

Helping Sedentary Patients Become More Active: A Practical Guide for the Primary Care Physician

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This article has a companion CME exam that follows the article. To earn credit, read the article and complete the CME evaluation on pages 170 and 171. Estimated time to complete this activity is 1 hour. Faculty disclosure information appears on page 167.

Program Audience

Primary care physicians.

Educational Needs Addressed

A sedentary lifestyle is an important risk factor for type 2 diabetes, coronary artery disease, obesity, osteoarthritis, major depression, and some cancers. For most diseases associated with inactivity, getting 30 minutes a day of moderate-intensity physical activity can decrease risk. The primary care and general medical office continues to be a critical place where exercise promotion can occur. Clinicians can help patients assess their current level of physical activity and understand the link between a sedentary lifestyle and chronic illness. Clinicians can also address barriers to physical activity, particularly health-related barriers that are common in patients with multiple chronic diseases. Motivational interviewing may be an effective technique to promote physical activity in a clinical setting. By providing concrete advice on how to start a physical activity program—including recommendations about activity type, duration, intensity, and frequency in a written exercise prescription—clinicians can increase their patients' chances of success.

Educational Objectives

After participating in this CME activity, primary care physicians should be able to

1. Assess a patient's level of physical activity
2. Cite patient barriers to exercise
3. Describe patient counseling interventions that may support behavioral change
4. Implement a pedometer-based walking program

Physical activity is a critical component of a healthy lifestyle [1]. Numerous studies have linked increases in physical activity with decreased risk for cardiovascular disease [2–4], type 2 diabetes [5,6], depression [7], and colon cancer [8]. Some of the positive effects of physical activity on health are due to the fact that physical activity contributes to weight loss [9]. Physical activity contributes to weight loss directly by burning calories and indirectly by building muscle mass, which helps maintain a higher basal metabolic rate. Physical activity can also help prevent weight regain after weight loss [10,11]. Even in the absence of weight loss, physical activity improves health outcomes [12]. Physical activity decreases inflammatory marker levels and increases cardiorespiratory fitness, leading to reduced risk of adverse cardiovascular events [13]. Physical activity also improves insulin sensitivity in patients with type 2 diabetes. A single episode of physical activity can reduce insulin resistance for up to 3 days [14]. Additionally, physical activity can decrease the risk of developing hypertension [15], reduce blood pressure in patients who already have hypertension [16], and improve lipid profiles, including raising high-density lipoprotein cholesterol [17]. Physical activity has been shown to improve function in patients with osteoarthritis [18].

Despite the fact that sedentary behavior is a significant risk factor for many chronic diseases and conditions, most Americans do not get enough physical activity. The 1996 Surgeon General's Report on Physical Activity and Health recommends that all adults "accumulate at least 30 minutes of endurance-type physical activity, of at least moderate intensity, on most—preferably all—days of the week [1]." According to the 2005 Behavioral Risk Factor Surveillance System, 51% of American adults did not achieve this minimal level of activity [19]. In a clinical population, particularly among those who have preexisting chronic illness, achieving even the relatively modest goal of 30 minutes a day on most days of the week can be challenging.


Although physical activity is important for health, there is only limited evidence to suggest that clinician counseling can help patients become more physically active. The U.S.

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Preventive Services Task Force concluded that there is insufficient evidence to recommend behavioral counseling in primary care settings to promote physical activity [20]. While we await further research to clarify the effect of counseling patients to increase physical activity, physicians still have an important role to play in communicating the benefits of exercise and encouraging physical activity in their patients. While we have limited data to support specific approaches, there is sufficient experience to support a number of useful strategies for talking to patients about physical activity in a clinical setting.

CASE STUDY

Initial Presentation

 A 55-year-old postmenopausal woman presents to her primary care physician for a health maintenance examination. She has no current concerns other than some recent weight gain.

History

She has gained about 40 lb in the last few years and now weighs 190 lb. She is not taking any prescription medication but does take a multivitamin. Her past medical history is significant for 3 uncomplicated pregnancies and mild osteoarthritis in her knees. She has a family history of diabetes, osteoporosis, and hyperlipidemia. She works full-time as a librarian. She lives at home with her husband and 1 son, who attends college. She quit smoking 15 years ago.

