

# Do wearable activity trackers have a place in pharmacies?

*Kathryn Mercer, BA, MI; Melissa Li, BScPharm; Kelly A. Grindrod, BScPharm, PharmD, MSc*

OUR BODIES ARE BUILT FOR MOVEMENT, NO matter our age. Yet most older adults are sedentary for at least 8.5 hours a day.<sup>1</sup> Sedentary behaviour refers to the activities we do sitting or lying down where little energy is expended, such as television watching, computer work and driving.<sup>2</sup> By comparison, physical activity guidelines recommend that all adults, including those older than 65 years, should get at least 150 minutes per week of moderate-intensity aerobic exercise in periods of at least 10 minutes at a time.<sup>3,4</sup> We should also do muscle and strength activities at least 2 days per week.<sup>5</sup>

Together, physical inactivity and sedentary behaviour increase the risk of diabetes, obesity, cardiovascular disease, breast and colon cancer, premature death and many other chronic diseases.<sup>2,6,7</sup> For someone who is inactive, the weekly goal of 150 minutes of physical activity can be daunting if they do not have an effective strategy to becoming more active. It is even more difficult for older adults who have limited mobility, ailing health, poor access to services or a perception that physical activity takes too much time.<sup>8</sup>

## What can pharmacists do to help?

As adults age, their contact with and trust of physicians increases, but only one-third to two-thirds of patients receive physical activity advice from a physician.<sup>6,9</sup> Few patients know how to put that recommendation into practice. Pharmacists can fill that gap by talking with patients about the benefits of physical activity and the risks of sedentary behaviour and by offering simple interventions to boost activity levels.

One of the first strategies a pharmacist can try is to help people make and track a step-count goal. A 2007 systematic review of 26 articles by Bravata et al.<sup>10</sup> found that having a step

goal and tracking steps significantly increased physical activity—regardless of the actual goal that was set. In particular, 3 studies found that the combination of a step counter (pedometer), an individualized step goal and individualized motivational feedback increased step counts by almost 2000 steps per day, which is roughly equal to 1.5 km.<sup>11-13</sup> However, most study participants for physical activity studies do not represent the typical pharmacy population—namely, older adults. Of the 2767 participants assessed in the review by Bravata et al., only 15% were male, while only 5 of the 26 included studies had an average participant age older than 60 years.<sup>10</sup>

A second strategy for pharmacists is to host a walking program. Walking programs are cost-effective interventions that combine the motivational elements of pedometers with social interactions and the familiar activity of walking.<sup>14</sup> A 2013 meta-analysis by Kassavou and colleagues<sup>15</sup> found programs that promoted walking in groups, with or without pedometers, were moderately effective for increasing physical activity. The biggest effects were from programs that lasted at least 6 months or that targeted older adults from both sexes. The effect was similar whether the walking groups were led by trained professionals or by laypersons, which means pharmacists and pharmacy staff could both host effective walking programs.

A third strategy is for pharmacists to promote online walking programs. In 2010, Richardson et al.<sup>16</sup> found that both Internet-mediated walking programs and pedometer-based walking programs that have an online community increase step counts by 2000 steps per day. For individuals who have little social support, walking programs with an online community also have lower drop-out rates.

**TABLE 1** Wearable activity trackers

Fitness Tracker	Cost	Heart Rate	Sleep Tracker	Waterproof	Step Counter
Jawbone	\$60-250	Some models	Some models	Some models	Yes
FitBit	\$70-300	Some models	Some models	No	Yes
Withings	\$100-450	Some models	Some models	Some models	Yes
Shine	\$50-100	No	Yes	Yes	Yes

Müller and Khoo<sup>17</sup> suggest that physical activity interventions that do not need to be delivered face to face may have a better outreach and adoption. This is especially true as the use of modern media and technology increases in older adults. Mouton and Cloes<sup>18</sup> also contend that one way of motivating older adults to adopt innovative physical activity interventions is to connect users to the immediate environment. Community-based interventions such as walking programs already provide this connection, but wearable activity trackers and complementary mobile applications (apps) can do so as well. Effective interventions to increase physical activity in older adults include the following components: 1) home based, 2) individualized tailoring and self-monitoring, 3) application of behaviour change theory, 4) single interventions, 5) moderate intensity and low weekly physical activity frequency, 6) simple and convenient lifetime activities and 7) low cost.<sup>19</sup>

