time sitting on non-work compared to work days.

CONCLUSIONS

- The activPAL monitor seems ideal for measuring SB because it provides output for sitting, standing and stepping time and the activPAL detected changes in sedentary and standing time between conditions (e.g. more sedentary minutes for sedentary condition, more standing for light intensity condition).
- The Omron detected increases in steps between conditions but one cannot be sure if there was a reduction in SB. The ActiGraph failed to detect any changes in SB and the cut-point of 100 counts/minute should be further evaluated as the activity count boundary to define SB. A lower count boundary or non-linear data processing techniques may enhance efficacy of the ActiGraph for measuring SB.
- The questionnaires did not detect reductions in sitting time or differences in activity between conditions suggesting that these self-report questionnaires may not be appropriate for determining the efficacy of interventions to reduce SB.

References