

# Encouraging Patients to Be Physically Active: What Busy Practitioners Need to Know

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**A**lthough exercise is one of the cornerstones of diabetes management, it remains by far the most underused. Undeniably, its beneficial health effects for almost everyone are well established and include improvements in glycemic control, insulin action, cardiovascular fitness, systemic inflammation, diabetes-related health complications, and mental health. Given its positive health impact, it is critical that practitioners encourage almost all of their diabetic and pre-diabetic patients to become and remain regularly physically active.

Making physical activity recommendations is a crucial part of effective care for people with diabetes. A recent meta-analysis examining the effect of diabetes self-management interventions including recommendations to increase exercise reported that such interventions improve metabolic control in individuals with type 2 diabetes, although the magnitude of the effect varies.<sup>1</sup> Moreover, interventions that recommend and emphasize exercise alone appear to be especially effective for improving glycemic control, even more so than changing exercise, diet, and medication behaviors simultaneously.

Given typical medical office time constraints, it is tempting simply to tell patients to “be regularly active” to achieve better control of their diabetes. But is this strategy effective? Although numerous studies demonstrating that diabetes control can be improved by regular exercise, others have shown no effect on overall glycemic control

or body weight. One problem is that exercise interventions vary widely in their duration (of both individual exercise sessions and overall length of participation), exercise intensity, and mode of physical activity, which explains some of these conflicting results. Another meta-analysis, which examined exercise fitness outcomes in patients with type 1 or type 2 diabetes, found that positive changes in physical fitness levels were greater for patients given an actual exercise prescription that included a detailed regimen.<sup>2</sup> They also fared better when they had their physical fitness levels tested beforehand, participated in supervised exercise programs and group exercise sessions, and followed recommendations to engage in longer durations of physical activity.

It appears, then, that practitioners may greatly help their patients by prescribing an appropriate duration, intensity, and type of exercise. But how can they find the time to do it during limited office visits? One answer is that there may be alternate, time-saving ways to perform this care task. In a recent study, researchers found that a brief intervention to increase dialogue between patients and health care providers about behavioral goals can lead to increased physical activity and weight loss. In that study, patients were able to set self-management goals for nutrition and physical activity in about 10 minutes using a tailored computer program, and their goals were then briefly reviewed at each clinic visit to

provide reinforcement and continued motivation for participation.<sup>3</sup>

## Challenges to Making Exercise Recommendations

When such a computer program is not available, how can practitioners give specific exercise recommendations in the course of a time-limited office visit? Admittedly, one of the primary challenges in making any recommendations is that even the experts fail to agree on what those recommendations should be. In general, exercise duration includes both how long individuals should exercise over time and how much time they should spend during each workout session. Regular exercisers fare better physically, but what still needs to be determined is the number of weeks, months, or years of sustained physical activity required to optimize health benefits, control diabetes, prevent complications or diabetes onset, and reverse prediabetic conditions. Clinical trials often follow participants' improvements over a 6- to 16-week period, but greater improvements likely result from exercise during a year or longer, and few interventional studies are conducted for that length of time. One can only surmise that the longest duration possible (ideally as an integral lifestyle behavior over a lifetime) will have the greatest benefits, as demonstrated by prospective studies.

Recommendations also vary with regard to the optimal duration of each exercise session. The 2007 guidelines released jointly by the American Heart Association and American College of Sports Medicine recommend getting at

least 30 minutes of moderate exercise 5 days a week, or 20 minutes of more vigorous activity at least 3 days a week for healthy adults.<sup>4</sup> However, just 10 minutes of physical activity each day can improve fitness levels in overweight, postmenopausal women, although longer exercise durations result in greater improvements.<sup>5</sup> Such results can be used as encouragement to motivate sedentary, diabetic adults to do some activity of any length, even if they do not meet the recommended durations. Additional research is needed to determine whether exercising for > 30 minutes is required to optimize the health of diabetic individuals or whether vigorous activity is a better alternative.