The newest generation of wearable activity trackers is the fourth strategy that pharmacists should start paying attention to. “Wearables” are electronic and Internet-enabled devices that are worn on our bodies. Wearables include activity trackers, stress trackers, smart eyewear, smart-watches and smart clothing. Wearables combine pedometers with data-tracking software to help users set and track goals and connect with the online communities described above. No longer a simple pedometer, wearables are paired with smartphones and web accounts and are typically augmented with at least one other feature, including an altitude tracker, sleep tracker, diet tracker or calorie counter. Wearables that connect to handheld and desktop computers allow physical activity interventions to be more tailored to individual users, along with more interaction and accessibility.<sup>18</sup> The trackers are “wearable” because they can be clipped to clothing or worn around the wrist or neck and because they are often meant to be worn 24 hours a day.



From an implementation perspective, if we consider wearable activity trackers to be health care devices, pharmacists should know when and how to recommend them. Furthermore, considering that many of our older patients do not frequent electronics stores, we may also want to consider prescribing and/or selling the tools if we find them to be useful in helping patients move more. Certainly, according to the Canada Revenue Agency, any time a pharmacist recommends something in the context of a pharmacist-patient relationship, we do not need to charge sales tax.<sup>19</sup> Much like blood glucose meters and blood pressure machines, distributing wearable activity trackers through pharmacies also conveys to patients and health insurance providers that we believe these tools have a place in health care.

### Where do we go from here?

Wearables that track and report physical activity have a lot of potential to help improve patients' quality of life. Pharmacists can help older adults become more aware of the many different types of physical activity trackers and the diverse set of options each one can provide to track both health, diet and activity. Please see Table 1. Health-focused add-ons to wearables include heart rate and blood pressure monitoring, temperature monitoring, scales for tracking weight, calorie counting and glucose monitoring.

It is important to be aware that while sedentary persons can adopt and continue regular long-term physical activity, daily, long-term adherence to home-based programs is usually low.<sup>20,21</sup> Successful interventions are often expensive and time intensive, and include key components important to lasting success.<sup>17</sup> Programs that build self-awareness may be most amenable to lasting participation, and goal setting has proven itself when it comes to promoting physical changes.<sup>16,22</sup> There is good evidence that self-monitoring and the use of social support are ways to improve the success of physical activity

interventions, and that tailored feedback and information helps with adoption of increased physical activity.<sup>10,23,24</sup>

While we can certainly start recommending activity trackers now, this field is, by nature, rapidly changing, with constant innovations and developments, as well as new devices being brought to the market. As we look to the future, we need to understand where these new technologies fit. From where we stand today, it looks like there is great potential for pharmacists to integrate use of technology and wearables to support their practices. ■

---

*From the School of Pharmacy, University of Waterloo, Kitchener, Ontario. Contact [kelly.grindrod@uwaterloo.ca](mailto:kelly.grindrod@uwaterloo.ca).*

**Author Contributions:** *This commentary is based on research being done by K. Grindrod and K. Mercer at the University of Waterloo and an independent study project done by M. Li.*

