



Diabetes: Guide to Safe and Effective Physical Activity and Exercise for the Aging Adult

Diabetes is a chronic disease where the body does not produce or properly use insulin. Insulin is a hormone which changes sugars, starches and other foods into energy needed for daily activities. Physical activity, along with diet and medication, is a cornerstone of diabetes self-management. Physical activity is beneficial for the prevention and treatment of diabetes.



Exercise for the prevention of diabetes:

Weight control including at least 150 minutes/week of moderate to vigorous physical activity and a healthful diet with moderate caloric restriction has been shown to delay or prevent the development of type 2 diabetes.



Exercise prescription for those with diabetes:

Cardiovascular / aerobic exercise:

To improve your blood sugars, assist with weight management, and reduce the risk of cardiovascular disease, you should do:

- at least 150 minutes/week of moderate-intensity aerobic physical activity and/or
- at least 90 minutes/week of vigorous aerobic exercise.

Physical activity should be done over at least 3 days/week and with no more than 2 consecutive days without physical activity.

Exercise prescription for those with diabetes:

Resistance / strengthening exercise:

People with type 2 diabetes should perform resistance exercises, unless there is another medical condition which makes them unsafe. The guidelines for resistance exercises are:

- 3 times/week,
- targeting all major muscle groups (8-10 exercises),
- progressing to 3 sets of 8-10 repetitions of a weight that cannot be lifted more than 8-10 times.

To ensure resistance exercises are performed correctly, maximize health benefits, and minimize the risk of injury, you should see a physical therapist for initial supervision and a periodic reassessment.

Diabetes affects 20.8 million Americans, or 7% of the population.

- 14.6 million are diagnosed
- 6.2 million are undiagnosed
- 54 million people have pre-diabetes. People with pre-diabetes are at risk of developing diabetes and cardiovascular disease.

Exercising Safely With Diabetes. . .

Exercise considerations for safety in the presence of complications:

- **High blood glucose (hyperglycemia):** If you have type 1 diabetes, you should check for ketones if your blood glucose is over 250 mg/dl. If there are no ketones, you can exercise with caution. If there are ketones, you should not exercise vigorously. If you have type 2 diabetes, it is not necessary to postpone exercise for high blood glucose if you feel well and are well hydrated.
- **Low blood glucose (hypoglycemia):** If you take insulin or diabetes pills that help the body produce more insulin, added carbohydrate should be taken before exercise if your blood sugar is less than 100 mg/dl.
- **Retinopathy:** You may have activity precautions if you have diabetes eye disease. Ask your eye doctor and physical therapist for guidelines.
- **Peripheral neuropathy:** If you have loss of sensation, pain in your feet or other foot problems from diabetes, you may consider non-weight-bearing activities (swimming, bicycling, upper body exercises).
- **Autonomic neuropathy:** If you have autonomic neuropathy, you may be restricted in your exercise. Cardiac testing should be performed before starting physical activity more strenuous than your normal activities.
- **Microalbuminuria and nephropathy:** People with kidney disease from diabetes do not have specific exercise precautions. However, these conditions are associated with increased risk for cardiovascular disease, therefore if you have been sedentary, an exercise stress test should be done before starting exercise greater than the demands of your everyday living.

Exercise testing:

If you have been inactive and have diabetes, you may need a stress test before starting physical activity that is harder than your everyday living (more intense than brisk walking).



Medical identification:

People with diabetes should always wear medical identification, especially during physical activity.

Recommendations for adults with diabetes:

- A1c: <7.0% (Hemoglobin A1c)
- Fasting blood glucose: 90-130 mg/dl
- Peak postprandial blood glucose: <180 mg/dl
- Blood pressure: <130/80 mmHg
- Lipids:
 - LDL <100 mg/dl
 - Triglycerides <150 mg/dl
 - HDL >40 mg/dl

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