

Participant Experiences in a Workplace Pedometer-Based Physical Activity Program

Nicola Lauzon, Catherine B. Chan, Anita M. Myers,
and Catrine Tudor-Locke

Background: Limited process evaluation of pedometer-based interventions has been reported. **Methods:** Feedback via focus groups (n = 38) and exit questionnaires (n = 68) was used to examine participants' experiences in a group-based, pedometer-based physical activity (PA) program delivered in the workplace. **Results:** The pedometer was described as a useful tool for increasing awareness of PA, providing motivation and visual feedback, and encouraging conversation and support among participants and others such as family and friends. Group meetings provided motivation and social support, as did participation by coworkers. Self-selected goals, self-selected PA strategies, and recording of steps/d were also important. **Conclusions:** Given the importance of social support as a mediating variable in changing PA behavior, future pedometer-based programs might benefit from including a group-based component.

Keywords: walking, physical activity, program evaluation

The health benefits of physical activity (PA) have been well documented¹; many North American adults, however, do not engage in sufficient PA to achieve these benefits.^{2,3} Pedometers, small objective measurement devices typically worn attached to clothing at the waist, have become popular tools to monitor and encourage daily PA. Interventions that have used pedometers in such a manner have been successful at increasing PA in predominantly female, clinical,^{4,5} and nonclinical⁶⁻¹¹ adult populations.

In general, pedometer-based studies have focused on outcomes, with limited or no information concerning process evaluation (ie, why and how they work). As a consequence, little is known about factors that might contribute to the success of such interventions. The pedometer itself has been described as an enjoyable,¹² useful,^{13,14} and motivational^{11,12,15,16} tool for increasing PA and can help increase awareness of PA.^{15,16} Other influential pedometer-based program components

Lauzon, Myers, and Tudor-Locke are with the Dept of Health Studies and Gerontology, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1. Chan is with the Dept of Biomedical Sciences, University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada C1A 4P3. Tudor-Locke is also with the Walking Behavior Laboratory, Pennington Biomedical Research Center, Baton Rouge, LA 70808.

shown to increase PA include step goals, visual pedometer feedback, and daily steps records.⁸

Qualitative investigation, using methods such as the focus group, can be a rich source of in-depth feedback, helping researchers and program developers explore the experiences of program participants and, thus, begin to understand the factors influencing program enrollment, participation, and success. Heesch, Dinger, McClary, and Rice¹⁵ are the only researchers to date to report a thorough qualitative examination of participant experiences in a pedometer-based intervention. Women in this 6-week, minimal-contact program received a pedometer, weekly step logs (mailed back to researchers weekly), and strived to achieve self-selected step goals. Contact with research staff was limited to data collection sessions (preintervention and postintervention) and receipt of weekly e-mails containing strategies for increasing PA. There was no contact among study participants.

Focus group (FG) findings with program completers indicated that the pedometer helped increase PA by increasing awareness of personal PA and providing motivation and meaningful goal setting. Feedback related to the minimal-contact strategy indicated that submitting step logs to researchers was motivational and provided accountability. E-mails were well received; however, a desire for more detailed content related to strategies for increasing PA was reported. Some women indicated a program requiring a greater time commitment (eg, regular meetings) would have prevented or made difficult their participation. Thus, the experiences with both the pedometer and a minimal-contact approach were reportedly enjoyable and motivating. Suggested program improvements included tips for overcoming barriers, assistance with goal setting, feedback on progress of other participants for comparison purposes, and contact with other participants to share experiences and locate walking partners.¹⁵

Pedometer-based programs that include greater contact with program deliverers and other participants might help to address a number of the issues just raised. Although it is acknowledged that the use of regular group meetings might increase the time commitment for participants, the advantage would be greater contact, information sharing (eg, progression, addressing barriers), and social support among participants, as well as the potential for guidance with goal setting.