Physical Examination

The patient is 5' 4" tall and weighs 198 lb. Her body mass index is 34 kg/m². Blood pressure is 145/90 mm Hg. Her most recent laboratory work showed a glycosylated hemoglobin level of 6.8%, total cholesterol of 249 mg/dL, high-density lipoprotein cholesterol level of 32 mg/dL, and low-density lipoprotein cholesterol level of 129 mg/dL.

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- What information can help a physician assess a patient's level of physical activity?
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In assessing the amount of physical activity a patient is getting, physicians need to inquire about 3 parameters:

- (1) Frequency (number of episodes of exercise per week)
- (2) Duration (number of minutes of exercise per episode)
- (3) Intensity (light, moderate, or vigorous)

Individuals who exercise for 30 minutes a day at least 5 times per week at an intensity level that is equivalent to a brisk walk or higher are meeting the recommended level of physical activity.

To determine if a patient is meeting the Surgeon General's minimum guidelines for physical activity, physicians can start by simply asking "Do you get any regular exercise or physical activity?" Individuals who participate in regular structured activity, such as attending an aerobics class 3 times a week, will be able to answer this question easily and precisely. However, many Americans do not participate in regular structured activity. For many individuals, physical activity comes from lifestyle activity integrated into daily life, such as walking, carrying packages, or climbing stairs. Although such lifestyle activity may improve health, it is difficult to assess clinically. Questioning these patients about physical activity often yields vague results such as "I chase the kids around all day" or "I walk all day. I never sit down [21]." Such people may be relatively active but have trouble quantifying the many short bouts of activity they engage in throughout the day. Others may overestimate their activity levels or judge their daily activity based on how exhausted they feel at the end of the day. Further, a response such as, "No, I don't get any exercise at all" can be inaccurate if the patient thinks walking does not count.

Further Patient Assessment

 Dr: Do you get any regular exercise or physical activity?

Mrs. Smith: Well, I try to get out and go for a walk a few times a week. I know I need to get out for my walks more often, but it has been hard to find time for exercise since I started working full-time. And I don't like walking outside when it's dark or when it's too cold.

Dr: It sounds like finding time to exercise is difficult for you.

Mrs. Smith: Yes. I get up at 6:30 AM for work, and at the end of the day I just don't have the energy to go out for a long walk.

Dr: Do you know how far you walk or how many minutes you walk when you do manage to fit a walk into your day?

Mrs. Smith: Well, I used to walk to the end of the block and back. I think it takes about 10 minutes if I walk pretty fast.

The physician has made an attempt to elicit frequency, duration, and intensity information from this patient; however, her answers make it difficult to tell exactly how much physical activity she is getting. For patients who are unable to report their level of lifestyle activity, a baseline physical activity assessment using a pedometer may be considered.

Baseline Pedometer Assessment

Pedometers are devices about the size of a pager and worn at the waist that count each step taken by the user throughout the day. For a baseline assessment, the patient is asked to wear a pedometer all day every day for 7 days while going about her usual daily activities. The purpose of the baseline assessment is to gather information about current level of physical activity and to generate data that can be used for subsequent goal setting. **Figure 1** offers a set of patient instructions and activity log that can be handed out with a pedometer for a week of pedometer assessment.

Pedometers can be potent motivators [22–24], and the patient may dramatically increase her step count during the initial week in response to the novelty of wearing a pedometer and seeing the step count feedback. This would result in a falsely elevated baseline physical activity assessment. We sometimes put a sticker over the pedometer face to keep the patient from seeing the step count reading during the first week. This helps us get a more accurate baseline assessment of preintervention physical activity levels.

When the patient returns with her completed log and pedometer, calculate the average daily step count by dividing total steps by the actual number of days that the pedometer was worn. Only count days during which the pedometer was worn for at least 8 hours. Use the **Table** to assign the patient to 1 of 4 physical activity categories: sedentary, low active, somewhat active, and active.