**Declaration of Conflicting Interests:** *The authors do not have any conflict of interest to disclose.*

**Funding:** *No funding or grants to report.*

---

## References

1. Harvey JA, Chastin SFM, Skelton DA. Prevalence of sedentary behavior in older adults: a systematic review. *Int J Env Res Public Heal* 2013;10:6645-61.
2. Wilmut EG, Edwardson CL, Achana FA, et al. Sedentary time in adults and the association with diabetes, cardiovascular disease and death: systematic review and meta-analysis. *Diabetologia* 2012;55:2895-905.
3. Canadian Society for Exercise Physiology. Canadian Physical Activity Guidelines and Canadian Sedentary Behaviour Guidelines; 2012:1-29. Available: [www.csep.ca/cmfiles/guidelines/csep\\_guidelines\\_handbook.pdf](http://www.csep.ca/cmfiles/guidelines/csep_guidelines_handbook.pdf) (accessed Feb. 23, 2015).
4. National Health Services. Physical activity guidelines for adults (19-64 years). July 11, 2011. Available: [www.nhs.uk/Livewell/fitness/Documents/adults-19-64-years.pdf](http://www.nhs.uk/Livewell/fitness/Documents/adults-19-64-years.pdf) (accessed March 13, 2014).
5. World Health Organization. Global recommendations on physical activity for health. Geneva, Switzerland: WHO; 2010. Available: [http://whqlibdoc.who.int/publications/2010/9789241599979\\_eng.pdf](http://whqlibdoc.who.int/publications/2010/9789241599979_eng.pdf) (accessed Feb. 23, 2015).
6. Balde A, Figueras J, Hawking D, Miller J. Physician advice to the elderly about physical activity. *J Aging Phys Act* 2003;11:90.
7. Benzinger P, Iwarsson S, Kroog A, et al. The association between the home environment and physical activity in community-dwelling older adults. *Aging Clin Exp Res* 2014;26:377-85.
8. Schutzer KA, Graves BS. Barriers and motivations to exercise in older adults. *Prev Med (Baltim)* 2004;39:1056-61.
9. Barnes PM, Schoenborn CA. Trends in adults receiving a recommendation for exercise or other physical activity from a physician or other health professional. *NCHS Data Brief* 2012;(86):1-8.
10. Bravata DM, Smith-Spangler C, Sundaram V, et al. Using pedometers to increase physical activity and improve health: a systematic review. *JAMA* 2007;298:2296-304.
11. Strath SJ, Swartz AM, Parker SJ, et al. A pilot randomized controlled trial evaluating motivationally matched pedometer feedback to increase physical activity behavior in older adults. *J Phys Act Health* 2011;8(Suppl 2):S267-74.
12. Kaminsky LA, Jones J, Riggins K, Strath SJ. A pedometer-based physical activity intervention for patients entering a maintenance cardiac rehabilitation program: a pilot study. *Cardiovasc Diagn Ther* 2013;3:73-9.
13. Snyder A, Colvin B, Gammack JK. Pedometer use increases daily steps and functional status in older adults. *J Am Med Dir Assoc* 2011;12:590-4.
14. Gusi N, Reyes MC, Gonzalez-Guerrero JL, et al. Cost-utility of a walking programme for moderately depressed, obese, or overweight elderly women in primary care: a randomised controlled trial. *BMC Public Health* 2008;8:231.
15. Kassavou A, Turner A, French DP. Do interventions to promote walking in groups increase physical activity? A meta-analysis. *Int J Behav Nutr Phys Act* 2013;10:18.
16. Richardson CR, Buis LR, Janney AW, et al. An online community improves adherence in an internet-mediated walking program. Part 1: results of a randomized controlled trial. *J Med Internet Res* 2010;12:e71.

17. Müller AM, Khoo S. Non-face-to-face physical activity interventions in older adults: a systematic review. *Int J Behav Nutr Phys Act* 2014;11:35.
18. Mouton A, Cloes M. Web-based interventions to promote physical activity by older adults: promising perspectives for a public health challenge. *Arch Public Health* 2013;71:16.
19. Boychuk D. Medical Expense Tax Credit. *Canada Custom Revenue Agency*. 2010. Available: [www.pharmacists.ca/cpha-ca/assets/File/cpha-on-the-issues/GSTHSTRequestInterpret.pdf](http://www.pharmacists.ca/cpha-ca/assets/File/cpha-on-the-issues/GSTHSTRequestInterpret.pdf) (accessed Nov. 16, 2014).
20. Garmendia ML, Dangour AD, Albala C, et al. Adherence to a physical activity intervention among older adults in a post-transitional middle income country: a quantitative and qualitative analysis. *J Nutr Health Aging* 2013;17(5):466-71.
21. Richardson CR, Buis LR, Janney AW, et al. An online community improves adherence in an internet-mediated walking program. Part 1: results of a randomized controlled trial. *J Med Internet Res* 2010;12:e71.
22. Engbers L. *Monitoring and evaluation of worksite health promotion programs—current state of knowledge and implications for practice*. September 2007. Geneva (Switzerland): World Health Organization; 2008. Available: [www.who.int/dietphysicalactivity/Engbers-monitoringevaluation.pdf?ua=1](http://www.who.int/dietphysicalactivity/Engbers-monitoringevaluation.pdf?ua=1) (accessed March 14, 2014).
23. Kolt GS, Schofield GM, Kerse N, et al. Healthy Steps Trial: pedometer-based advice and physical activity for low-active older adults. *Ann Fam Med* 2012;10:206-12.
24. Helsel DL, Jakicic JM, Otto AD. Comparison of techniques for self-monitoring eating and exercise behaviors on weight loss in a correspondence-based intervention. *J Am Diet Assoc* 2007;107:1807-10.