Does the fact that more intense exercise has the potential to bestow greater health benefits mean that less intense exercise is not worthwhile? Diabetic individuals in particular may experience comorbidities such as hypertension, cardiovascular disease, obesity, and other diabetes-related complications (e.g., autonomic neuropathy and silent ischemia) that can limit their ability to engage in more intense workouts. Practitioners should recommend that their patients exercise as intensely as possible, but not so excessively hard that they lose the motivation to continue, develop an athletic injury, or put their health acutely at risk. A viable alternative may be to recommend “pick up the pace” training with interspersed, faster intervals that enhance cardiorespiratory fitness gains and further improve insulin action.<sup>6</sup>

As for which mode of training to recommend, studies have yet to reach a definitive conclusion about whether aerobic, resistance, or both types of training are best for diabetes control and cardiovascular health. Moderate walking and other weight- and non-weight-bearing aerobic exercises have traditionally been recommended for diabetic individuals, but resistance training may be as important as, if

not more important than, aerobic for improving insulin action.<sup>7</sup> Resistance work may result in greater and more lasting improvements in glucose tolerance without changes in body weight,<sup>8</sup> and adding such training to ongoing aerobic exercise participation appears to result in greater metabolic improvements.<sup>7</sup> Thus, diabetic individuals will benefit from either mode of exercise or, ideally, the combination of both.

### Getting Patients Started With Physical Activity

Frequent, regular exercise of any type is the key to effective blood glucose control because the heightened insulin action in exercised muscle persists for only 1–2 days. As mentioned, for type 2 diabetic individuals, nearly daily physical activity is recommended to optimize weight loss and blood glucose control. For patients with type 1 diabetes, performing regular, predictable exercise may make their diabetes easier to manage than when exercise is sporadic.

Given that most people with diabetes are sedentary, practitioners should recommend to their patients to begin with easy, unstructured exercise, including taking more daily steps and simply standing up more. Oftentimes,

patients are less resistant to moving more when they do not necessarily perceive it as planned exercise. Luckily, all physical activity accumulated during the day counts. Activities such as golfing, gardening, mowing the lawn, and mild walking done for 30–45 minutes per day are all beneficial to the health of participants, even if their fitness levels are not improved. In a recent study on adult women, regular, moderate (brisk) walking decreased their risk for developing diabetes similarly to engaging in more vigorous activity, demonstrating that intensity may not be as important as participation in any activity. Simply being physically active in any manner during leisure time—and particularly doing longer or more intense activities—also reduces type 2 diabetes risks.

A simple recommendation that practitioners can make is to encourage their patients to limit their TV watching, a sedentary activity during which energy expenditure is usually lower than during other sit-down activities, including playing board games or reading. Table 1 lists some suggestions to easily and effectively get patients more physically active.

**Table 1: Tips for Becoming More Physically Active on a Daily Basis**

- Get up to change the TV channel rather than using the remote.
- Stand up and walk in place while watching TV (or at least during commercials).
- Invest in a rebounder (mini-trampoline) and jump while watching TV.
- Ride a stationary bike while you are watching TV, reading a book, or talking to someone.
- Limit TV and home computer use to no more than 2 hours per day, or minimally reduce these pastimes by 30 minutes daily.
- Try to take more steps throughout the day.
- Try taking stairs instead of an elevator or escalator whenever possible.
- If going up steps is too difficult, try starting with taking stairs only going down.
- Walk up or down escalators instead of standing still.
- Walk instead of standing on moving walkways in airports and other public places.
- Park at the farthest end of the lot; stop searching for the closest parking space.
- Get up and move for 3–5 minutes after every 30 minutes of a sedentary activity.
- Stand up or take a short walk instead of remaining seated during work breaks.
- Buy an inexpensive pedometer, and try to add at least 2,000 steps a day.
- For every excess calorie you eat, add 20 steps to your daily total.
- Take the dog out for a daily walk; borrow a neighbor's dog if necessary.

## Keeping Patients Moving More—Safely

The next step is to get patients engaged in more structured physical activities, such as planned aerobic exercise programs or classes and resistance training. Doing so requires a greater commitment from patients and more sustained motivation given that in the population as a whole, > 50% of individuals who start exercise training programs drop out in the first 6 months. Patients with uncomplicated diabetes may be more likely to engage in sustained exercise training, but those with comorbidities such as neuropathy and heart disease may be less so. General guidelines for various structured exercise training modes are given in Table 2, along with suggested venues to engage in such training.

