What I need to know about

Physical Activity and Diabetes

NIDDK
NATIONAL INSTITUTES OF HEALTH
National Diabetes Information Clearinghouse

U.S. Department
of Health and
Human Services

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Contents

How can I take care of my diabetes?

Diabetes means that your blood glucose (also called blood sugar) is too high. Your body uses glucose for energy. But having too much glucose in your blood can hurt you. When you take care of your diabetes, you'll feel better. You'll reduce your risk for problems with your kidneys, eyes, nerves, feet and legs, and teeth. You'll also lower your risk for a heart attack or a stroke. You can take care of your diabetes by

- being physically active
- following a healthy meal plan
- taking medicines (if prescribed by your doctor)

What can a physically active lifestyle do for me?

Research has shown that physical activity can

- lower your blood glucose and your blood pressure
- lower your bad cholesterol and raise your good cholesterol
- improve your body's ability to use insulin
- lower your risk for heart disease and stroke

- keep your heart and bones strong
- keep your joints flexible
- lower your risk of falling
- help you lose weight
- reduce your body fat
- give you more energy
- reduce your stress

Physical activity also plays an important part in preventing type 2 diabetes. A major government study, the Diabetes Prevention Program (DPP), showed that a healthy diet and a moderate exercise program resulting in a 5 to 7 percent weight loss can delay and possibly prevent type 2 diabetes.

For more information about the study, read the DPP fact sheet online at *www.diabetes.niddk.nih.gov/dm/pubs/preventionprogram/index.htm* or call the National Diabetes Information Clearinghouse at 1–800–860–8747 to request a printed copy.

What kinds of physical activity can help me?

Four kinds of activity can help. You can try

- being extra active every day
- doing aerobic exercise
- doing strength training
- stretching

Be Extra Active Every Day

Being extra active can increase the number of calories you burn. There are many ways to be extra active.

- Walk around while you talk on the phone.
- Play with the kids.
- Take the dog for a walk.
- Get up to change the TV channel instead of using the remote control.
- Work in the garden or rake leaves.
- Clean the house.
- Wash the car.
- Stretch out your chores. For example, make two trips to take the laundry downstairs instead of one.

- Park at the far end of the shopping center lot and walk to the store.
- At the grocery store, walk down every aisle.
- At work, walk over to see a co-worker instead of calling or emailing.
- Take the stairs instead of the elevator.
- Stretch or walk around instead of taking a coffee break and eating.

- During your lunch break, walk to the post office or do other errands.
- Other things I can do: _____

  _____

Do Aerobic Exercise

Aerobic exercise is activity that requires the use of large muscles and makes your heart beat faster. You will also breathe harder during aerobic exercise. Doing aerobic exercise for 30 minutes a day, most days of the week, provides many benefits. You can even split up those 30 minutes into several parts. For example, you can take three brisk 10-minute walks, one after each meal.

If you haven't exercised lately, see your doctor first to make sure it's OK for you to increase your level of physical activity. Talk with your doctor about how to warm up and stretch before exercise and how to cool down after exercise. Then start slowly with 5 to 10 minutes a day. Add a little more time each week, aiming for 150 to 200 minutes per week. Try

- walking briskly
- hiking
- climbing stairs
- swimming or taking a water-aerobics class
- dancing
- riding a bicycle outdoors or a stationary bicycle indoors
- taking an aerobics class
- playing basketball, volleyball, or other sports
- in-line skating, ice skating, or skate boarding
- playing tennis
- cross-country skiing
- other things I can do: _____
  _____

The National Institute on Aging offers a free booklet, ***Exercise: A Guide From the National Institute on Aging.*** Read it online at *www.nia.nih.gov/exercisebook/toc.htm* or call 1–800–222–2225 to request a printed copy.

Do Strength Training

Doing exercises with hand weights, elastic bands, or weight machines two or three times a week builds muscle. When you have more muscle and less fat, you'll burn more calories because muscle burns more calories than fat, even between exercise sessions. Strength training can help make daily chores easier, improving your balance and

coordination, as well as your bones' health. You can do strength training at home, at a fitness center, or in a class. Your health care team can tell you more about strength training and what kind is best for you.