The First Step Program (FSP) is a group-based, pedometer-based intervention founded on principles of adult learning and social cognitive theory (SCT), in particular self-efficacy, outcome expectations, and social support. Critical inputs of the program include self-structured, moderate-intensity walking; self-selected incremental goals; daily use of self-monitoring and feedback tools (pedometer, PA log); individualized decision-balance tasks and self-contracts; relapse planning; and follow-up contact.^{13,17}

During the 4-week adoption phase, participants attend weekly small group meetings facilitated by a trained leader who uses a detailed resource manual (eg, lesson plans, timeline, activity checklist) to ensure the program is delivered as intended. The iterative curriculum includes cognitive, psychomotor, and affective tasks. Group discussion and individual reflection are directed toward strategies for

increasing PA, experiences and achievements during the previous week (eg, average steps/d, number of days the PA goal was achieved, barriers encountered, etc), relapse prevention, and engaging social support systems. Although PA strategies and goals are discussed as a group, ultimately personal PA strategies and goals are self-selected each week during personal reflection time. Participant workbooks reinforce educational components and allow for recording of personal reflection. Each meeting includes a group walk (progressing from 10 to 30 minutes over 4 weeks) during which steps are monitored and pedometer accuracy is checked using a simple 20-step test (participants walk 20 steps and then check the step tally on the pedometer, various locations along the waistband can be tested until the most accurate placement is located). Participants are encouraged to walk in pairs or small groups during these walks. Each week participants select their own steps/d PA goals using the PA level (average steps/d) from the previous week, along with the number of steps taken in the timed walk. Participants record their steps/d in a PA log.

The subsequent 12-week adherence phase allows participants to individually practice these established program activities. Contact with the program facilitator during the adherence phase is limited to monthly postcards. On completion of the adherence phase, one "booster session" is offered to those participants who have relapsed to within 1000 steps/d of their initial PA level. Booster sessions follow the same format as adherence-phase sessions, with particular emphasis on relapse prevention and strategies for overcoming barriers.

Originally designed to be delivered in a diabetes education setting for individuals with type 2 diabetes, the FSP has been effective at increasing PA in this population.⁵ It was unknown whether the FSP would be similarly effective in other populations. Given that a typical workday demands a large proportion of one's waking hours and that those in sedentary jobs have been shown to accumulate less PA than other jobs,¹⁸ Chan, Ryan, and Tudor-Locke⁷ adapted the FSP for delivery in the workplace with ostensibly healthy adults in Prince Edward Island, Canada (herein referred to as the PEI-FSP). Modifications included use of electronic communications (e-mail and a Web page for bulletins showing average steps/d for each workplace overall), a Web-based PA log (in addition to a paper-based PA log), a shortened adherence phase because of budget constraints (8 versus 12 weeks in the original FSP), and a booster session offered to all participants midway through the adherence phase. There was no fee for participation or program materials, and participants kept their pedometers at the end of the program. The program was delivered by 2 trained female facilitators (both registered nurses) hired specifically for the PEI-FSP. Group meetings were 30 to 60 minutes in length and were held on-site at each workplace during the lunch break. Group walks were held inside the workplace (during inclement weather) or outside on workplace property and nearby neighborhoods. The PEI-FSP elicited similar outcomes as previous FSP studies, namely increased PA and decreased body mass index (BMI), waist girth, and resting heart rate.⁷ The purpose of the current study was to qualitatively examine participants' experiences of this pedometer-based workplace program.

Methods

Participants and Setting

As reported by Chan, Ryan, and Tudor-Locke,⁷ 177 individuals from 5 workplaces took part in the PEI-FSP. A principal contact within each workplace advertised the PEI-FSP as deemed appropriate within each workplace (eg, e-mail, posters, personal contact). There were no exclusion criteria for participation. Maximum registration for each workplace was capped at 30 participants because of budget constraints, and enrollment was on a first-come, first-served basis. Workplaces were government-funded agencies and were selected for their typically sedentary occupations (eg, clerical or administrative). The total number of employees at each workplace ranged from 90 to 1000 workers, and women constituted the majority of employees (70% or greater). Three of the five workplaces (2 urban, 1 rural; $n = 94$; constituting 53% of the total sample) were designated to solicit postprogram feedback.