There are some other important points to remember in helping patients become more active. Counsel them not to start out exercising too intensely, which increases the likelihood that they will either lose motivation (because of how hard the exercise sessions feel) or end up with an athletic or overuse injury. Have them use the “talk test” as a simple way to monitor exercise intensity: if they cannot comfortably carry on a conversation with someone else while exercising, then they are working out harder than needed.

Almost everyone with diabetes can find a way to exercise safely and effectively; however, diabetes bestows additional risks and possible limitations. For example, if peripheral neuropathy is present, patients may benefit from switching to non-weight-bearing activities such as swimming or stationary cycling to minimize trauma and potential injury to their feet and lower extremities. Patients with proliferative retinopathy should avoid doing any jumping, jarring, or breath-holding activities, including heavy weight lifting. Inclusion of proper warm-up and cool-down periods (at least 5 minutes of a lesser-intensity activity) is also important to provide a cardiovascu-

**Table 2: Recommendations for Structured Exercise Programs**

### Aerobic Exercise

- **Type:** Walking, cycling, swimming, aquatic exercises, aerobic exercise classes, jogging (if no lower-extremity problems are present)
- **Duration:** minimum of 30 minutes of moderate exercise, 20 minutes of vigorous exercise
- **Frequency:** At least 5 days a week for moderate or 3 days for vigorous
- **Intensity:** Mild to vigorous (use the “talk test” to monitor upper levels)

### Resistance Training

- **Type:** At least 8–10 upper- and lower- body resistance/weight exercises
- **Duration:** 20–60 minutes total, with 2–3 minutes of rest between sets
- **Frequency:** 2–3 nonconsecutive days per week
- **Intensity:** low (2–3 sets of 15 repetitions per set) or moderate (2–3 sets of 8–12 repetitions per set), with a lower resistance on the first set as a warm-up, but appropriate amounts to reach exhaustion within the desired number of repetitions on subsequent sets

### Flexibility Training

- **Type:** Stretches of all the major muscles groups in upper and lower body and torso
- **Duration:** Hold each stretch (without bouncing or pain) for 10–30 seconds
- **Frequency:** 2–3 days per week or after any exercise training
- **Intensity:** Never stretch to the point of pain or intense discomfort

### Where to Find Exercise Programs

- Fitness gyms, health clubs and spas, and local universities and colleges
- Local YMCAs, Jewish community centers, and other affiliated organizations
- Senior centers or retirement communities
- Martial arts instructional centers (for tai chi, kickboxing, karate, and other classes)
- Workplace offerings of low-impact aerobics or other exercise classes
- Organized groups of individuals who walk together during lunch breaks or after work hours at workplaces or in neighborhoods

lar transition period and to prevent injuries. Additionally, patients should be advised about any other limitations they should be aware of when exercising; for example, if they experience exertional angina at certain heart rates, they should limit their heart rate increases to 10 beats per minute lower than their angina threshold.

Another practice to enhance patients’ overall fitness and insulin sensitivity is to incorporate workouts of varying intensities into their weekly routine. It is beneficial for a number of physiological reasons to alternate easier and harder workout days. By doing so, their bodies get both the enhanced fitness attributable to working out at a higher level and the healing effects of greater recuperative time before undergoing another such workout. Harder workouts also tend to enhance insulin action (and, therefore, diabetes control)

for a longer period of time after the activity. Varying the types of activities (e.g., walking three days and cycling two days per week) also helps prevent overuse syndrome, which includes more frequent colds, chronic tiredness, and orthopedic injuries such as bone stress fractures and tendonitis, which are especially common in people with diabetes. Having a routine of varying intensities and activities also assists in preventing loss of motivation and exercise burnout.

