

Diabetes: Importance of Exercise

What is diabetes?

Having diabetes means that there is too much sugar (glucose) in your blood. Your body breaks down some of the foods you eat into sugar. Your blood carries the sugar to the cells of your body. You need the sugar in your cells for energy, but too much sugar in your blood is not good for your health.

Diabetes is caused by a problem with the way your body makes or uses insulin. Insulin is made by the pancreas, which is an organ in your upper belly. Your body uses insulin to help move sugar from the blood into the cells. When you do not have enough insulin or you have trouble using the insulin your body makes, sugar builds up in your blood and cannot get into your cells.

Why is exercise important when I have diabetes?

Exercise can help you control your blood sugar in the following ways:

- **It helps your body burn more sugar.** Insulin is more effective during exercise. More sugar and insulin flows in the blood to the muscles during exercise. As a result, your body burns more sugar. Exercise usually helps lower the blood sugar.
- **It makes you feel better.** You will have more energy and tire less easily. Studies have shown that exercise can make you feel healthier and happier by helping you keep normal levels of the brain hormones that affect your mood.
- **It helps keep the body in good shape.** Exercise helps you burn extra calories. If you are overweight, it can help you lose weight and keep a normal weight. It also keeps your muscles and bones strong.
- **It helps keep the heart rate and blood pressure lower.** People who exercise have healthier hearts. It's easier for the heart to pump blood throughout the body. Normal blood pressure helps prevent stroke and heart, eye, and kidney problems.
- **It helps keep blood fat levels normal.** Many people with diabetes have high levels of blood fats (cholesterol and triglycerides). High blood fats can lead to blockage of blood vessels. Exercise and a healthy diet are the best ways to keep blood fats low.
- **It helps you have normal blood flow to the feet.** This can help prevent foot problems.

How do I get started?

- Make sure you discuss plans for a new exercise program with your healthcare provider before you start.
- It's always best to start a new exercise program slowly. Slowly increase how long and how hard you exercise.

- If you are taking insulin or other diabetes medicines, ask your provider when you need to check your blood sugar and adjust your dose of insulin before and after exercise.
- Keep sugar tablets or a high carbohydrate and protein snack (such as crackers with cheese or peanut butter) on hand in case your blood sugar drops after exercise.
- Make exercise a daily routine.
- Protect your feet when you exercise. Wear good-fitting shoes and smooth-fitting socks. Check your feet every day and watch for blisters, warm areas, or redness. If you have any kind of sore on your foot, see your healthcare provider right away.

Which kinds of exercise are best?

The best exercise is exercise you enjoy. It is easier to form a habit of exercising if you enjoy the activity. Some of the exercise should be aerobic because it helps the heart. Aerobic exercise makes you breathe faster and more deeply. It uses your large muscles, like the muscles in your legs and arms, and gets your heart beating faster. Some examples of aerobic exercise are walking, jogging, swimming, and bicycling, including exercycles.

If you have type 2 diabetes, ask your provider if resistance training at least twice a week should also be part of your exercise plan. Resistance training involves exercise such as weight lifting or anything that makes you strain. Resistance exercise done twice a week can be very helpful in controlling your blood sugar, especially if you do it on alternate days from your aerobic exercise. However, this kind of exercise can be harmful if you have certain medical conditions, such as high blood pressure.

People with diabetes can play almost every sport. Boxing is the only activity that is discouraged. This is because eye injuries are common in boxing, and eye problems are a possible complication of diabetes.

Strenuous activities, such as weight lifting and jogging, are discouraged if you have severe eye problems related to diabetes because these activities increase the pressure in the eyes. If you have eye problems, make sure you talk to your healthcare provider before you start a new activity.

If you have nerve damage or foot problems, it's also best to avoid walking long distances and treadmill or step exercises. Instead try activities like bicycling or swimming.

When should I exercise?