Procedures

Ethical approval for this research was granted by the University of Prince Edward Island Research Ethics Board. Before the program, informed consent was obtained and a demographic questionnaire completed. PEI-FSP participants met with research staff for assessment before beginning the program and again upon completion (ie, week 12). These assessments included PA level and selected health indicators (body weight, height, waist girth, resting heart rate, resting blood pressure). PA was measured as average steps/d using a pedometer worn for 3 consecutive days (2 workdays, 1 nonworkday; blinded protocol) as previously described.¹⁹ Complete results of the 106 participants (87% female) who completed both pre- and postassessments are reported elsewhere.⁷

Excluding 7 people who withdrew from the study and no longer wished to be contacted, at the end of the 12-week program all participants ($n = 87$) from the 3 selected workplaces were mailed an exit questionnaire (EQ), together with an invitation to participate in a subsequent FG. EQs included a series of open-ended questions regarding general impressions of the program, as well as feedback on specific components (facilitated group meetings, use of the pedometer, self-monitoring, and communication with staff). EQs were returned to researchers in stamped, addressed envelopes. No incentives for returning the EQ were provided.

FGs were limited to less than 1 hour and were held during lunch breaks (at the same time and place PEI-FSP group meetings were previously held; lunch was provided). An experienced moderator facilitated all FGs using procedures described by Krueger.²⁰ A cofacilitator was present primarily for observational purposes. The guiding script was the same as the open-ended queries on the EQ, with probing for further elaboration or clarification. Field notes were recorded, and each FG was audio recorded with participant permission. Pseudonyms were used to maintain confidentiality.

Data Analysis

To describe the sample, identification numbers of individuals who completed the EQs and/or took part in the FGs were linked to the database of demographic information. Demographic characteristics are reported as frequencies (n; % or valid cases) or means $\pm$ standard deviation (SD).

Responses to each open-ended question (on the exit survey) were compiled into text files by workplace and imported into QSR.NUD*IST version 4.²¹ Content analysis was performed using established methods.^{22–24} Audiotapes of FGs, meanwhile, were transcribed verbatim by the first author and imported into QSR.NUD*IST version 4.²¹ It is important to note that the first author had not been previously involved in either the delivery of the PEI-FSP or the conduct of the FGs. Before analysis, transcribed notes were compared with field notes; no discrepancies were found. Procedures for analyzing FG data followed standard protocol^{20,25} and involved creating categories of data and searching for patterns within and across categories. For both the open-ended and FG data, each workplace was analyzed separately before making comparisons across workplaces. In addition, although there were relatively few men in the sample ($n = 11$), particular attention was paid to any potential gender differences.

Categories for both the FG data and the EQ responses were created using the constant comparative method. An inductive approach was used to develop these categories, meaning that the codes and categories “emerge out of the data rather than being imposed upon them prior to data collection and analysis.”²⁴ (p. 390) Thus, categories were linked to, or grounded in, the data from which they originated.²² The first author independently coded and categorized the data, which were subsequently presented to the FG moderator for verification. Merging of some categories resulted from this review. The use of triangulation (ie, multiple data-collection methods, analysis, and researchers) serves to strengthen confidence in the findings.

Results

Sixty-eight (78%) individuals (90% female; age 26 to 61 years) completed and returned an EQ. Thirty-eight (44%) individuals (90% female; age 26 to 58 years) participated in 1 of 4 FGs (2 at 1 workplace, 1 in each of the other 2 workplaces). FGs ranged in size from 8 to 11 participants and lasted 30 to 60 minutes each. Thirty-two (37%) individuals attended a FG and completed an EQ. Females composed 90% of both EQ respondents and FG participants. No significant differences were found in preprogram characteristics between those persons providing qualitative feedback (ie, EQ respondents and FG participants) and those not providing feedback. Program attendance (number of classes attended), however, was significantly higher for those providing feedback versus those not providing feedback ($P < .01$; see Table 1).

Categories and patterns that emerged from discussion were similar across FGs. Categories created from EQ data mostly mirrored those emerging from FG data. No discernible gender or age differences were detected. Accordingly, the

Table 1 Comparison of Participants Who Did and Did Not Provide Feedback

Characteristic	Feedback (n = 74)	No feedback (n = 20)
Age (y): mean (SD); range	44 (9); 26 to 61	42 (11); 28 to 57
Female: count (%)	66 (89)	16 (80)
Body mass index (kg/m ²): mean (SD)	29 (6)	32 (8)
1 or more chronic conditions: count (%)	18 (24)	9 (45)
Baseline PA (steps/d): mean (SD)	6747 (2867)	5604 (2478)
Attendance (# classes): mean (SD) ^a	3.1 (0.9)	2.2 (1.3)

Abbreviation: PA, physical activity.
^a *P* < .01

qualitative results are reported collectively with differences (between FG and EQ findings) noted as these arise.