Stretch

Stretching increases your flexibility, lowers stress, and helps prevent muscle soreness after other types of exercise. Your health care team can tell you what kind of stretching is best for you.

The Weight-control Information Network, a service of the National Institute of Diabetes and Digestive and Kidney Diseases, has information about exercise. Call 1–877–946–4627, toll-free, to request free copies of the following publications, or read them online.

- ***Active at Any Size***
  www.niddk.nih.gov/health/nutrit/activeatanysize/active.html
- ***Walking: A Step in the Right Direction***
  www.niddk.nih.gov/health/nutrit/walking/walkingbro/walking.htm
- ***Physical Activity and Weight Control***
  www.niddk.nih.gov/health/nutrit/pubs/physact.htm

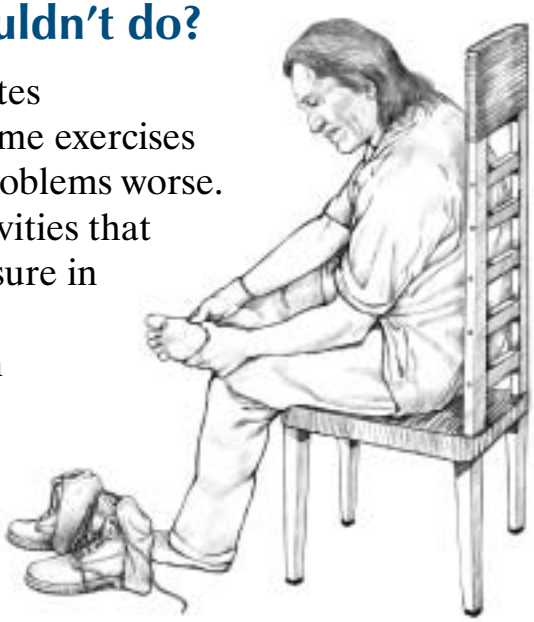
Can I exercise any time I want?

Ask your health care team about the best time of day for you to exercise. Consider your daily schedule, your meal plan, and your diabetes medications in deciding when to exercise.

If you exercise when your blood glucose is above 300, your level can go even higher. It's best not to exercise until your blood glucose is lower. Also, exercise is **not** recommended if your fasting blood glucose is above 250 and you have ketones in your urine. For information about preventing or treating low blood glucose, see page 9.

Are there any types of physical activity I shouldn't do?

If you have diabetes complications, some exercises can make your problems worse. For example, activities that increase the pressure in the blood vessels of your eyes, such as lifting heavy weights, can make diabetic eye problems worse.



If nerve damage from diabetes has made your feet numb, your doctor may suggest that you try swimming instead of walking for aerobic exercise.

Numbness means that you may not feel any pain from sores or blisters on your feet and so may not notice them. Then they can get worse and lead to more serious problems. Make sure you exercise in cotton socks and comfortable, well-fitting shoes that are designed for the activity you are doing. After you exercise, check your feet for cuts, sores, bumps, or redness. Call your doctor if any foot problems develop.

Can physical activity cause low blood glucose?

Physical activity can cause hypoglycemia (low blood glucose) in people who take insulin or certain diabetes pills, including sulfonylureas and meglitinides. Ask your health care team whether your diabetes pills can cause hypoglycemia. Some types of diabetes pills do not.

Hypoglycemia can happen while you exercise, right afterward, or even up to a day later. It can make you feel shaky, weak, confused, irritable, hungry, or tired. You may sweat a lot or get a headache. If your blood glucose drops too low, you could pass out or have a seizure.

However, you should still be physically active. These steps can help you be prepared for hypoglycemia:

Before Exercise

- Be careful about exercising if you have skipped a recent meal. Check your blood glucose. If it's below 100, have a small snack.
- If you take insulin, ask your health care team whether you should change your dosage before you exercise.