### Creating Sustained Behaviors

Given the abysmal dropout rate from physical activity programs, maybe the new millennium with its worldwide diabetes epidemic requires a change in our mode of delivery of exercise recommendations. A recent study in South Korea found that Internet-based and printed-material interventions for

counseling patients on exercise and dietary changes were equally effective, and both had a higher efficacy in promoting healthy lifestyle changes such as increased physical activity than usual-care interventions.<sup>9</sup>

In all likelihood, practitioners likely will need to try new motivational approaches to help patients maintain positive physical activity behaviors. Promoting physical activity is an ongoing challenge that will require practitioners to fully understand the potential barriers to exercise, including lack of motivation, pre-existing health complications, and cultural differences, among others. Optimization of behavioral changes will require more rigorous evaluation of strategies and tools to improve physical activity in populations with diabetes, including ethnic minorities and other groups being disproportionately affected by the diabetes epidemic.

In the meantime, what can practitioners do to help patients remain motivated to exercise? Clinical interventions designed to implement dietary and exercise changes in nondiabetic individuals suggest that participation is higher when patients are made aware of what constitutes an unhealthy lifestyle and when they perceive themselves as being more susceptible to diseases that can result from inactivity, such as diabetes.<sup>10</sup> Some possible motivational strategies are given in Table 3.

In addition, general motivation for making lifestyle changes is an important mediator of participation. Individuals screened and found to have diabetes or pre-diabetes appear to be more likely to adhere to prescribed lifestyle alterations than overweight individuals. Therefore, relying on weight loss as a motivating factor alone may not be that effective and may actually have a negative impact, particularly because exercisers can gain muscle mass while losing body fat, and neither beneficial change would necessarily be apparent to them

by measuring body weight on a scale. Patients who do lose weight by any means may be motivated to continue exercising by learning that the most effective means for keeping lost weight off is regular participation in daily physical activity.

Researchers in Pittsburgh, Pa., developed a 1-day outpatient motivational workshop and evaluated its effectiveness by measuring total and activity-specific energy expenditures and BMI changes after 1 year.<sup>11</sup> In this pilot study of 25 overweight individuals, 69.2% were identified as sedentary at baseline. One year later, 39% of previously sedentary patients had become active, and others who were previously active had increased their total amount of high-intensity exercise. Thus, a theory-based workshop designed to increase motivation for maintaining optimal physical activity participation may be an effective means to provide additional guidance to diabetic patients beyond office visit recommendations. Other research has shown that interventions that are not face-to-face can be effective in increasing physical activity in sedentary adults: when patients are asked to complete and mail in monthly physical activity surveys, feedback they then receive via regular mail or telephone appears to be equally effective in promoting greater exercise adherence.<sup>12</sup>

In conclusion, although much still remains to be elucidated about physical activity, optimal recommendations, and motivations for sustained exercise participation, the current understanding strongly suggests that becoming and remaining physically active is crucial to living well with diabetes. The aforementioned educational physical activity interventions (such as Internet-based interactions, single-day patient workshops, or monthly print feedback via mail) would be relatively cost-effective and easily implemented in busy medical practices and would likely yield appreciable health benefits for all diabetic patients. It is time to try some new motivational approaches to support patients with diabetes to maintain positive physical activity behaviors.

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**Table 3: Keys to Achieving Sustained Exercise Participation**

- Set realistic exercise goals or milestones to keep track of activities.
- Use a sticker chart to keep a visible account of all physical activities during the day.
- Set up noncaloric rewards for reaching short- and long-term exercise goals.
- Schedule activities into a daily calendar and keep these exercise “appointments.”
- Make exercise a priority, along with taking prescribed medications, getting adequate sleep, and consuming a healthy diet.
- Find an exercise buddy to increase motivation for doing scheduled activities.
- Set up a good social network involving significant others, family members, friends, and co-workers in exercise participation.
- Vary daily activities and occasionally substitute in more fun ones., such as social dancing or golf (without golf carts) to keep interest higher.
- Incorporate exercise into your outings: visit a museum, the zoo, or sporting events.
- Increase unstructured activities to accumulate a greater total exercise time.
- For structured activities, increase exercise duration and intensity slowly to prevent overuse injuries and higher burnout rates.



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