The best time to exercise depends on your schedule. If you are taking insulin or other diabetes medicines that can lower blood sugar, you need to take precautions against your blood sugar getting too low when you exercise. Think ahead and make changes in your snacks and doses of insulin or other diabetes medicine to help prevent low blood sugar. Try to pick a regular exercise time and adjust your snacks and medicine dose to fit the exercise. If you are just starting an exercise

program, don't exercise too long. Check your blood sugar after 15 minutes of exercise and, whether you're still exercising or finished, check it again after 30 minutes of exercise.

Remember, you can adjust your diabetes management to suit your lifestyle. Your lifestyle does not have to be adjusted to fit diabetes.

How often and how long should I exercise?

Ask your healthcare provider to prescribe a plan for starting an exercise program. It should include the types of exercise, how long you should exercise, and how often.

To help your heart stay healthy, it's good to have at least 2 hours and 30 minutes of moderate aerobic exercise each week. For example, you might exercise 30 minutes a day, 5 days a week. Try not to go more than 2 days in a row without aerobic exercise.

The more exercise you get, the more fat you will burn. If weight loss is one of your goals, you may need to exercise harder or for a longer time to reach your goal.

Start each exercise activity with a warm-up. Do something for 5 to 10 minutes that slowly increases your heart rate, such as walking. Gently stretch your muscles before and after exercise to help prevent cramps and stiffness. Finish your exercise with a cool-down by slowing your activity for 5 to 10 minutes before you stop.

Ask your healthcare provider what kind and level of exercise is best for you.

When should I not exercise?

If you have type 1 diabetes, you should avoid vigorous physical activity when your urine or blood test is positive for ketones. If your urine ketone level is large or moderate, exercise can raise your ketone level even more. Check your urine for ketones before exercising if you are not feeling well or your blood sugar is staying higher than 240 milligrams per deciliter (mg/dL), or about 13 millimoles per liter (mmol/L). You can usually still exercise when your blood sugar is high as long as you feel well and there are no ketones in your blood or urine.

Avoid exercising when it's very hot or very cold. Ask your healthcare provider if there are other times when you should not exercise—for example, when you feel ill or have a fever.

How can I help prevent low blood sugar reactions during exercise?

A low blood sugar (hypoglycemia) could happen during or after exercise. There are several ways to manage your blood sugar and exercise:

- Plan to exercise after a light, high-protein snack.
- Exercise after a meal, but wait at least 30 minutes after you have eaten so you can digest your food first.

- Reduce your insulin dose before exercise.
- Take extra snacks with you to help prevent low blood sugar during your exercise.

You will need some practice with adjusting the amount of food you eat before exercise, how long you wait before exercising, and how much you decrease your doses of insulin or other diabetes medicine. You will need to keep good records so you can see what works best. Take these records to your visits with your healthcare provider so you can get help making adjustments.

Here are some things that might help.

- Often the best time to exercise is 1 to 3 hours after eating a meal.
- Check your blood sugar before and after exercise. You may need to eat a carb snack (at least 15 grams of carbohydrate) before exercise if your blood sugar is less than 100 mg/dL (5.5 mmol/L). Test your blood sugar again 15 to 30 minutes later. Your provider may recommend that you not exercise until your blood sugar is higher than 100 mg/dL (5.5 mmol/L). Your blood sugar may keep being lower than usual for several hours after exercise. Until you learn how your body is reacting to a new exercise program, you should check your blood sugar more often than usual until bedtime, just to be sure it's not getting too low.
- Avoid exercising when insulin is working at peak level, which means it's keeping your blood sugar at its lowest level. Your provider can tell you when your type of insulin is working at its peak.
- Learn how your blood sugar responds to different exercise conditions.
- Know what to do if your blood sugar is low or gets low when you are exercising.
- **Always** carry a source of sugar, plus a longer lasting snack of some carbohydrate and protein--for example, nuts, peanut butter, or cheese and crackers.

Remember, it's wise to **think ahead** about the day's schedule and plan accordingly. Be sure to ask your healthcare provider if you have any questions about managing your blood sugar levels, your doses of insulin or other diabetes medicines, and the timing of your exercise.

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