

## Potential Benefits of a Pedometer-Based Walking Program in an Inactive Patient Population

Merom D, Rissel C, Phongsavan P, et al. Promoting walking with pedometers in the community: the Step-by-Step Trial. *Am J Prev Med* 2007;32:290–7.

### Study Overview

**Objective.** To determine if adding a pedometer to a walking program increases physical activity in a community-based population of inactive adults.

**Design.** Randomized controlled trial with intent-to-treat analysis.

**Setting and participants.** Participants were recruited from the community of New South Wales, Australia. Participants were eligible if they were aged 30 to 65 years, were inactive (defined as engaging in  $\leq 3$  sessions of walking or moderate or vigorous physical activity per week, provided that the 3 sessions were not all of vigorous intensity and totalled  $\leq 60$  min), and had no physical limitations to walking.

**Intervention.** Participants were allocated to a walking program (WP group), a walking program with pedometer (WPP group), or a no treatment control group. Individuals in the WP group were mailed a self-help book (the Step-by-Step program, with a structured walking program) and 6 weekly diaries. The walking program consisted of 3 stages that increased walking intensity over time. Individuals in the WPP group received the walking program along with a pedometer. Individuals in the WPP group were instructed to record the number of daily steps made over a 7-day period prior to beginning the walking program. Completed diaries for both the WP and WPP groups were mailed to researchers using an enclosed postage-paid envelope. At baseline and 3 months, participants completed a structured 20-minute telephone interview. Participants in the control group received a letter in the mail informing them of the telephone interview.

**Main outcome measures.** The primary outcome measures were changes from baseline to 3 months in all-purpose walking (APW; defined as number of total minutes spent walking continuously [ $\geq 10$  min] for exercise, recreation, or to get from place to place) or moderate or vigorous physical activity (MVPA) as well as leisure-time physical activity (LTPA) (participation in any sports/recreation). APW and MVPA were determined using the Active Australia Ques-

tionnaire, a validated physical activity survey. LTPA and leisure-time walking (LTW) over the prior 3 months were self-reported and were measured using the College Alumni Questionnaire. Secondary analysis assessed the proportion of individuals in each group meeting the recommended level of walking ( $\geq 150$  min and  $\geq 5$  sessions/week).

**Main results.** 369 participants were allocated to the 3 arms. Baseline characteristics were similar among the groups. 314 (85%) participants completed the 3-month follow-up. For all groups, within-group changes in all measures were statistically significant; however, when groups were compared, the WPP group showed the greatest magnitude of change for most measures. There were no differences in the change in the number of minutes per week engaged in APW, MVPA, or total physical activity between the groups; however, participants in the WPP had an increased number of APW sessions per week (1.2 vs. 2.3;  $P = 0.021$ ). Both the WP and WPP groups had a significant increase in the number of LTW sessions per week when compared with the control group (mean change, 2.0 [95% confidence interval {CI}, 1.6–2.4] and 2.1 [95% CI, 1.7–2.6], 0.9 [95% CI, 0.6–1.2], respectively); however, there were no significant differences between the WP and WPP groups. The WPP also had a significant increase in LTW minutes per week when compared with the control group (66 min [95% CI, 50–82]) vs. 34 min [95% CI, 21–48]); however, there was no difference between the WP and WPP groups. There was a significant increase in the number of individuals reaching the recommended level of walking in the WPP group (odds ratio, 2.40 [95% CI, 1.17–4.93]) and a borderline significant increase in the WP group (odds ratio, 2.05 [95% CI, 0.98–4.31]).

**Conclusion.** Pedometers may help patients reach recommended levels of physical activity; however, it is unclear whether the addition of the pedometer provides additional benefit over a standardized structured walking program.

### Commentary

Although many theories have attempted to explain the obesity epidemic, declining physical activity among the general population is surely a contributor. Regardless of

the effects on weight, regular physical activity has numerous benefits for mental and cardiovascular health [1]. All physicians should recommend regular physical activity to their patients; however, the number of patients who walk regularly enough to achieve any health benefits is as low as 8% [2]. Efficient and inexpensive interventions that might help motivate patients to engage in regular physical activity are desperately needed.

Pedometers have been advocated as a means to increase patient motivation and physical activity levels. Prior studies have produced conflicting results but have been limited in their design [3,4]. Most studies have compared only 2 groups: either a pedometer plus exercise program group versus a control group or a pedometer plus exercise program versus an exercise program alone. A unique strength of the study by Merom et al is the 3-arm design, which is able to better delineate the marginal benefit of adding a pedometer to a standardized weight loss program. An additional strength of this study was the duration (3 months), which was substantially longer than in many prior studies. After 3 months, the intent-to-treat design indicated that the WP and WPP groups likely were superior to the control group, but no clear benefit was found with the addition of a pedometer.

There are several limitations to this study. First, there was a reasonably high drop-out rate (15%). In addition, weekly recording in the diaries was poor (< 65%), and during the last week of the study only 17% of subjects in the WPP

group were still wearing their pedometer. Physical activity was self-reported rather than using a more objective measure, such as an accelerometer. As the interventions were not blinded, participants allocated to the exercise groups may have been more likely to inflate the actual number of exercise sessions.

### Applications for Clinical Practice

Adding a pedometer to a structured exercise program may slightly increase total LTPA compared with a structured program alone. Pedometers are inexpensive devices that may be appropriate for certain motivated patients.

—Review by Harvey J. Murff, MD, MPH

### References

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