Experiences With the Pedometer

The pedometer was credited for facilitating a change in attitude toward PA and subsequent behavior. As one participant stated, “Anything’s changeable if you’re given the right tool and for me this is the right tool.” The pedometer was described as practical and simple. It fostered a sense of attachment (“I think you get hooked on the pedometer whether you want to or not”) and accountability (“You can’t cheat, you can’t blame the pedometer”). Individuals spoke fondly of their pedometers and repeatedly joked about the pedometer being their “guilty conscience” when their level of activity was low. A number of EQ respondents commented on the pedometer becoming an integral part of their daily routine (“I like the pedometer; it’s become a part of my day, like putting on my watch or my glasses”). The pedometer was reported to be helpful in a number of ways, specifically: increasing awareness of PA level, motivating an increase in PA, and providing visual feedback of accumulated PA.

Increasing Awareness of PA. The pedometer created a sense of awareness of initial low PA levels, of changes and patterns in PA level, and of how different activities or tasks affected PA level. For many, the most “eye opening” experience was becoming aware of how initially sedentary they were (“I always thought I was so active, and I wasn’t”). For some, acceptance of this new-found awareness was difficult (“We can start out by blaming it, ‘uh oh, my pedometer’s not working because my steps are so low,’ but I sat in the car all day”). One FG participant continued to question the accuracy of their initial pedometer-measured PA level.

Motivation to Increase PA. By providing objective quantification of PA level, the pedometer motivated participants to engage in more PA. It allowed participants to set, and strive to meet, tangible steps/d goals (“The pedometer was a great motivator; I checked it regularly, and if I wasn’t near my goal, it gave me incentive to get moving”). Furthermore, the pedometer provided motivation for increased

PA through visual feedback, acting as a focal point for personal connections, and tracking steps/d progress over time (in conjunction with a PA log), all of which are discussed in the following paragraphs.

Visual Feedback. Visual quantification of PA in a meaningful way (ie, ability to see the number of steps/d) was instrumental for increasing awareness of PA and achieving PA goals (“Check your pedometer often throughout the day so that you will be more likely to reach your goal”). Numerous participants discussed the motivation resulting from being able to visibly quantify PA level at any given moment. One woman said, “I guess what amazed me the most was having the visual value to know your number of steps. It was a great motivator.” When asked to give advice to someone beginning to use a pedometer, EQ respondents most frequently mentioned using the visual feedback from the pedometer to increase PA (“Check your pedometer often during the day to plan for more activity if steps are low”).

Personal Connections. FG participants reported that using the pedometer provided a sense of connection with other pedometer wearers and often served as a focal point for conversation both within program participant groups and with non-participants (eg, coworkers, family, or even strangers). One woman reported, “I was amazed at the amount of people who would see it on my belt; the other day this lady said, ‘Is that what I think it is, that step thing for diabetes,’ and so we had a great conversation about it.” Others were excited about family members taking an interest in their PA goals and efforts, reporting, “My kids were just thrilled with it, constantly asking ‘how many steps you got today mom,’ as were my sisters.” Participants particularly enjoyed sharing in the excitement of overcoming barriers and achieving PA goals.

Complaints About the Pedometer. A small number of individuals reported difficulties using the pedometer such as forgetting to wear it, having it fall off, or being limited in the type of clothing to which the pedometer could be attached (“You were limited to wearing pants—no dresses—unless you attached the pedometer to your panties”). Placement difficulties were linked to questioning the accuracy of the pedometer (“Sometimes does not work correctly, depending on what you are wearing or when incorrectly placed”).

