

The Effect of Goal Setting, Motivation, and Fitness Trackers on Daily Step Counts

C. Mostul, E. Jones, L. Seki, S. Coste

Health, Human Performance & Athletics Department
Linfield College – McMinnville, OR

Abstract

PURPOSE: Wearable devices for tracking health and fitness related activities are thought to motivate individuals to participate in regular exercise. It has been suggested that personal activity trackers can empower individuals to create and keep fitness goals. Therefore, this research was conducted to examine whether using a fitness tracking device in combination with working towards a given goal, self-reporting daily steps, and receiving motivational emails would increase physical activity. **METHODS:** 44 participants (13 males, 31 females) were recruited and randomized into either an experimental (goal setting) or control group (n=22 per group). Participants reported step counts every day for four weeks using an online form. After the first week of data collection, daily step count averages were calculated and goals were given to participants in the experimental group, by adding 500 steps to their daily average. Participants were notified of this goal and sent motivational emails each week, while participants in the control group were not given a specific goal or motivation. **RESULTS:** Week one step count averages were similar between groups (8460.9 ± 3329.8 steps for the control group and 8783.6 ± 4317.6 steps for the experimental group). Step counts declined in both groups across the three-week period. The week three average was 7731.8 ± 4231.5 steps for the control group and 7642.1 ± 4208.9 steps for the experimental group. Despite email encouragement in the experimental group, only 40.9 percent met their given goal in week one. By the third week, only 27.3 percent of participants in the experimental group met their goal, missing this goal by an average of 1595.88 ± 3294 steps. Participants reported that the use of these devices encouraged them to participate in physical activity (44.8 percent of the control group and 63.7 percent of the experimental group) despite the declining step count trend observed. 69.6 percent of the control group and 72.7 percent of the experimental group reported that they would continue to wear a fitness tracking device outside of the study. **CONCLUSION:** There was no significant difference between experimental and control groups with their adherence to the program and step count levels throughout each week. Both groups on average did not reach the widely accepted recommendation of 10,000 steps per day. Interestingly, the majority of participants reported that they still plan to use a fitness tracking device in the future and consider them to be a piece of motivational technology.

