Exercise and Diabetes

Here’s an update on getting our diabetic patients to exercise.

BY DAVID W. JENKINS, DPM

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Introduction

In the November/December 2012 issue of Podiatry Management, an overview of the state of the evidence concerning the role and benefit of exercise on the management of patients with diabetes was presented. The following discussion will be a review of the latest publications that deal with the challenges, both to clinicians and patients, in instituting what the evidence so clearly demonstrates: exercise is a key in the management of diabetes. Why are patients with diabetes not exercising? How can they be motivated? Also, as in the first review, the role podiatric physicians have in recommending, encouraging, and even supervising the exercise prescription is highlighted.

Issue of the Exercise Prescription and Compliance/Motivation

A comparative study of Pima Indians in Mexico and the United States demonstrated a prevalence of T2DM of 6.9% and 38% respectively. It is therefore not surprising that exploration of these behaviors is one of the significant areas of investigation. Despite the overwhelming data that supports the benefits of exercise for those with diabetes, it is common to see reports such as one by Herbst, et al. that report that over half of adolescents with T2DM in their cohort of 578 did no regular physical activity. Similarly, Mu, et al. found that only 12% of a surveyed USA cohort (N=36,662) made changes to one’s exercise habits seem more difficult than changing dietary habits, according to a survey by Morrison, et al. A population of “motivated to change lifestyle” patients with diabetes reported they had a much easier time making changes to their diet than to exercise regularly. This begs the question—given all the reported evidence that exercise is so beneficial for the control of diabetes—how do we convince and encourage our patients with diabetes to exercise, and how can we best assist them in this effort?

Patient Barriers for Exercise Compliance

Booth, et al. presents an excellent critique of the many barriers to patient compliance. Some of the major barriers are lack of knowledge about the seriousness of diabetes and the potential complications, lack of motivation, lack of time, circumstances related to socioeconomic condition, and an inability to change old habits. Walker, et al. describe quality of life issues and so-called low self-efficacy as possible reasons for poor adherence to exercise recommendations. Conversely, Moonaghi, et al. found that patients with an optimistic attitude are able to utilize the diagnosis of a chronic illness to make significant life changes, such as improving dietary habits, stopping smoking, and getting regular exercise. They refer to this process as “benefit finding” and believe that ultimately, these patients may be healthier than they were before their diagnosis.

Though inherited factors play a role in one’s predisposition to develop type 2 diabetes mellitus, many experts believe it is one’s lifestyle that is most significant.
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As would be expected, a study by Saleh, et al. demonstrated that those subjects with diabetes who did not adhere to a recommended exercise program had a significant reduction in quality of life—most specifically, poor mobility, reduced self-care, limits in usual activities, as well as increased pain and anxiety.8

An interesting barrier noted in recent literature is the concept of walkability. Hosler, et al. designed a survey that asked adults with diabetes about such factors as sidewalks and traffic safety in the communities in which they lived. They concluded that patients with diabetes were more likely to exercise in a community with good walkability.9

One reported solution to enhanced compliance may be a greater empowerment of patients regarding their care. Given that patient self-efficacy (self-reliance) as noted above is effective in better adherence to provider recommendations, it would seem imperative that the provider encourage a “take responsibility for your diabetes care” attitude in their patients as well as buoy a partnership in their care.10 Although the idea that a patient with strong self-efficacy is more compliant and thus will achieve better glycemic control seems self-evident, the authors point out that when a patient exhibits poor compliance, one should consider low self-efficacy and that a referral for counseling may also be in order.9

Healthcare Provider Shortcomings

Inadequate Counseling

Although much focus has been placed on how we can educate and encourage those with diabetes to not only become involved in lifestyle changes but also to stick with them, a number of studies are now directed at healthcare providers in a quest to determine shortcomings that result in noncompliance. Despite overwhelming evidence of the benefits of exercise for those with diabetes, few physicians counsel their patients about physical activity.11 Barnes and Schoenborn report that only 32% of patients queried were provided any sort of physical activity counseling during the past year at their physician’s appointment.12

Curricular Shortcomings

Some researchers believe this paucity of physical activity counseling is due to a lack of formal medical school training in this skill.13 A study by Garry, et al. looked at formal training that United States medical students received and found an alarming scarcity of curriculum devoted to the exercise/T2DM connection and related counseling. They cite that only 13% of U.S. medical schools provide a curriculum in the medical aspects of physical activity.14 Medical students in the United Kingdom fared no better.15 Not surprisingly, queried physicians felt inadequately prepared to provide counseling about physical exercise.16,17

Nature of the Recommendation Is Crucial

Other studies found that the nature of the recommendation was instrumental in compliance. Those providers who gave a specific regimen (especially one that was structured and supervised) were more likely to be successful in getting their patients to exercise than those who simply told their patients they needed to “get more exercise” (simple recommendation).18-20 It is also not a surprise that those physicians who are physically active themselves are more successful in motivating their patients about physical exercise.14,21-23