Experiences With the PEI-FSP Approach

Group Meetings. In general, the group meetings were well liked, particularly the motivation, support, and encouragement of being part of a group (“I was motivated by other people who were working at getting active. It was great to have the weekly visits for the first 4 weeks”). Many enjoyed the group discussions and shared experiences (eg, goal achievement, barriers encountered and overcome). Several individuals voiced concern about maintaining their motivation and activity without the continued contact provided through group meetings. For instance, one woman commented, “I think that after the initial meetings we should still get together as a group on a regular basis. I think some people need that motivation or the feeling of group achievement.” There was disagreement whether the nature of group support should be competitive; some discussed competition for steps as

motivating, whereas others found competition discouraging. A small number of EQ respondents found the repetitive nature of the meetings unnecessary.

Self-Selected Goal Setting. The process of goal setting during meetings was reported to be helpful. Striving to achieve steps/d goals was motivational (“The incentive was always there. I knew I had to get my 9000 steps a day. I really wanted to keep my personal goal”). Several individuals discussed pacing around their homes before bedtime to achieve their daily step goal.

Self-Selected PA Strategies. Strategies for increasing PA frequently included performing purposeful activity and making a concerted effort (eg, taking PA breaks instead of smoking breaks). As one woman said, “It [the pedometer] made me more aware of getting out and walking, actually making an effort to do it.” Whereas others used small daily changes to help accumulate activity; for instance, “I think what the pedometer made me notice was just how effective small changes can be. I gave up the elevator, I parked 3 or 4 blocks from work, I parked farther away in the parking lot.” Others modified pedometer use and program protocol to suit their needs. Allowing oneself a “day off” day was used to eliminate guilt associated with knowing one will have a low activity day because of personal or other commitments. Meanwhile, “banking steps” allowed for accumulating extra steps in anticipation of an upcoming sedentary day to still achieve a weekly step goal. Both strategies (ie, day off and banking steps) were created spontaneously by participants to adapt the program to fit into their respective lifestyles.

Calendar-Based PA Log. Recording of steps/d on the calendar-based log was described as motivational and provided the ability to visualize progress over time. A sample comment was, “It helped me to see my progress and to make up for any shortcomings by walking more the following day.” Weekly patterns became apparent through this daily recording process. Many observed that on weekends, particularly Sundays, they generally accumulated fewer steps than on weekdays, a pattern attributed to lack of structure and schedule during nonwork days. For instance, one comment in regards to Sunday activity was, “By noontime [at work] you’d know to take a 10-minute walk, whereas at home you’d just go all day long, and you look [at the pedometer] at the end of the day and go ‘oh shoot.’” A small number of EQ respondents indicated they initially forgot to fill out the calendar. However, as with wearing the pedometer, it soon became habitual.

Communication With Program Staff. Both the e-mail and Web site were reported as helpful by EQ respondents (“I enjoyed the Web site info to see what others were doing. Competition was good”). Suggested improvements included more frequent updates, a tool for goal calculation, and graphical display of steps/d over time.

Workplace Setting. Although questions specific to the workplace environment were not asked, participants of one FG commented and agreed on the benefits of PA programming in the workplace. For instance, one woman commented, “In the workplace there’s a huge support network there that probably has a profound effect on people. I think it created a great support network.” A number of EQ respondents also indicated they enjoyed the frequent contact and support from coworkers (“I also liked that it was done in the work site so I could compare with,

walk with, and get support from coworkers”). A number of FG participants discussed continuing to walk together at the workplace (outside of group meetings and after the PEI-FSP had ended) and encourage one another upon meeting during the day.

Overall Program Impact. There were ample EQ responses and FG discussion of the perceived impact of the PEI-FSP on the lives of participants. Many focused on the physical benefits they have achieved, such as weight loss, reduced girth, increased fitness and energy level, or generally feeling better (“You won’t believe how much better you’re feeling when you get moving”). Others discussed changes in attitude toward PA, creating a lifestyle change, influencing others to become more physically active (“My sister actually went and bought one, she was intrigued by it and she’s into counting steps now. My being a part of this program has motivated others”), and overcoming barriers to PA (such as poor weather, illness, unforeseen commitments).

Discussion

Similar to other pedometer-based programs, this program successfully used the pedometer as a motivational, monitoring, and feedback tool. Unlike other pedometer-based interventions, however, the PEI-FSP also provided self-selected PA goals (based on PA level and number of steps taken in timed group walks), as well as social support through on-site weekly group meetings. The findings from this sample of mostly female (90%), generally healthy employees supported positive experiences reported by individuals with type 2 diabetes for whom the FSP was originally designed.¹³ The major themes were related to the usefulness of both the pedometer and various PEI-FSP program components. Based on this feedback, implications for future pedometer-based interventions will be presented.