Purpose

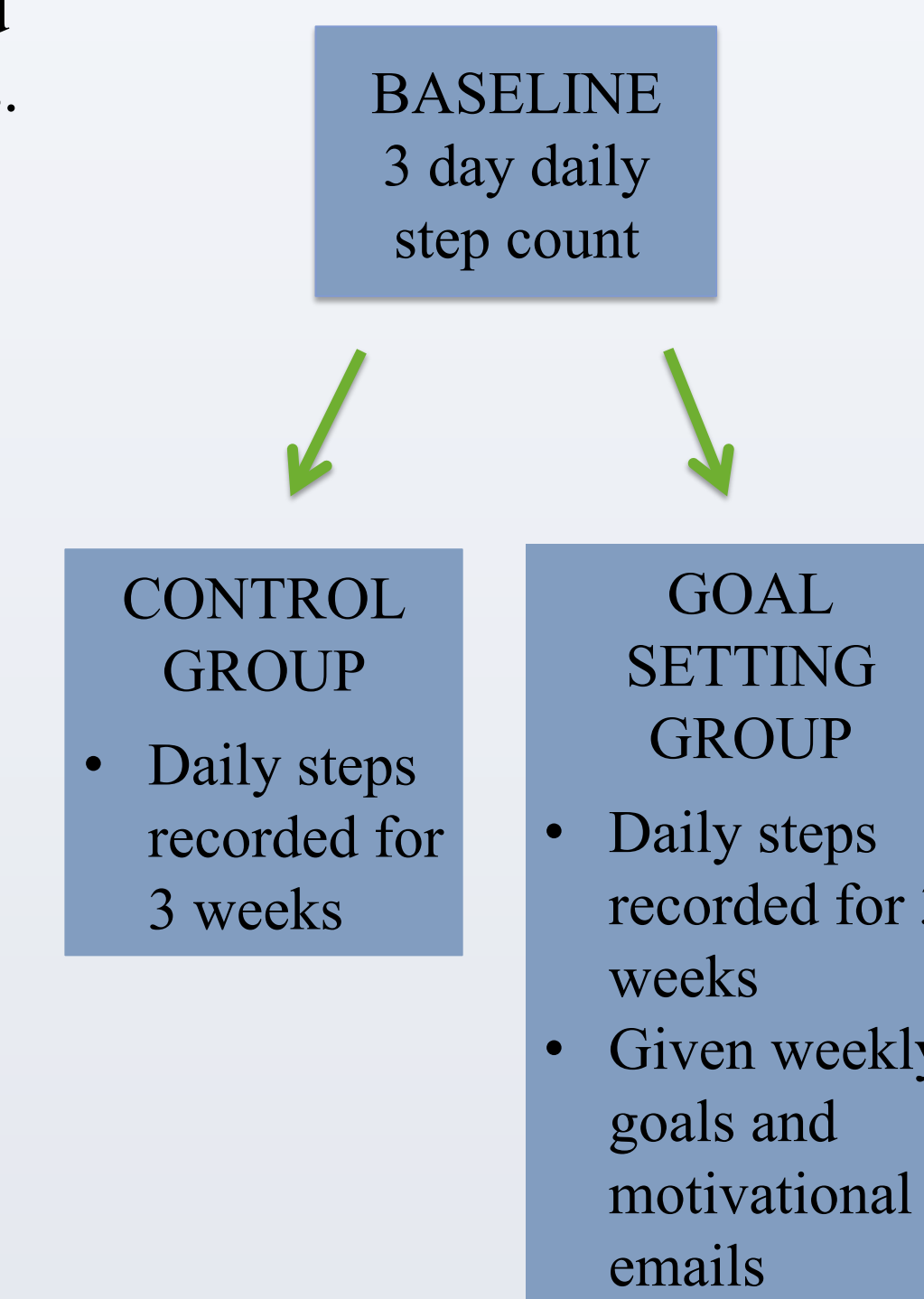
The purpose of this research was to examine whether working towards a specific goal along with self-reporting of daily step counts, as measured by a fitness activity tracker, would increase physical activity. We hypothesized that the goal setting group would have higher step counts throughout the study period as compared to the control group.

Introduction

Obesity continues to be a major health concern as more than one-third of U.S. adults are obese. Obesity has been associated with a number of diseases including cardiovascular disease, stroke, type 2 diabetes, and certain types of cancers (CDC, 2015). A significant way to combat obesity is through increasing physical activity. According to the 2008 Physical Activity Guidelines for Americans, U.S. adults are recommended to engage in moderate to vigorously intense aerobic activity for a minimum of 150 minutes each week, which is equivalent to 30 minutes a day for five days per week. In addition, muscle-strengthening activities that work all major muscle groups should be performed 2 days a week. (CDC, 2015). Wearable devices for tracking health and fitness related activities are thought to motivate individuals to participate in regular exercise (Rooney et al., 2003). In addition, previous studies suggest that focused and challenging goals related to physical activity generally lead to increased levels of physical activity. Participants in studies who had larger commitment to their goals and self-reported their progress had higher rates of improvement in their exercise (Smith, Hauenstein and Buchanan, 1996). In a recent study, the use of an Internet walking program significantly increased daily steps compared to controls (Poirier et al., 2016). It has been suggested that personal activity trackers can empower individuals to make and keep fitness goals (Nelson, Verhagen, & Noordzij, 2016).