- **What approaches may be useful for talking with patients about behavior change?**

Patient-centered collaborative approaches to behavior change counseling and self-management can increase the influence and effectiveness of a clinician's counseling interventions [25–27]. Patient-centered collaborative approaches alter the traditional patient/doctor communication formula from the paternalistic model in which the doctor provides an untailored prescription to one in which the patient and the doctor work together to address barriers to health behavior change with the doctor functioning as an advisor. One popular mode of patient-centered counseling that has been employed in the physicians' office is the 5 A's model in which physician counseling is conducted in 5 phases: Assess, Advise, Agree, Assist, and Arrange [28,29].

Empowerment approaches involve helping people discover and use their innate abilities to achieve their health behavior change goals [25,30]. The goal of the clinician in the empowerment model is to highlight the skills and expertise of the patient and to encourage the patient to use his or her

pre-existing skills and expertise to tackle new health behavior change problems.

Motivational interviewing is another counseling technique similar to empowerment that emphasizes helping patients explore their barriers to behavior change and develop their own strategies for overcoming these barriers. The 4 general principles of motivational interviewing include expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy [31]. There is some evidence that motivational interviewing may be more effective than standard care involving delivery of information and recommendations to promote physical activity [32,33]. Two resources for health care professionals interested in learning the basics of motivational interviewing are *Health Behavior Change: A Guide for Practitioners* by Rollnick, Mason, and Butler [34] and www.motivationalinterview.org [35]. At the core of these counseling techniques is a basic respect for the patient's ability to solve problems and overcome barriers so that they can succeed even in difficult behavior change programs.

An example of a counseling session using some of the principles and counseling styles described above might go something like this:

Mrs. Smith: I know I should get more exercise, but I just can't seem to find the time or energy to get going.

Dr: It can be hard to fit exercise into a busy day. Perhaps work is more important for you right now than starting an exercise program.

Mrs. Smith: Well, actually exercise is probably even more important now with all the stress from work. Plus, if I end up in the hospital, I won't be able to do my job!

Dr: So taking care of your health is an important priority for you, but you are having trouble finding the time and energy to fit in physical activity.

Mrs. Smith: I know I need to start doing something for exercise. I used to go on walks with a friend 3 days a week, but she moved out of town last winter, and walking by myself just isn't fun.

Dr: Having someone to exercise with can really help keep you on track with an exercise program.

Mrs. Smith: One of my co-workers goes for a walk every day at lunchtime. When she told me about it, I thought that I should be doing that too. I didn't say anything because I wasn't sure if I was ready to commit to doing the walk every day. Sometimes you just need a break ...

One-Week Physical Activity Assessment Using a Pedometer

Patient Instructions

Name: _____ **Pedometer Number:** _____

Date: _____

You have been given a pedometer to wear for a week to measure your physical activity.

How do I wear the pedometer? Every morning when you wake up and get dressed, clip the pedometer on your waist belt. Also clip the safety strap on your clothes or on a belt loop. Using both the pedometer and safety strap clips is important to avoid losing the pedometer or accidentally dropping it in the toilet. Wear the pedometer all day every day as you go about your usual daily activity until you see your doctor again.

The pedometer should be positioned directly above one of your knees. Some people, particularly those with large waists, find this position uncomfortable. You can move the pedometer out a little farther to the side or even place it on your back if it is more comfortable. Some pedometers can count accurately in your pocket or purse.

Is my pedometer counting correctly? Wherever you attach your pedometer, test it out to make sure it is counting by doing a 20-step test every morning. After positioning the pedometer where it is comfortable, look at the pedometer and see what step count you are at. Then take 20 regular steps down a hallway. Then stop and look at the pedometer again to see if your 20 steps were counted. Pedometers are not usually perfect and the first and last few steps can be miscounted, so we consider the pedometer to be working well if it counts anywhere from 18 to 22 steps during your 20-step test.

At the end of the day simply unclip the pedometer and leave it in a place where you will see it in the morning and remember to put it back on. Next to your toothbrush or your morning pills might be a good place to put it.

What about showering and swimming? Pedometers are not waterproof. Do not wear them in the pool, bathtub, or shower.

What about nonwalking or running activity? Pedometers only measure walking or running activity. If you participate in physical activity such as swimming, bicycling, weight lifting, or gardening, record the activity in the log on the back of this instruction sheet.

