

## Patient Handout

# Balancing Exercise and Insulin: What You Need to Know

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Balancing exercise with your insulin needs can be tricky. Here is what you need to know to reap the benefits of exercise and keep your blood glucose in good control.

### The Benefits of Exercise

Exercise can offer a range of important benefits. For example, exercise can:

- Help you manage your weight.
- Strengthen your heart and improve your blood flow.
- Help lower your blood pressure.
- Help lower your triglyceride (blood fat) level and increase the level of “good” cholesterol (high-density lipoprotein [HDL] cholesterol) in your blood.
- Improve your muscle strength and tone.
- Help you manage stress.

It’s important, however, to check with your health care provider before beginning any exercise program. With the help of your diabetes care team, you will be able to adjust your diet and insulin schedule to get the most benefit from your exercise program and still keep your blood glucose in good control.

### How Exercise Affects Blood Glucose and Your Insulin Needs

During exercise, your body uses the glucose that is stored in your muscles and liver. When those supplies begin to run low, your body starts to use the glucose that is in your blood. If your glucose and insulin needs are not balanced, you may run low on glucose during and after exercise. That’s why it’s important to balance the following:

- The glucose your body needs while exercising.
- The glucose you get from the food you eat.
- Your insulin needs.

Ask your diabetes care team about the signs and symptoms of low glucose levels.

Exercise can also affect how insulin works in your body and the amount of insulin you need. When you exercise, your blood flows through your body faster, which makes the insulin you inject work faster too. This is especially true if you inject the insulin into an arm or a leg that will be involved in the exercise.

### The Balance Between Insulin and Exercise

Figuring out how to adjust your insulin in response to exercise is mostly a matter of trial and error. But the key is regular blood glucose monitoring.

Test your blood glucose level *before and after exercise*. You might even have to test your glucose level *during exercise* when you first start an exercise program or for any of the following reasons:

- You begin a different exercise program.
- You will be exercising strenuously.
- You will be exercising for a long time.

By testing and keeping careful records, you and your diabetes care team will be able to figure out how exercise affects your blood glucose level and how to adjust your diet and insulin needs.

### To Exercise Safely...

- **Check with your health care provider before beginning an exercise program.**
- **Test your blood glucose level before and after exercise, as well as during exercise if necessary.**
- **Ask your health care provider for advice on how to adjust your insulin levels.** Your adjustments will depend on:
  - The intensity and length of your workout. The harder and longer you exercise, the more glucose your body will use.
  - The time of day that you exercise. Glucose levels usually drop less in the morning than they do in the afternoon or evening.
  - When you eat your meals and snacks and how much you eat.
  - The type of insulin you take and when the insulin level peaks.

- **Be prepared for low glucose levels during exercise.** Bring some form of sugar with you (for example, fruit juice, raisins, hard candy, or glucose tablets). Carry some form of identification that says you have diabetes. If you don't usually recognize when your glucose level is getting low, try to exercise with a friend or family member who can offer help if you need it.
- **Stay alert for low glucose levels for up to 24 hours after exercise.** After exercise, the body transfers glucose from your blood to your muscles and liver to replace what it used during exercise. This process mainly occurs after exercising very hard for a long time, and it can continue for up to 24 hours.
- **Recognize that increases in blood glucose are also possible.** If you're attempting a more intense workout or exercising for a long period without enough insulin, your body may release stored glucose, causing a rapid rise in your glucose level. This mainly occurs when your glucose levels have been very high because your insulin doses have not been large enough to meet your needs.

**But...**

- **Don't start exercising until your blood glucose level is over 100 mg/dL.** If testing shows your level is lower, have a snack with at least 15 grams of carbohydrate, such as 3 graham crackers or a piece of fruit. Then test again 15 to 30 minutes later to be sure that you're over the 100-mg/dL mark.
- **Don't start exercising until your insulin level has peaked.** If you use only regular insulin, avoid exercising within the first 1 to 2 hours after your injection.
- **Don't continue to exercise if you suspect that an episode of low blood glucose is coming on.** Stop immediately and take some form of sugar.

**FOR MORE INFORMATION**

- National Diabetes Education Program—1-800-438-5383 or [www.ndep.nih.gov](http://www.ndep.nih.gov)
- National Diabetes Information Clearinghouse—1-800-860-8747 or [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov)
- American Association of Diabetes Educators—1-800-338-3633 or [www.diabeteseducator.org](http://www.diabeteseducator.org)
- American Diabetes Association—1-800-DIABETES or [www.diabetes.org](http://www.diabetes.org)
- Taking Control of Your Diabetes—1-800-99-TCOYD or [www.tcoyd.org](http://www.tcoyd.org)

This contact information is accurate as of July 2006.