Materials and Methods

Students, faculty and staff (n=44) were recruited from the Linfield College McMinnville Campus. For baseline step count levels, participants recorded their step counts each day for 3 days using either their own fitness tracking device or a provided pedometer. Participants were randomized into either a goal setting group or control group. Each member of the goal setting group received an individualized goal that was calculated by adding 500 steps to their daily baseline average. In addition, this group received motivational emails and check-ins regarding their goal. Both groups recorded their step counts daily for three weeks using Google forms. Repeated measures ANOVA was used to determine differences in step counts between groups across the 3 week period.



Results

Table 1. Participant Demographics

| Gender | Goal Setting Participants | Control Participants | Average Weight (lbs) | Average Height (cm) |
|---------|---------------------------|----------------------|----------------------|---------------------|
| Males | 7 | 7 | 193.61 ± 27.93 | 178.90 ± 5.31 |
| Females | 15 | 15 | 151.24 ± 36.08 | 165.95 ± 7.42 |

Figure 1. Step Count Average for Control and Experiment Groups Throughout Weeks 1-3 Both Decreased

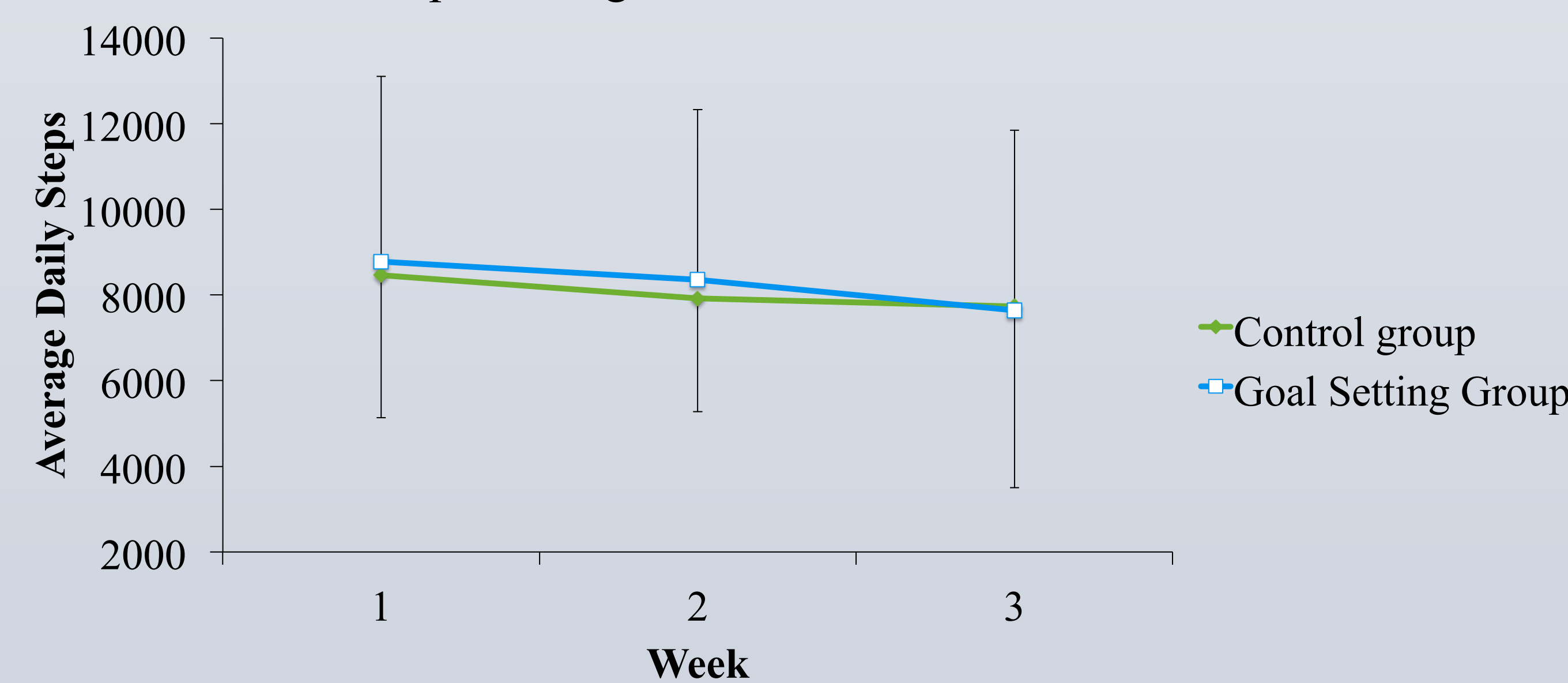


Figure 2. The Percentage of Goal Setting Participants Who Met Their Goal Each Week Decreased Throughout the Study

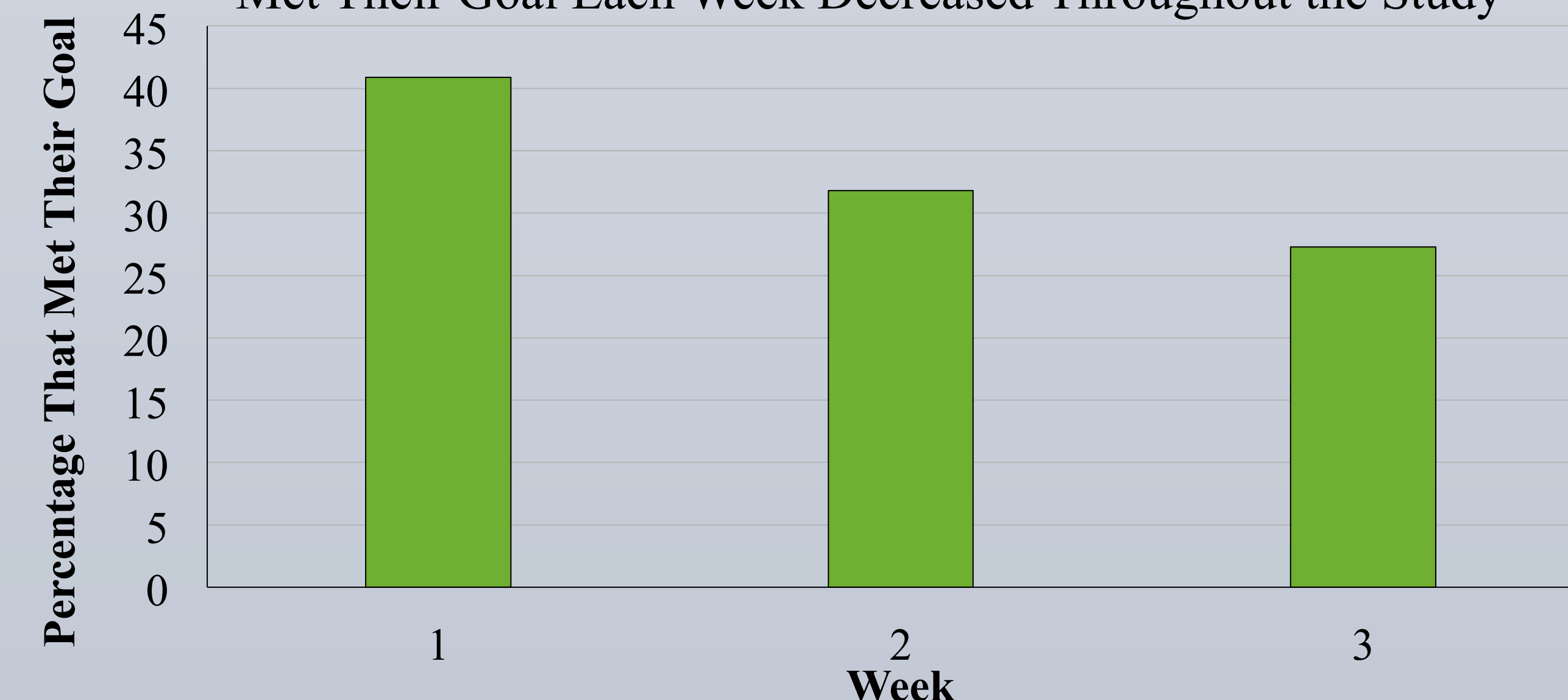


Figure 3. The Percentage of Participants Who Felt Motivated by Their Fitness Tracking Device Was Higher in the Goal Setting Group