At the end of the week return the pedometer and your activity log to your doctor, and he or she will help you get started on a walking program.

Activity Log

Wear your pedometer all day every day for seven days and fill out the chart below. Do not try to increase your physical activity level this week. We just want to find out how active you are now. At next week's doctor visit, you and your doctor will set goals for your new walking program.

Day/date	Time pedometer was put on	Time pedometer was taken off	Type of nonwalking or running activity	Total minutes of nonwalking or running activity
1				
2				
3				
4				
5				
6				
7				

Figure 1. Patient instructions for baseline pedometer-based assessment.

Dr: Jumping right in to walking every day can be a little overwhelming.

Mrs. Smith: Yes, you know, I've tried to start exercising several times, and I always give up after a week or 2.

Dr: Well, you have been successful in the past when you really put your mind to it. Remember when you decided to quit smoking? You said that once you made up your mind to do it, it wasn't as hard as you thought it would be.

Mrs. Smith: Hah, I remember. It was hard, especially the first few weeks. But I'm glad I did it. Think of all the money I've saved not buying cigarettes.

Dr: What do you think would be a good first step toward starting an exercise program?

Mrs. Smith: I think I'll try to go on 1 walk with my friend at work this week just to see how it goes. If it is fun, I can add a few more days a week later.

Dr: That sounds like a good plan. As a first step, go for at least 1 lunchtime walk with your friend. Let's follow up in 4 weeks to see how you do with starting your exercise program. We can also recheck your blood pressure when you return. OK?

Mrs. Smith: OK.

• How may physicians help their patients address common barriers to physical activity?

Patients cite numerous barriers to exercise. Lack of time for physical activity is the most common barrier for younger and healthier individuals [36], while poor health is the most frequently reported barrier for older and sicker individuals [37]. Patients who cite a lack of time or convenience might be offered the following suggestions:

- Take a 10-minute walk during your lunch break.
- Organize a walking group with friends and/or family members on the weekends.
- Walk on a treadmill while watching your favorite TV show.
- Walk to work if it is feasible or park a mile away and walk to work when the weather is nice.
- Exercise at home with home exercise videos or DVDs.
- Try indoor walking at a local mall, many of which

Table. Classifying Physical Activity Level by Average Daily Step Count

Average Daily Step Count	Level of Physical Activity
< 5000 steps	Sedentary
5000 to < 7499 steps	Low active
7500 to < 9999 steps	Somewhat active
≥ 10,000 steps	Active

Adapted with permission from Tudor-Locke C, Bassett DR Jr. How many steps/day are enough? Preliminary pedometer indices for public health. *Sports Med* 2004;34:1–8.

open early for community walking clubs. The same opportunity often exists for school district swimming pool facilities.

- Explore the cost and availability of private and community-based recreation facilities.
- Find a safe building, perhaps at work, with stairwells or longer hallways that would be available for lunch-time walks.

According to the health belief model of behavior change, perceived risk and perceived benefit are critical components of motivation for health behavior change [38]. Clinicians can increase motivation for healthy behavior change by explicitly linking poor health behaviors to current medical problems or risks of developing medical problems. While educating patients about the connection between a sedentary lifestyle and poor health outcomes may not be sufficient to ensure successful behavior change, health care providers can leverage their authority, the patient-doctor relationship, and their knowledge about the patient's specific medical issues to increase motivation.

Dr: I know you are worried about your borderline blood sugar, blood pressure, and cholesterol. It is possible that we might have to begin medication for those issues.

Mrs. Smith: Yes, and I am very discouraged about possibly having to take medication for these problems.

Dr: Well, you told me that you are not getting much physical activity on most days. Even a small amount of physical activity, maybe as little as a 10-minute walk each day, could help you control both your blood sugar and blood pressure better. It might also help you avoid gaining more weight, which I know also concerns you.

Mrs. Smith: But you know, Doctor, I have arthritis, and my knees hurt when I walk.


Dr: Often people with mild arthritis actually find that their knee pain gets a little better once they start a walking program. In fact, avoiding walking may actually make your arthritis and knee pain worse.

