A Gardening Feasibility Study on Physical Activity and Sedentary Behavior

INTRODUCTION

- Gardening is a popular leisure time activity in the U.S. and may promote overall health and prevent disease by elevating physical activity (PA) engagement and by decreasing sedentary behavior (SB).
- Most previous gardening studies measured PA using self-reported survey data requiring participants to recall PA. The lack of objectively measured physical activity is a weakness of these previous studies.
- Accelerometers offer an objective way to measure PA by detecting the amount of movement/acceleration. However, few studies have objectively measured PA and SB for gardening.

STUDY PURPOSE

The purpose of this study was to determine the feasibility of using accelerometers to objectively measure physical activity, sedentary behavior and energy expenditure in gardener and non-gardener participants.

METHODS

- Repeated measures of PA and SB were collected at 2 time points:
  - T1 in June of 2016 & T2 in September 2016.
  - Two study groups: gardeners (TG, intervention) vs. non-gardeners (NG, comparison)
- 12 participants were randomly assigned to TG (6) or NG (6)
- Participants wore the activPAL accelerometer for 6 days
  - 4 weekdays & 2 weekend days
- Durations of sitting, standing, walking cadences and number of walking steps were measured energy expenditure was estimated.
  - Walking cadences were measured for <120 steps/min & > 120 steps/min
  - Walking steps were measured overall & for each walking cadence
  - All measures were analyzed for weekday, weekend and overall
- Data analysis: data was downloaded from the activPAL and analyzed using Matlab and SAS (General Linear Model).

RESULTS

- At T1, no significant differences between gardeners (TG) and comparison group (NG) were detected for time spent sedentary overall, time spent standing, time spent walking and energy expenditure, indicating good random sampling.
  - For walking cadences <120 steps per minute, the TG had lower number of steps (1.25 ± 0.35) compared to the NG (2.05 ± 0.47).
- NG showed some significant changes between T1 and T2, see graph below.
  - TG did not show any significant differences between T1 and T2.
- Because sedentary time and standing time were not significant in the NG but not the TG group between T1 and T2, gardening may protect against sedentary behavior and promote physical activity.

CONCLUSION

- The activPAL accelerometer is a feasible approach for assessing these measures during gardening.
- Small sample size precluded statistical power; interpret results with caution.
- Future research should test these measures for a large scale gardening study.

DEMOGRAPHIC INFORMATION

- Demographic variables: age, gender and education level
  - 6 participants < 50 years & 6 participants > 50 years
  - 3 male & 8 female participants
  - 7 participants attended at least 4 years of college & 4 participants attended some college or technical school

DEPARTMENT OF HEALTH AND EXERCISE SCIENCE

Elizabeth Thomson,** Kaigang Li, Ricky Pimentel, Alyssa Beavers, Kelsey Burr,** Jill Litt**
*Colorado State University, Fort Collins, CO, **Children’s Hospital Colorado, Aurora, CO, *Michigan State University, East Lansing, MI, *University of Colorado Denver, Denver, CO.