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Do pedometers motivate people to walk more?

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Physical activity confers many important health benefits. The 'active living message' recommends that adults should accumulate 30 min of moderate-intensity physical activity (e.g. brisk walking) on most – preferably all – days of the week, but the populations of most developed countries are not meeting this target. Walking is one mode of activity that most people can do without skills, equipment, facilities or extra expense and walking has less bias in terms of age, sex and social class than facility-based exercise. Thus we need to investigate interventions that promote walking. The aim of this study was to use the transtheoretical model of behaviour change (Marcus and Simkin, 1994: *Medicine and Science in Sports and Exercise*, 26, 1400–1404) as a theoretical framework for investigating the effectiveness of pedometers (mechanical devices that provide reliable and valid counts of the number of walking steps made on a daily and weekly basis), in conjunction with a goal-setting programme, for enhancing motivation for walking. Participants were volunteers who responded to a 'walk for health' project at a university.

All participants (7 men and 43 women aged 40+9 years; mean+s) wore a sealed pedometer for 7 days and were then randomized into intervention (n = 26, pedometer open and used for feedback) and control (n = 24, pedometer sealed and unable to be used as feedback) groups. Both groups agreed weekly goals aimed at accumulating 30 min of walking on most days of the week by the end of the project. Data were recorded every 7 days for 4 weeks. All participants completed questionnaires on the constructs of the transtheoretical model (stage of change, self-efficacy, decisional balance and processes of change) and a 7-day recall of physical activity at baseline and follow-up.

Qualitative data, concerning the pedometers, were collected after 4 weeks from all participants. A 2 (groups) × 5 (time points) repeated-measures analysis of variance of 7-day step counts showed no significant difference between groups ($F = 0.01$, $P = 0.93$) and no significant group × time interaction ($F = 1.45$, $P = 0.22$). However, there was a significant increase in 7-day step count for both groups over time ($F = 15.9$, $P < 0.01$, mean change in step count for intervention = 32,153 and for control = 17,649). Using non-parametric statistical analysis, we found that the intervention group recalled more total weekly minutes of activity at follow-up than at baseline ($P < 0.05$), whereas the control group reported no significant change.

Both groups recalled significantly more leisure walking ($P < 0.01$) but no change in occupational walking at follow-up compared with baseline. The processes of self-reevaluation and self-liberation received the highest frequency of use scores for both groups at both time points. The intervention group significantly increased the use of stimulus control ($P < 0.05$) and counter-conditioning ($P < 0.01$) from baseline to follow-up and were more likely to use the process of helping relationships than the control group at follow-up ($P < 0.05$). There were no statistically significant changes in self-efficacy from baseline to follow-up in either group but both groups had high self-efficacy for walking. Perceptions of pros and cons did not change over time for either group.

There appears to be no advantage to having access to the pedometer readings in terms of the number of step counts recorded over 4 weeks. A weekly goal-setting

plan is sufficient to increase walking (especially in leisure time) in those motivated to increase physical activity. Self-recalled total physical activity was significantly increased from baseline to follow-up for the intervention group, suggesting that feedback from the pedometer motivated participants to increase activity other than walking. The use of the pedometer encouraged participants to use the processes of counter-conditioning, stimulus control and helping relationships. Qualitative data suggested that feedback from the pedometers was motivational. The control group participants felt that having access to the pedometer readings would have helped them. Thus in the short term pedometers may not help motivation for walking, but in the longer term they may provide additional prompts, confidence and support for achieving goals. However, longer-term outcomes remain to be determined.