Assisting Healthcare Providers with Practice Guidelines

Given that physicians feel ill-prepared to counsel their patients about exercise, an attempt is underway to assist providers with a “patient-centered” and more individualized exercise recommendation. Major diabetes organizations such as The American Diabetes Association/European Association for the Study of Diabetes (ADA/EASD) and the American Association of Clinical Endocrinologists/American College of Endocrinology (AACE/ACE), to name a few, have developed practice guidelines that are based in clinical evidence and are designed to assist providers in making specific and patient-centered exercise recommendations to their patients.24,25

Barriers to Exercise Recommendations

From the provider’s perspective, there are barriers to available time and resources for appropriate patient education and utilization of the practice guidelines noted above.26 Besides the issues of time and resources, Lew and DeMaria report on the lack of utilization of the guidelines due to the perceived disconnect of clinical practice and said guidelines by some practitioners.27

Even social media sites have been developed to educate and support those patients with diabetes.
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led to a significant reduction in cardiovascular events in those with impaired glucose tolerance. Even social media sites have been developed to educate and support those patients with diabetes.

Practice Guidelines and Evolving Evidence—What Is the Best Exercise Regimen?

As helpful as practice guidelines might be, it is clear from the most recent studies and publications that what constitutes the optimal exercise prescription is far from settled. Therefore, impending changes to the recommended ideal exercise prescription are all but assured.

Many studies have explored what the most effective exercise prescription is as far as aerobic versus resistance versus higher intensity (i.e., interval training) versus steady (constant-longer duration) activity and, for the most part, these studies have been conflicting and/or inconclusive.

Hawley and Gibala are strong proponents for low volume—high intensity interval training (LVHIT), claiming that besides being effective, it is a regimen that better allows a more individualized approach to one’s exercise program. Likewise, Karstoft, et al. concluded in their study that a walking program using intervals of fast/slow walking was superior to a constant pace, continuous walking program with regard to glycemic control.

Conversely, a review by Harmer and Elkins supports the premise that volume of exercise (times per week of participation) is more important than duration of a single session or increasing the intensity.

Given the greater expense and issues with access that someone wanting to do resistance exercise (free weights and machines) may encounter, McGinley, et al. considered the possibility that a patient could substitute resistance bands which would be far less expensive and more readily accessible. Their review determined, however, that resistance band training did not result in the statistically significant improvement on glycemic control that occurs with resistance exercise.

It should be noted that the practice guidelines outlined above were developed in part to specifically answer (with the best evidence to date) the optimal exercise regimen for a given patient with diabetes based on the many demographic factors specific to that patient.

Exercise as Prevention

Besides a significant effort to institute exercise for the management of diabetes, many investigations and publications are focused on the benefits of exercise in the prevention of diabetes. A prospective study from 1991 to 2007 of 4,554 women with gestational diabetes found that those who increased their exercise level by 2.5 hours/week had a 47% lower risk of developing T2DM later in life. The risk was inversely proportional to the amount exercised. Given the less than optimal dietary and exercise habits seen in a cohort of 1,228 pre-diabetics, it would be reasonable to expect that clinicians should consider recommending exercise to their patients who are pre-diabetic and/or considered at-risk for developing diabetes.

Relevance to the Podiatric Clinician and Profession

As previously noted, medical school curricula appear remiss in neglecting to include study of the exercise/diabetes relationship, most especially with regard to exercise counseling. One of the objectives of this paper is to encourage the colleges of podiatric medicine to include (if they do not already) a discussion of the benefits of exercise for diabetes management in their curriculum. Indeed, this topic, including the exercise prescription, is presented in our curriculum at The Arizona School of Podiatric Medicine, in both in the diabetes will assist the practitioner in the counseling of these patients.

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6) The curriculum of colleges of podiatric medicine should include discussion of the exercise-dietary connection and implementation of an exercise recommendation.

7) Given the large number of patients with diabetes seen in podiatric practices and also the fact that so many podiatric physicians have an expertise in sports medicine, podiatric physicians are uniquely positioned to participate in the exercise prescription for patients with diabetes. PM

References


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 Feb;(86):1-8.

US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. Trends in adults receiving a recommendation for exercise or other physical activity from a physician or other health professional. Available from: http://www.webcitation.org/6NyEU6Zsy [cited 10 March 2014].


Joyce CL, O’Tuathailhaj CM. Increased training of general practitioners in Ireland may increase the frequency of exercise counselling in patients with chronic illness: A cross-sectional study. Eur J Gen Pract. 2014 Apr 15.


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Dr. Jenkins is a Professor at the Arizona School of Podiatric Medicine-Midwestern University as well as a Fellow and President-Elect of the American Academy of Podiatric Sports Medicine. He is also a Regional Clinical Advisor for the Healthy Athletes FIT FEET Program United States Special Olympics and Podiatric Consultant for the Los Angeles Dodgers.