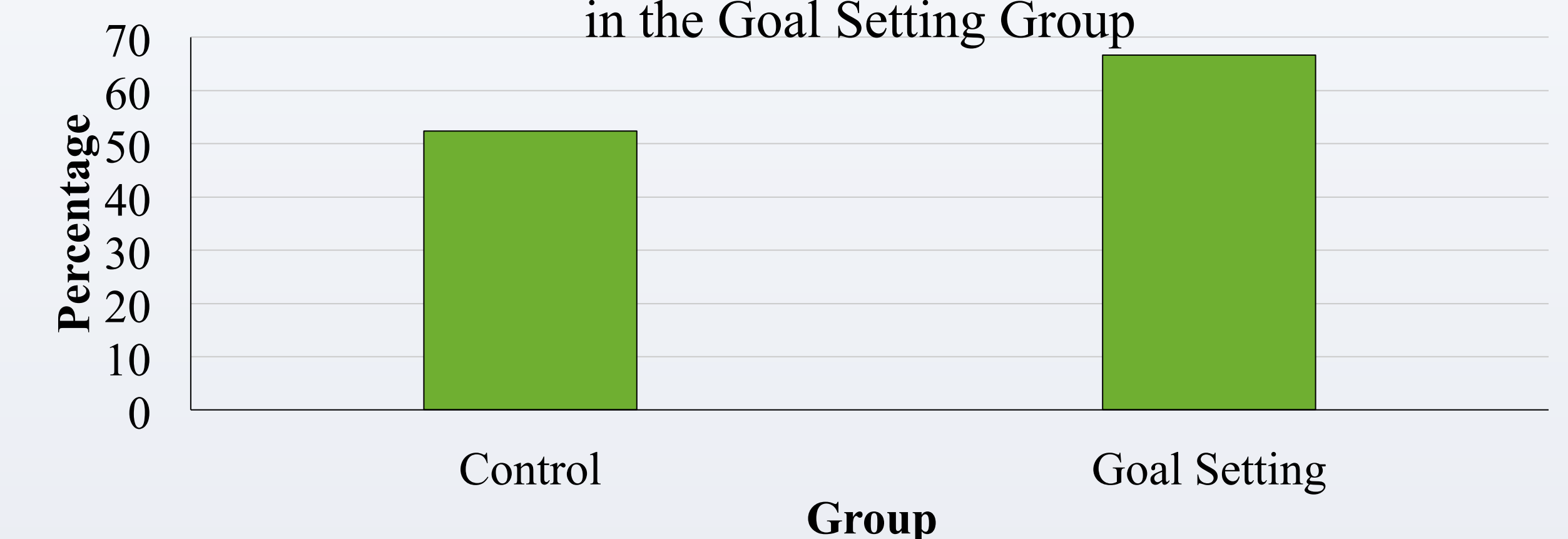
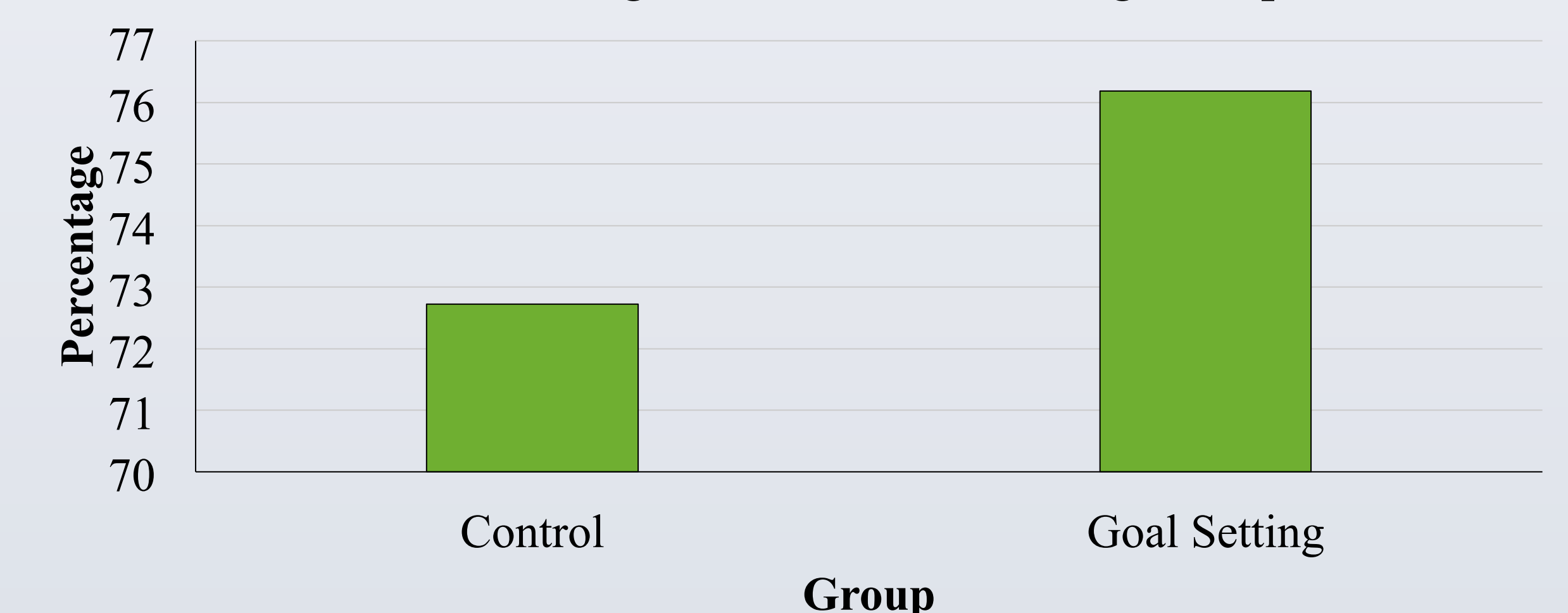