Major Findings

The major themes from this investigation concur with many of those reported by Heesch et al,¹⁵ most notably those related to the usefulness of the pedometer for increasing awareness of PA and providing motivation for increasing PA. In the PEI-FSP study, the concepts of *awareness* and *motivation* were often discussed together when describing the positive uses of the pedometer. Rooney, Smalley, Larson, and Havens²⁶ reported a similar connection between awareness of PA and motivation created by the use of a pedometer.

Respondents indicated the pedometer was a practical, helpful, and enjoyable tool. It was described as useful for (1) increasing awareness of personal PA, (2) providing motivation to become more physically active, (3) providing visual, quantifiable feedback related to PA level (particularly in relation to steps/d goals), and (4) enabling a personal connection with others. Few negative aspects of pedometer use were reported.

With respect to the PEI-FSP approach, group meetings were reportedly enjoyable and motivational. The support received from group members, both during and outside of group meetings, encouraged an increase in PA. Delivery of the

program in the workplace setting was reported to provide additional social support. Self-selected goals and PA strategies, and recording of steps/d in a PA log, were important to participant success. E-mail and Web-based updates related to group progress were found to be motivational. Overall, the program impacted participants in numerous beneficial ways including both physical and attitudinal improvements.

Implications for Pedometer-Based Interventions

Contrary to Heesch et al,¹⁵ in which FG participants indicated the use of program meetings might have hindered their participation, there were numerous reported benefits to group-based meetings and little indication that these meetings were burdensome. It is suspected that holding the 4 weekly 30- to 60-minute meetings at a convenient time and location (ie, on-site at each workplace during lunch breaks) was instrumental in achieving this positive response. Although FSP group meetings in a clinical setting outside of traditional office hours with persons with type 2 diabetes have also been favorably received and well attended.¹³

To our knowledge, no other pedometer-based interventions have incorporated on-site group meetings into a workplace pedometer program. A randomized control trial of a coronary health education program delivered to employees of a medical care provider successfully increased PA with the use of pedometers incorporated into the curriculum.⁶ Off-site meetings were much more time intensive than the PEI-FSP (four 2-hour meetings each week for 4 weeks), and presumably held outside of working hours. These meetings, however, were still well attended (mean attendance 87%⁶). Other interventions using pedometers and including a group-based component have also been successful at increasing PA in sedentary, healthy adults²⁷ and overweight or obese adults.^{28,29} Attendance was unreported.

FSP weekly group meetings were designed, using SCT, to encourage social support among participants and to encourage participants to seek support outside the FSP members. In this study, participants reported that seeing each other often throughout the workday was helpful because it allowed them to discuss accumulated steps and encourage one another. Given the importance of social support as a mediating variable in PA behavior change, future pedometer-based programs might benefit from including a group-based component. A short-lived run of facilitated group meetings held in a convenient time and location, such as the workplace, to take advantage of existing social networks, frequent contact, and the structure of the workday might encourage program participation and incorporation of PA into one's daily routine. Unpublished PEI-FSP data indicate 82% of participants incorporated PA into their workday.³⁰

Based on participant feedback, Heesch et al¹⁵ suggest strategies for future minimal-contact pedometer interventions. These include guidance for PA goal setting, weekly submission of steps/d logs, weekly e-mail contact containing steps/d progress of other participants and information for overcoming barriers to PA, communication among participants, and a list of available walking partners. It is our belief that the use of a small number of facilitated group meetings, such as those used in the FSP, can address each of these issues with minimal time commitment for participants.

For instance, participants at each FSP meeting are encouraged to share their progress, goal achievement, barriers, and PA strategies from the previous week. Solutions to barriers encountered, including problems with the pedometer, can be presented: for example, the use of “safety straps” to ensure pedometers are not lost should they fall off and the periodic testing of placement and accuracy (eg, using a simple 20-step test) to help instill confidence in the use of the pedometer. Strategies for relapse planning or prevention and engaging social support systems are also discussed among the group. Participants are accountable for reporting their own PA, gain a sense of how others are progressing, and learn from other participants’ experiences. PEI-FSP participants indicated they enjoyed knowing how other participants were progressing, both through group meetings and Web-based information. Participants did not indicate any difficulty using the self-selected approach for goal setting. Group walks also facilitate an important, but often overlooked, personal success or mastery experience (a theoretically important source of self-efficacy according to SCT³¹); provide an important additional time to socialize and communicate; and offer a pool of walking partners.