Ensure that the patient understands that this is a long, slow process and that she might not see results quickly. Emphasize short-term, non-weight loss benefits of physical activity, such as improved mood, increased energy, and improved cardiorespiratory fitness.

Social Support

Most people have better results when someone else is counting on them to show up for a physical activity session [39,40]. Recommend that your patient find a walking buddy or join a group exercise class. Family members can help with encouragement and support as well [41]. Family and friends can help by providing emotional support, informational support, or instrumental support. Emotional support includes encouragement and “you can do it” messages. Informational support might come from someone with knowledge about physical activity, such as a sister who happens to be a personal trainer. Instrumental support includes help that makes it easier to participate in the healthy behavior, such as the patient’s husband cooking dinner some nights while she goes for a walk.

Results of Baseline Assessment

 Pedometer baseline assessment reveals that the patient’s average daily step count is 2985, classifying her as sedentary. The physician asks her if she would be interested in starting a regular walking program.

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- **What are features of a pedometer-based walking program?**
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Pedometers can help patients assimilate critical behavior change skills including self-monitoring, goal setting, and documenting progress. Feedback about daily walking patterns can be useful in overcoming barriers, setting goals, and rewarding successes [42,43]. One study found that women who were given pedometers and who were instructed to walk 10,000 steps a day walked almost 2000 steps per day more than women who were instructed to go for a brisk 30-minute walk each day [44]. Pedometer-based walking programs have been used successfully in clinical settings, but there is some debate over whether or not pedometers are more effective than simple time-based walking programs [45].


Pedometer Basics

There are hundreds of different pedometers available and many of them are both accurate and inexpensive [46]. Newer piezoelectric-type pedometers are more expensive but more accurate, particularly in overweight individuals [47], than older spring and magnet-type pedometers. Prices for piezoelectric pedometers range from \$20 to \$60. Pedometers do not have to count steps perfectly to be useful. An error of $\pm 10\%$ of steps counted is sufficient to be clinically useful. Pedometers use different criteria for what constitutes a “step” such that comparing step counts between pedometer brands can be misleading. Pedometers are designed to count steps and do not accurately measure energy expenditure from other types of physical activity. Most cannot be worn while swimming, and no pedometer accurately measures resistance exercise such as weight lifting or carrying a heavy load. Pedometers usually do not give a very accurate estimate of activity level while riding a bicycle, playing hockey, or working out on an elliptical trainer. However, patients who are biking, playing hockey, or lifting weights probably do not need a pedometer in the first place. Pedometer assessment is most effective for those individuals for whom the majority of their activity is walking. Most pedometers do not work in patients with unusual biomechanics or a slow gait, or in patients confined to a wheelchair.

Setting Pedometer Goals

Pedometer-based physical activity programs often use 10,000 steps as the target step count for physical activity [48]. This goal is a reasonable long-term goal for young and healthy people, but it is equivalent to about 5 miles of walking per day and is likely to be too high for patients who are older or carry a significant chronic disease burden. A target of 8000 steps per day is closer to the 30 minutes per day of walking recommended by the Surgeon General. Most people get 3000 to 5000 steps per day without doing any planned walking, and a 30-minute walk at 3 miles per hour would add another 3000 steps per day to that baseline step count. For patients with more chronic disease, the average daily step count can be as low as 1000 to 2000 steps per day. For these people, increasing activity levels to the 5000 steps per day range is likely to result in substantial health benefits [49]. For other patients a common technique for step count goal setting is to calculate the patient’s average daily step count from the baseline assessment week and then add a small number of steps (maybe 500 or 1000 steps). This calculation yields a safe and feasible daily step count goal that takes into account your patient’s current fitness level. The goal can be increased gradually over weeks or months.

Exercise Prescription

 The physician and patient discuss the details of the walking program. The physician suggests that a

realistic daily step count goal for the patient might be 3500 steps per day for the first week. This goal can be gradually increased as she becomes more fit and as walking becomes a more regular part of her daily routine. The physician writes down the agreed-upon exercise goals on his prescription pad (Figure 2).

• How important is a written exercise prescription?

Several studies have examined the effectiveness of written exercise prescriptions in a primary care setting. Most studies of written exercise prescriptions have shown that they are more effective than verbal advice [27].

