

# Exercise

Exercise is an important part of the diabetes treatment plan. Exercise can help control blood glucose and high blood pressure and help prevent heart disease. There are different types of exercise. You need to find the type that is best for you and one that you enjoy.

## Benefits of exercise

- Lowers blood glucose
- Lowers blood pressure
- Lowers risk for heart disease
- Improves blood lipid levels
- Promotes weight loss
- Reduces stress
- Helps you feel better about yourself
- Helps your body to better use insulin
- May help reduce dose of insulin or oral anti-diabetes agents
- Strengthens bones

## Type 1 Diabetes and Exercise

- Exercise will usually lower blood glucose.
- If you do a lot of exercise (an hour or more), be alert for signs of low blood glucose during and for up to 24 hours after exercise.
- The drop in blood glucose depends on:
  - Blood glucose prior to exercise
  - When you last ate
  - Timing of exercise in relation to your last insulin
  - How long and how hard you exercise
  - What shape you are in
- If blood glucose is higher than 240 mg/dl, check urine or blood for ketones. DO NOT exercise if ketones are present.
- When ketones are present, it may mean that you do not have enough insulin. Exercising when there is not enough insulin can make your blood glucose go higher and make you sick (diabetic ketoacidosis).
- Sometimes your blood glucose will be higher right after you exercise. This can happen if you play a competitive sport. The stress of winning or losing may cause blood glucose to go up.

**Type 2 Diabetes and Exercise**

- Your blood glucose will usually go lower when you exercise.
- If you do a lot of exercise (an hour or more), the blood glucose may be lower for up to 24 hours after you exercise.
- Watch for low blood glucose if your treatment plan includes insulin or the type of diabetes pills that cause the pancreas to make more insulin.
- Talk with your diabetes health care team if you have frequent low blood glucose reactions. Changes in your diabetes treatment plan may be needed.
- Check your blood glucose before and after exercise.

**Types of Exercise****1. Aerobic Exercise**

- The best type to help lower blood glucose
- Helps your body better use insulin
- Examples:
  - Walking
  - Jogging
  - Swimming

**2. Anaerobic Exercise**

- Exercise of short duration, using a powerful burst of energy
- People with certain types of diabetes complications may need to avoid this type of exercise
- Types
  - Weight lifting
  - Sprinting

**Getting Started**

Talk with your doctor before you begin an exercise program. You may need an exercise stress test. This test helps your doctor determine how safe it is for you to exercise.

**Stages of exercise:**

A good exercise program has three parts:

1. Warm-up (pre-exercise, low-intensity activity and stretching)
  - Helps loosen muscles and reduces chances for injury
  - Should last five to ten minutes
2. Physical activity
  - Your body is moving during this time
  - Should last 20-45 minutes
3. Cool-down (post-exercise, reduced-intensity activity and stretching)
  - Helps return breathing and heart rate to normal
  - Should last five to ten minutes

### **General guidelines for preparing yourself to exercise**

*(Have a medical exam before you start an exercise program.)*

**Do's of Exercise**

- Do check blood glucose before and after exercise and record results.
- Do start slowly.
- Do know the signs of low blood glucose.
- Do carry glucose tablets or a sugar source with you.
- Do wear diabetes ID.
- Do know side effects of medications you are taking. Some medications can hide low blood glucose symptoms.
- Do plan a schedule for exercise three to five times per week. Work up to 20-45 minutes of exercise each day. Exercising for 60 minutes is best for weight loss.
- Do warm up for five to ten minutes before exercise and cool down five to ten minutes after exercise.
- Do talk with your doctor about how hard you should exercise. Ask your doctor about what target heart rate you should have during exercise.
- Do drink lots of water before, during and after exercise.
- Do wear good exercise shoes.
- Do exercise on smooth surfaces.

**Don'ts of Exercise**

- Don't drink alcoholic beverages before, during or after exercise.
- Don't exercise if you are not feeling well.
- Don't exercise in very hot, humid weather or in smog.
- Don't exercise when fasting blood glucose is over 250 mg/dl and ketones are present.
- Don't exercise strenuously if your blood glucose is over 300 mg/dl even if ketones are not present.
- Don't exercise if you have pain. Stop exercising if you have pain and call your doctor.

**If on Insulin**

- If exercising when your insulin is peaking or working hardest, use caution to avoid low blood glucose. If you do have low blood glucose while exercising, treat it.
- Avoid injecting insulin into a body area that you know will be directly exercised.
- Changes in the insulin dose may be needed before and/or after if you have low blood glucose reactions. Talk with your doctor.

### How hard you exercise

It is important to exercise at the right level or intensity. An easy way to know if you are exercising at the right level is to do the talk/sing test:

- If you cannot talk while exercising - you are exercising too hard!
- If you can sing while exercising - you are not exercising hard enough!

### Physical Activity - some is better than none!

If you are not able to do the usual exercise program because of physical problems, you can do simple things like:

- Walking in the house or in the mall
- Getting up to turn the TV channel rather than using the remote control
- Parking the car farther away and walking more
- Using steps instead of an elevator

People who are not able to walk can move their arms and do other types of exercise.

### Exercise and low blood glucose

- Monitor blood glucose just before and after exercise to learn how you react to the exercise session.
- You may need to eat a snack before you exercise based on your blood glucose reading.

**Refer to the chart below to fit snacks in before exercising.**

	Examples of carbohydrate (sugar) source
<b>15 grams of carbohydrate</b>	One small banana 8 ounces of Gatorade® 2 tablespoons raisins 1/2 cup juice 3 graham crackers 6 saltines 3-4 glucose tablets

## Exercise snack guidelines

*(Ask your health care team member what is right for you.)*

<b>Exercise Level</b>	<b>If Blood Glucose is:</b>	<b>Added Snack</b>
<b>Mild</b> (Less than 20 minutes)  Walking less than one mile or cycling at a slow pace	Less than 100 mg/dl	10–15 g of carbohydrate source
	100 mg/dl or above	Don't take an extra snack
<b>Moderate</b> (20–60 minutes) Tennis, swimming, jogging, cycling, vacuuming	Less than 100 mg/dl	30–45 g of carbohydrate source before exercise, then 10–15 g per hour of exercise
	100–200 mg/dl	15 g of carbohydrate source per hour of exercise
	200–300 mg/dl	Don't take an extra snack
	300 mg/dl or greater	Do not begin exercise until blood glucose is under better control
<b>Strenuous</b> (60 minutes or more)	Less than 100 mg/dl	45–50 g of carbohydrate source to start – check blood glucose carefully during exercise*
	100–200 mg/dl	30–45 g of carbohydrate source to start*
	200–300 mg/dl	15–45 g of carbohydrate per hour of exercise, depending on blood glucose and exercise intensity*

\* After 45 minutes to one hour, you may need an additional snack. Check your blood glucose.