Considerations for Future Study

Participants in both the PEI-FSP group-based approach and a minimal-contact approach¹⁵ were successful at increasing PA and indicated satisfaction with their respective programs. Systematic evaluation is necessary to adequately target these programs and their resources to those who are likely to benefit the most. For instance, the characteristics of those who might benefit from a minimal-contact intervention might differ substantially from those who might benefit from a group-based approach. With respect to a group-based approach, further study is needed to investigate the experiences and success of participants in different types of groups, for example existing versus newly formed and single- versus mixed-gender groups. Furthermore, direct inquiry into program delivery in the workplace from the perspective of both participants and facilitators could result in practical recommendations for workplace pedometer PA programs (eg, availability of walking locations, support from supervisors and coworkers, ease of incorporating PA breaks into the workday, etc).

Limitations

Generalizability of the findings is limited to the characteristics of the PEI-FSP participants (typically middle-age, overweight, sedentary women employed in office settings); thus, their views and experiences might not reflect those of participants in other pedometer-based interventions. During recruitment, potential participants were told about the group meetings. Therefore, those individuals anticipating having the time and desire to attend group-based meetings might have been more likely to volunteer. In addition, for those completing EQs or attending FGs, attendance was significantly higher compared with those who provided no postprogram feedback (although other characteristics were similar). Participants not providing feedback, especially those not completing the program, might have less positive experiences.²³

Summary

In summary, our findings further validate the design and critical elements of the FSP. The results indicate that the pedometer was a useful tool for increasing awareness and motivating PA. The group-based approach was well received, enjoyable, and provided an important source of social support. Delivery of the program in the workplace setting was found to provide additional social support, as well as a means to incorporate PA into the workday routine. Given the importance of social support as a mediating variable in PA behavior change, future pedometer-based programs might benefit from including a group-based component, particularly in settings such as the workplace in which participants have frequent contact.

Acknowledgments

This study was initiated by C Chan and C Tudor-Locke, the funds for which were provided by the Prince Edward Island Health Research Program.

References

1. Bauman AE. Updating the evidence that physical activity is good for health: an epidemiological review 2000–2003. *J Sci Med Sport*. 2004;7(suppl 1):6–19.
2. Macera CA, Ham SA, Yore MM, et al. Prevalence of physical activity in the United States: Behavioral Risk Factor Surveillance System, 2001. *Prev Chronic Dis*. 2005;2(2). http://www.cdc.gov/pcd/issues/2005/apr/04_0114.htm. Accessed September 2007.
3. Gilmour H. Physically active Canadians. *Health Rep*. 2007;18:45–66. (Statistics Canada, Catalogue 82-003-XIE).
4. Moreau KL, Degarmo R, Langley J, et al. Increasing daily walking lowers blood pressure in postmenopausal women. *Med Sci Sports Exerc*. 2001;33:1825–1831.
5. Tudor-Locke C, Bell RC, Myers AM, et al. Controlled outcome evaluation of the First Step Program: a daily physical activity intervention for individuals with type II diabetes. *Int J Obes Relat Metab Disord*. 2004;28:113–119.
6. Aldana SG, Greenlaw RL, Diehl H, Salberg A, Merrill RM, Ohmine S. The effects of a worksite chronic disease prevention program. *J Occup Environ Med*. 2005;47:558–564.
7. Chan C, Ryan DA, Tudor-Locke C. Health benefits of a pedometer-based physical activity intervention in sedentary workers. *Prev Med*. 2004;39:1215–1222.
8. Croteau KA. A preliminary study on the impact of a pedometer-based intervention on daily steps. *Am J Health Promot*. 2004;18:217–220.
9. Dinger MK, Heesch KC, McClary KR. Feasibility of a minimal contact intervention to promote walking among insufficiently active women. *Am J Health Promot*. 2005;20:2–6.
10. Sugiura H, Sugiura H, Kajima K, Mirbod SM, Iwata H, Matsuoka T. Effects of long-term moderate exercise and increase in number of daily steps on serum lipids in women. *BMC Womens Health*. 2002;2:3.
11. Williams BR, Bezner J, Chesbro SB, Leavitt R. The effect of behavioral contract on adherence to a walking program in postmenopausal African American women. *Top Geriatr Rehab*. 2005;21:332–342.