• What safety issues should be considered in prescribing exercise?

Many patients are concerned about adverse cardiovascular events. The greatest risk for cardiovascular events comes from not exercising rather than pursuing a regular exercise program even in high-risk patients [4,50–52]. Screening and intervention for cardiovascular risk factors, including hypertension, hypercholesterolemia, diabetes, and smoking, should be done routinely as part of preparation for starting a physical activity program. There are some data to suggest that quitting smoking and starting a physical activity program simultaneously increases the success rate for both smoking cessation and physical activity adoption [53].

Exercise stress testing is indicated for asymptomatic individuals who are sedentary, have multiple cardiovascular disease risk factors, and are contemplating a vigorous physical activity program. Walking is a moderate-intensity physical activity and, for most patients, preparticipation screening is an unnecessary barrier to initiation of a walking program. Sudden cardiac death during moderate-intensity physical activity such as walking is extremely rare [51,52], while cardiac arrest among high-risk patients who remain sedentary is not.

For individuals with complex medical barriers to exercise, it may be difficult to formulate a safe and feasible exercise prescription. Referral to an expert in preventive cardiology, exercise physiology, or physical rehabilitation may be appropriate.

SUMMARY

While there are few data to show a consistently high level of success by primary care clinicians in promoting exercise, many of us have had sufficient success to encourage our

Exercise Prescription for <u>Jane Smith</u>	
Start date:	3/21/07
Type of exercise:	Brisk walking
Start with:	3500 steps on Monday, Wednesday, and Friday
Gradually increase to:	5000 steps 5 days per week
Return for recheck:	5/8/07

Figure 2. Exercise prescription.

continued efforts. Most recommendations derive more from experience and expert opinion than from empiric trials, but the strategies described above provide a reasonable base from which interested clinicians can develop their own approach. The key step is to help patients assess their current physical activity level and to identify those who are both sedentary and willing to consider initiation of an exercise program. Motivational interviewing techniques may be more effective than information and recommendations. Explicitly making the connection between sedentary behaviors and existing medical problems can increase motivation and the chances of success. Explicit written exercise prescriptions, including the use of a pedometer to provide personal data and tailored feedback, are helpful. Finally, structured follow-up provides opportunities to help with problem solving, relapse prevention, and selection of safe and appropriate gradually incremented physical activity goals.

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CME EVALUATION: Helping Sedentary Patients Become More Active: A Practical Guide for the Primary Care Physician

DIRECTIONS: Each of the questions below is followed by several possible answers. Select the ONE lettered answer that is BEST in each case and circle the corresponding letter on the answer sheet.

1. For older sedentary people, the most frequently cited barrier to starting a physical activity program is:
 - A. Lack of time
 - B. Lack of knowledge about what exercise to do
 - C. Lack of motivation
 - D. No safe place to exercise
 - E. A health-related problem

2. Which of the following is NOT a good example of patient-centered, collaborative, and empowering counseling:
 - A. You need to walk for at least 30 minutes 5 days a week.
 - B. Is there any kind of physical activity program that you would like to try?
 - C. What do you think might be a good first step in starting an exercise program?
 - D. It sounds like finding time to exercise is a problem for you.
 - E. Do you want to stick with the same step count goal for next week or increase it a little?

3. The Surgeon General's Report on Physical Activity and Health recommends:
 - A. 30 minutes of moderate-intensity activity at least 3 days a week
 - B. 30 minutes of moderate-intensity activity at least 5 days a week
 - C. 30 minutes of moderate-intensity activity most if not all days of the week
 - D. 1 hour of moderate-intensity activity at least 3 days a week
 - E. 1 hour of moderate-intensity activity at least 5 days a week

4. Physical activity can reduce the risk of developing:
 - A. Obesity
 - B. Type 2 diabetes
 - C. Coronary artery disease
 - D. Some cancers
 - E. All of the above

5. For most sedentary obese adults with a chronic illness, such as diabetes or heart disease, who want to start a pedometer-based walking program, starting with a 10,000 steps per day goal is probably:
 - A. Too low
 - B. Too high
 - C. Just right

