

A Clinical Practice Lifestyle Intervention for Type 2 Diabetes

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ABSTRACT

Lifestyle interventions that incorporate healthy eating, routine physical activity, and frequent follow-up are required to achieve clinically meaningful weight loss in patients with type 2 diabetes. Only 42% of primary care providers address weight management during the office visit, citing the lack of time and a disbelief that such discussions are effective, yet most patients at least attempt lifestyle change when advised. By briefly discussing the impact of modest weight loss, including the importance of physical activity during the clinic visit and providing a simplified strategy to the patient with type 2 diabetes, self-efficacy can be enhanced and outcomes improved.

Keywords: diabetes, exercise, lifestyle, remote support, weight management

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Twelve percent of the adult population in the United States has diabetes, resulting in \$245 billion in direct and indirect costs to the nation's shrinking health care budget.¹ In addition, 37% of adults have prediabetes, a significant risk factor for the development of overt type 2 diabetes mellitus (T2DM).¹ Overweight and obesity are preventable risk factors associated with both conditions, yet > 75% of those affected remain overweight.² Evidenced-based lifestyle interventions aimed at weight reduction in these patients must be integrated into the clinical practice setting where they can have the most impact. The purpose of this report is to provide the advanced practice nurse with a review of the benefits of physical activity for patients with T2DM and best practice recommendations for improving adherence in this patient population.

GAP IN EFFECTIVELY ADDRESSING WEIGHT AT CLINIC VISIT

Sustained weight reduction of 5% in overweight patients with T2DM has been associated with improved glycemic control and reduction in cardiac risk factors.³ To improve outcomes through clinically meaningful weight reduction in patients with T2DM, intensive lifestyle programs are required that incorporate routine physical activity and frequent

follow-up.³ Only 42% of primary care providers discuss weight management lifestyle interventions with their patients during the office visit. These providers cite lack of time and a disbelief that such discussions are effective, yet most patients at least attempt weight loss when advised.⁴ Effective strategies are needed to target lifestyle interventions that can be efficiently integrated during the clinic visit.

PHYSIOLOGIC RESPONSE TO EXERCISE

Physical activity has acute positive effects on blood glucose levels by causing an increased uptake of glucose into the active muscles.⁵ Furthermore, both low- and high-intensity physical activity improve systemic insulin action for 2-72 hours.⁵ Patients should be informed that physical activity improves insulin sensitivity both during exercise and times at rest, independent of weight loss.

The risk of exercise-induced hypoglycemia is minimal, except for patients with T2DM who take insulin secretagogues or exogenous insulin.⁵ When selecting diabetes medications, consideration must be given to reducing the risk of hypoglycemia and mitigating weight gain.³ Patients who take exogenous insulin or secretagogues should be counseled on hypoglycemia risk and treatment, and

every effort should be made to adjust these medications to compensate for the improved insulin sensitivity gained through exercise. Patients should be engaged in the process and encouraged to check their blood glucose levels before and after the exercise session.

OVERVIEW OF EXERCISE AND DIABETES TRIAL OUTCOMES

A large, multicenter trial in the United States, the Action for Health in Diabetes (Look AHEAD) Trial, investigated the impact of an intensive lifestyle intervention (ILI) in overweight and obese patients with T2DM on reducing cardiovascular events.⁶ The ILI incorporated frequent individual and group counseling, reduced calorie meal plans, and 175 minutes per week of moderate-intensity physical activity, but it did not reduce the rate of cardiovascular events over a median follow-up period of 9.6 years.

Compared with a control group, however, the ILI participants attained significantly better improvements in glycated hemoglobin and fitness and, during the first 4 years of the trial, were more likely to have a partial remission of diabetes compared with the control group.⁶ Additional benefits of the ILI, in a comparison with a control group, included reductions in urinary incontinence, sleep apnea, and depression, and improvements in quality of life, physical functioning, and mobility.⁷

Weight loss and maintenance are best achieved in patients with T2DM through the combined approach of calorie reduction, exercise, and behavioral modification.⁷ The American Diabetes Association Standards of Medical Care for individuals with diabetes include the recommendation of 150 minutes per week of moderate-intensity aerobic physical activity, such as brisk walking, spread over 3 days within 1 week, with no more than 2 consecutive days without exercise.³ Increased physical activity, independent of weight loss, can reduce depressive symptoms and improve health-related quality of life in patients with T2DM.⁵

The Diabetes Prevention Program, a major multicenter research study, was designed to determine whether modest weight loss through physical activity and dietary changes or treatment with an oral diabetes drug, metformin, could prevent or delay the onset of

T2DM in high-risk adults of various ages and ethnicities.⁸ Participants in the lifestyle intervention group received intensive counseling and support on effective diet and exercise strategies, aiming for a 7% weight loss and 150 minutes of exercise per week. The remaining 2 intervention groups included standard lifestyle recommendations plus either metformin or placebo. The cumulative incidence of diabetes throughout the average follow-up period of 2.8 years was lowest in the intensive lifestyle group compared with both the metformin and placebo groups.⁹

Although both the Look AHEAD Trial and the Diabetes Prevention Program of the National Institutes of Health provide evidence of the benefits of lifestyle interventions in patients with and at risk for T2DM, they have been criticized for being too costly and time-consuming to be scalable to the real-world clinical practice setting where patients may not be as highly motivated.¹⁰ Furthermore, patients with diabetes complain that there are too many “rules” to follow regarding diet and exercise and that they often feel confused and overwhelmed.¹¹ It is essential that health care professionals provide simple, clear, and concise nutrition and physical activity advice to patients with T2DM.¹² Patients must understand why physical activity is so important, how much is necessary to impact change, and the importance of consistent adherence (Table 1).¹³

SELF-EFFICACY: IMPROVING PATIENT OUTCOMES

Self-efficacy is a phenomenon of concern that is integrated into self-management behaviors directed at achieving weight loss and controlling diabetes.¹² By briefly discussing the importance of weight loss, including the importance of physical activity during the clinic visit, and providing a simplified approach for the patient in writing, along with follow-up supportive care, self-efficacy is enhanced and optimal outcomes obtained.¹⁴ For example, the American Diabetes Association’s “Create Your Plate” and physical activity recommendations should be provided in written format and discussed during the office visit.³ A 5% weight loss goal should be calculated and discussed.

Each patient should be given a written exercise prescription much like those used to prescribe medications. In addition, referrals to a certified

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