12. Rooney BL, Gritt LR, Havens SJ, Mathiason MA, Clough EA. Growing healthy families: family use of pedometers to increase physical activity and slow the rate of obesity. *WMJ*. 2005;104:54–60.
13. Tudor-Locke CE, Myers AM, Rodger NW. Formative evaluation of the First Step Program: a practical intervention to increase daily physical activity. *Can J Diabetes Care*. 2000;24:56–60.
14. Wang CY, Chan SM. Culturally tailored diabetes education program for Chinese Americans: a pilot study. *Nurs Res*. 2005;54:347–353.
15. Heesch KC, Dinger MK, McClary KR, Rice KR. Experiences of women in a minimal contact pedometer-based intervention: a qualitative study. *Women Health*. 2005;41:97–116.
16. Pickering K, Eakin E. Using pedometers to increase physical activity in a family planning clinic: a feasibility study. *Health Promot J Aust*. 2003;14:165–170.
17. Tudor-Locke CE, Myers AM, Rodger NW. Development of a theory-based daily activity intervention for individuals with type 2 diabetes. *Diabetes Educ*. 2001;27:85–93.
18. Chan CB, Spangler E, Vacour J, Tudor-Locke C. Cross-sectional relationship of pedometer-determined ambulatory activity to indicators of health. *Obes Res*. 2003;11:1563–1570.
19. Tudor-Locke CE, Bell RC, Myers AM, Harris SB, Lauzon N, Rodger NW. Pedometer-determined ambulatory activity in individuals with type 2 diabetes. *Diabetes Res Clin Pract*. 2002;55:191–199.
20. Krueger RA. *Focus Groups: a Practical Guide for Applied Research*. Thousand Oaks, CA: Sage; 1994.
21. Qualitative Solutions and Research. *Qualitative Solutions & Research Non-Numerical Unstructured Data & Indexing Searching & Theorizing (version 4)*. Thousand Oaks, CA; 1997.
22. Berg BL. *Qualitative Research Methods for the Social Sciences*. 2nd ed. Needham Heights, MD: Allyn & Bacon; 1995.
23. Myers AM. Interpreting and using evaluation information. In: Myers A. *Program Evaluation for Exercise Leaders*. Champaign, IL: Human Kinetics; 1999:115–137.
24. Patton MQ. *Qualitative Evaluation and Research Methods*. Newbury Park, CA: Sage; 1990.
25. Luborsky MR. The identification and analysis of themes and patterns. In: Gubrium JF, Sankar A, eds. *Qualitative Methods in Aging Research*. Thousand Oaks, CA: Sage; 1994:189–210.
26. Rooney B, Smalley K, Larson J, Havens S. Is knowing enough? increasing physical activity by wearing a pedometer. *WMJ*. 2003;102:31–36.
27. Heesch KC, Masse LC, Dunn AL, Frankowski RF, Mullen PD. Does adherence to a lifestyle physical activity intervention predict changes in physical activity? *J Behav Med*. 2003;26:333–348.
28. LeCheminant JD, Jacobsen DJ, Hall MA, Donnelly JE. A comparison of meal replacements and medication in weight maintenance after weight loss. *J Am Coll Nutr*. 2005;24:347–353.
29. Villanova N, Pasqui F, Burzacchini S, et al. A physical activity program to reinforce weight maintenance following a behavior program in overweight/obese subjects. *Int J Obes*. 2006;30:697–703.
30. Chan C, Tudor-Locke C. Unpublished PEI-FSP data. 2003.
31. Bandura A. *Self Efficacy: The Exercise of Control*. New York, NY: W.H. Freeman and Company; 1997.

Copyright of Journal of Physical Activity & Health is the property of Human Kinetics Publishers, Inc. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.