During Exercise

- Wear your medical identification or other ID.
- Always carry food or glucose tablets so that you'll be ready to treat hypoglycemia.
- If you'll be exercising for more than an hour, check your blood glucose at regular intervals. You may need snacks before you finish.

After Exercise

- Check to see how exercise affected your blood glucose level.

Treating Hypoglycemia

If your blood glucose is 70 or lower, have **one** of the following right away:

- 2 or 3 glucose tablets
- 1/2 cup (4 ounces) of any fruit juice
- 1/2 cup (4 ounces) of a regular **(not diet)** soft drink
- 1 cup (8 ounces) of milk
- 5 or 6 pieces of hard candy
- 1 or 2 teaspoons of sugar or honey

After 15 minutes, check your blood glucose again. If it's still too low, have another serving. Repeat until your blood glucose is 70 or higher. If it will be an hour or more before your next meal, have a snack as well.

What should I do first?

Check with your doctor. Always talk with your doctor before you start a new physical activity program. Ask about your medications—prescription and over the counter—and whether you should change the amount you take before you exercise. If you have heart disease, kidney disease, eye problems, or foot problems, ask which types of physical activity are safe for you.

Decide exactly what you'll do and set some goals. Choose

- the type of physical activity you want to do
- the clothes and items you'll need to get ready
- the days and times you'll add activity
- the length of each session
- your warm up and cool down plan for each session
- alternatives, such as where you'll walk if the weather is bad
- your measures of progress

Find an exercise buddy. Many people find that they are more likely to do something active if a friend joins them. If you and a friend plan to walk together, for example, you may be more likely to do it.

Keep track of your physical activity. Write down when you exercise and for how long in your blood glucose record book. You'll be able to track your progress and to see how physical activity affects your blood glucose.

Decide how you'll reward yourself. Do something nice for yourself when you reach your activity goals. For example, treat yourself to a movie or buy a new plant for the garden.

What can I do to make sure I stay active?

One of the keys to staying on track is finding some activities you like to do. If you keep finding excuses not to exercise, think about why. Are your goals realistic? Do you need a change in activity? Would another time be more convenient? Keep trying until you find a routine that works for you. Once you make physical activity a habit, you'll wonder how you lived without it.

For More Information

To find diabetes teachers (nurses, dietitians, and other health professionals) near you, call the American Association of Diabetes Educators toll-free at 1–800–TEAMUP4 (1–800–832–6874). Or look on the Internet at *www.diabeteseducator.org* and click on "Find a Diabetes Educator."

For additional information about diabetes, contact

American Diabetes Association
National Service Center
1701 North Beauregard Street
Alexandria, VA 22311
Phone: 1–800–342–2383
Fax: (703) 549–6995
Email: askada@diabetes.org
Internet: www.diabetes.org

Juvenile Diabetes Research Foundation International
120 Wall Street
New York, NY 10005–4001
Phone: 1–800–533–2873
Fax: (212) 785–9595
Email: info@jdrf.org
Internet: www.jdrf.org

National Diabetes Information Clearinghouse

1 Information Way
Bethesda, MD 20892–3560
Phone: 1–800–860–8747 or (301) 654–3327
Fax: (301) 907–8906
Email: ndic@info.niddk.nih.gov
Internet: www.diabetes.niddk.nih.gov

The National Diabetes Information Clearinghouse (NDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health under the U.S. Department of Health and Human Services. Established in 1978, the clearinghouse provides information about diabetes to people with diabetes and to their families, health care professionals, and the public. NDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about diabetes.

Publications produced by the clearinghouse are carefully reviewed by both NIDDK scientists and outside experts. This booklet was reviewed by Andrea Kriska, Ph.D., University of Pittsburgh, Department of Epidemiology; David G. Marrero, Ph.D., Indiana University School of Medicine, Division of Endocrinology; and Susan Yanovski, M.D., NIDDK, Division of Digestive Diseases and Nutrition, Obesity and Eating Disorders Program. Field-testing was facilitated by Sally A. Stacey, R.N., C.D.E., Regional Diabetes Center, Home Hospital, Lafayette, IN.

This booklet is also available at *www.diabetes.niddk.nih.gov.*

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