

Physical Activity and Type 2 Diabetes

Physical activity and exercise, which is more structured, are important for everyone but especially important for individuals with prediabetes and Type 2 diabetes. Regular exercise may even prevent or delay Type 2 diabetes. You can start by simply reducing sedentary behavior and becoming more active every day. Get up and move often! Any prolonged sedentary behavior like sitting should be interrupted every 30 minutes for blood glucose benefits. Just briefly stand up, walk, or do any light activity. More structured activities can be in the form of aerobic exercise, strength training, or flexibility/balance, and each has unique benefits.

Types and Benefits of Exercise:

- Aerobic exercise involves continuous movement of large muscle groups (e.g., walking, jogging, cycling and swimming). Benefits of regular aerobic activity may include:
 - Weight loss and maintenance
 - Stronger, healthier heart
 - Increased insulin sensitivity
 - Reduced A1C levels
 - Improved blood pressure, cholesterol, triglycerides, and blood glucose levels
- Resistance exercise/strength training includes using free weights, exercise machines, body weight or elastic bands. Benefits may include:
 - Prevention of diabetes-related decline in muscle strength and functional status
 - Improved glycemic control, insulin sensitivity, blood pressure and cardiovascular health
 - Improved body composition with increased lean muscle mass, reduced body fat, and increased basal metabolic rate (BMR)
- Flexibility and balance exercises include tai chi and yoga and simple stretching. These types of activities are especially important in older adults with diabetes. Benefits may include:
 - Improved joint mobility
 - Improved gait and reduced risk of falls



Exercise and Blood Glucose:

- Exercise helps lower blood glucose by increasing the muscle's ability to take up and use glucose without insulin.
- Monitor blood glucose before, during, and after you exercise to learn how your glucose level changes with activity.
 - If you take a glucose lowering medication that contributes to hypoglycemia, such as insulin, sulfonylureas (SFUs) or glinides, you may need extra carbohydrates for exercise. If your blood glucose is less than 100mg/dL before you start an activity, consume 15 grams of carbohydrate to keep your blood glucose from going too low.
 - After exercise, if your blood glucose is less than 100mg/dL follow your individualized eating plan. If it is not time for your next meal, you may need to add a snack.
- Stop exercising and test your blood glucose if you feel symptoms of hypoglycemia, including excessive sweating, anxiousness, shakiness, confusion, and/or low energy. Follow your usual plan for rapid correction of blood glucose, whether glucose tablets or gel, or sweetened fruit juice.
- Hypoglycemia can also occur after exercise and last for several hours due to exercise-induced insulin sensitivity and this is more common if you are on insulin or insulin-secretagogues.

Guidelines:

- Talk with your doctor before becoming physically active or starting a new exercise routine, especially if it is more vigorous than your usual activity.
- Plan to combine all types of exercise, especially aerobic and strength training for improved glycemic control. Include 2-3 sessions/week of strength training/resistance exercise on non-consecutive days. Flexibility training and balance exercises are recommended especially for older adults with diabetes 2-3 times/week.
- Challenge yourself by gradually increasing effort and time spent being active as you become more fit.
- Wear comfortable, well-fitting shoes and socks to prevent sores or blisters on your feet. Check your feet regularly!
- Carry a treatment for hypoglycemia, such as glucose tablets, gels, juice, or a piece of fruit.
- Work toward exercising at least 150 minutes per week at a moderate intensity (i.e., brisk walking, water aerobics), spread over at least 3 days/week with no more than 2 consecutive days without activity. Try 30 minutes a day for 5 days a week.
- If you exercise at a vigorous intensity (i.e. jogging, running, swimming laps), aim for at least 75 minutes per week. Try 25 minutes, 3 days a week.
- You can also “mix and match” your activity by combining moderate- and vigorous-intensity activities within a week or even accumulate your time over multiple short sessions in a day (i.e. 10 minutes of brisk walking 3 times a day).
- Join a class or find a trainer - Supervised aerobic or resistance training is associated with greater improvements in A1C, BMI, waist circumference, blood pressure and overall fitness.

References:

1. American Diabetes Association. Blood Glucose Control and Exercise. <http://www.diabetes.org/food-and-fitness/fitness/get-started-safely/blood-glucose-control-and-exercise.html>.
2. Rosenbloom C, Coleman, E. Sports Nutrition: Practice Manual for Professionals. 5th ed. Academy of Nutrition and Dietetics.
3. Colberg SR, Sigal, RJ, Yardley JE, et al., Physical Activity/Exercise and Diabetes: A Position Statement of the American Diabetes Association. *Diabetes Care* (2016), 39:2065-2079. http://care.diabetesjournals.org/content/39/11/2065?ijkey=68de466fba9e380dfc9563069d4441fa21ff12c6&keytype=tf_ipsecsha
4. Umplerre D, Ribierio PA, Kramer CK, et al., Physical activity advice only or structured exercise training and association with HbA1C levels in type 2 diabetes: a systematic review and meta-analysis. *JAMA* (2011), 305:1790-1799.
5. American Diabetes Association. Standards of Medical Care in Diabetes – 2018. *Diabetes Care* (2018), 41(Suppl. 1):S1–S2.

Contact SCAN

www.scandpg.org
800.249.2875

Written by SCAN registered dietitian nutritionists (RDNs) to provide nutrition guidance. The key to optimal meal planning is individualization. Contact a SCAN RDN for personalized nutrition plans. Access “Find a SCAN RD” at www.scandpg.org or by phone at 800.249.2875.

© 2018 Sports, Cardiovascular, and Wellness Nutrition (SCAN)
Reviewed by Susan Vanucci, PhD, RD (2018)