Figure 4. The Percentage of Participants Who Reported That They Would Continue to Wear the Fitness Tracking Device Was Higher in the Goal Setting Group



Summary and Conclusion

- Average daily step counts decreased for experimental and control groups from the baseline week to week three.
- Of the experimental participants, a larger percentage of them met their goal in the first week, which declined in weeks two and three. Showing that sticking to the goal was easier when beginning the program.
- 66.6% of experimental participants and 45% of control participants reported that they felt motivated by the fitness tracking device, revealing that receiving goals along with recording steps can help to increase motivation for physical activity.
- Receiving goals and motivation also lead to more experimental participants reporting that they would continue to wear the fitness tracking device, providing future implications for increased physical activity through tracking steps and setting personal goals.
- Some limitations to this research include the reliance upon participants to honestly self-report answers and the relatively small sample size.

Selected References

- Poirier, J., Bennett, W. L., Jerome, G. J., Shah, N. G., Lazo, M., Yeh, H. C., ... & Cobb, N. K. (2016). Effectiveness of an Activity Tracker and Internet-Based Adaptive Walking Program for Adults: A Randomized Controlled Trial. *Journal of Medical Internet Research, 18*(2), e34.
- Smith, J. A., Hauenstein, N. M., & Buchanan, L. B. (1996). Goal setting and exercise performance. *Human Performance, 9*(2), 141-154.

*More references available upon request

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