

***“My Doctor Says Exercise
Is Good for My Diabetes...”***

Where Do I Start?



Helping all people
live healthy lives

BD Getting Started™

Exercise and Diabetes

What will happen if I exercise every day?

Daily exercise will give you more energy and help you become stronger and healthier. It's easier than you think, but we know how hard it can be to get started, so we designed this booklet to help you plan an exercise program and make the right choices.

You will learn:

- How to keep safe when you exercise.
- Why activity is important for your health, and for your diabetes, too.
- What kind of activity and how much you need to do to stay healthy.
- How to plan your exercise program and get started.

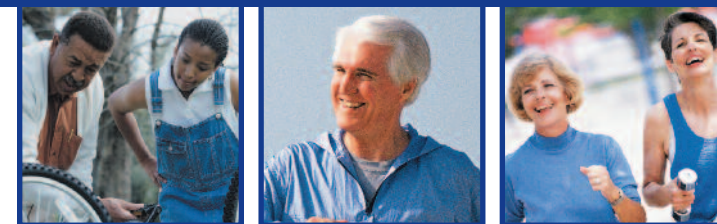
I. What are some safety tips for active people like me who have diabetes?



Get Your Doctor's Okay Before You Start Exercising

This is especially important if you are older than age 35, have had diabetes for more than ten years, have any complications of diabetes, have not exercised in a long time, or have heart disease.

Exercise has the same effect on blood glucose as insulin. It lowers blood glucose, making you more sensitive to insulin. This is a benefit of exercise that can also pose a problem if it lowers your blood glucose too much.



There is a greater risk of low blood glucose if you take insulin or a diabetes pill that lowers blood glucose by making more insulin. Do not be afraid to exercise because your blood glucose might drop down too low. The tips listed below will tell you how to avoid low blood glucose reactions.

Avoid Low Blood Glucose (Blood Glucose Less Than 70)

(IF YOU HAVE ANY QUESTIONS CHECK WITH YOUR DOCTOR OR DIABETES EDUCATOR)

- **Always test your blood glucose before and after exercise**

Write down your numbers in this booklet on page 22 and show them to your doctor or diabetes educator. They can help you adjust your medication if your blood glucose drops below 70. This will also tell you and your doctor or educator how your blood glucose responds to different types of exercise.

- **Have at least 15 grams of fast-acting carbohydrate with you to treat low blood glucose**

Examples of 15 grams carbohydrates are:

1. Glucose tablets (3-4)
2. Snacks such as four ounces of juice, one small box of raisins, or four ounces of regular (not diet) soda
3. Keep more than 15 grams handy in case you need more

- **Know the symptoms of low blood glucose**

1. Sweating
2. Rapid heart rate
3. Dizziness
4. Headache
5. Trembling
6. Hunger
7. Blurred Vision
8. Irritability



- **If you think you have low blood glucose or feel sick, check your blood glucose right away**

If your blood glucose is below 70:

1. Take 15 grams of carbohydrate right away.
2. Wait 15 minutes.
3. Check again — if still below 70, have another 15 grams. (Fifteen grams of carbohydrate should raise your blood glucose about 30 mg/dl to 40mg/dl in 10 to 15 minutes).

(For more information about low blood glucose, read BD Getting Started™ "Hypoglycemia and Diabetes").

Know What Happens to Your Blood Glucose When You Exercise

- **Checking your blood glucose before and after exercise is advised because:**

1. Some people with diabetes can have "low blood glucose unawareness." This is when your blood glucose drops below 70 but you don't feel the symptoms of low blood glucose.
2. Review your blood glucose numbers with your doctor or diabetes educator, to understand the effect that exercise has on your blood glucose.

3. Exercise has some of the same symptoms as low blood glucose (such as sweating and rapid heart beat). It is important to know the cause of your symptoms so you can prevent low blood glucose in the future.
4. Check all of your medications with your doctor — some medicines can hide low blood glucose symptoms (like a beta-blocker for your heart). That means even if you are not feeling anything different you could still have low blood glucose and need to take action.

- **What if you exercise longer than 30 minutes?**

1. Longer or more intense exercise can cause your blood glucose to drop more than shorter or easier exercise. You may need to take some carbohydrate after 20-30 minutes of intense exercise.
2. Blood glucose may continue to drop for several hours after activity and should be monitored.

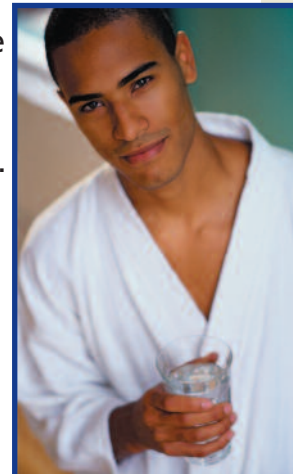
- **When is the best time of day to exercise?**

Anytime! You will get healthy and fit no matter when you work out, but here are some important things to consider:

1. Morning exercise may cause your blood glucose to drop less than if you exercised later in the day.
2. If you are on insulin or taking pills that work by making more insulin, evening exercise may result in low blood glucose while you sleep.

- **Have you ever had low blood glucose?**

1. If your answer is yes, you are more likely to develop symptoms of low blood glucose after exercise.



2. If you exercise in the evening, you may need to take a carbohydrate snack before going to bed to prevent a low blood glucose reaction while you sleep.
3. If you are taking insulin and you exercise at night, you may need to take less at bedtime. (Check with your doctor and read the next section carefully.)

• **Are you “sensitive to exercise?”**

1. If you feel that you are sensitive to exercise, your doctor or diabetes educator may suggest that you lower your pre-exercise insulin dose.
2. If you do not adjust your insulin before you exercise, eat or drink 15 grams of carbohydrate for every 20 minutes of physical activity.

• **Be Prepared!**

1. Always carry money (especially quarters) or a cell phone in case you need to call for help.
2. Carry identification or wear a bracelet or necklace with your medical information and doctor’s phone number.



More Exercise Safety Tips

• **Warm up and cool down**

1. Always warm up first and cool down after exercise.
2. Move slowly and stretch for 5 to 10 ten minutes.

• **Not used to exercise?**

1. Start slowly (5 to 10 minutes).
2. Build up to 3 to 5 sessions per week.

• **Check your feet**

1. Wear shoes that fit properly.
2. Always inspect your feet after activity for blisters or sores.

• **Drink lots of water**

1. Drink water, especially in hot weather, even if you are not thirsty.
2. Have 15 to 20 ounces of water 30-60 minutes before a workout and then 12-15 ounces every 15 minutes during exercise.



• **Other hot weather reminders**

1. Avoid exercising in hot, humid weather.
2. Exercise in early morning or late evening during summer months.
3. Wear lightweight, comfortable clothing and a hat to keep the sun off your head.

A Few Exercise Alerts

• **Have a sore throat, fever or chest cold?**

Postpone exercise until you feel better.

• **Have blood glucose over 250 and ketones?**

Avoid exercise. (To learn about ketone testing read the BD Picture Page: Urine Testing for Ketones).
http://www.bddiabetes.com/us/download/urinetesting_eng.pdf

• **Have blood glucose over 300 and no ketones?**

Use caution during exercise. Check your blood glucose 15 minutes after you start. If it goes up, stop exercising and follow your doctor’s high blood glucose instructions.

• **Is your diabetes in poor control?**

Check with your doctor before you exercise.

- **Do you have diabetes eye disease (retinopathy)?**
Talk to your doctor about the kind of exercise you can do. Resistance exercise (exercise that is done with weight machines, free weights, or rubber exercise bands), can raise your blood pressure in the short term. This can cause bleeding in your eye if you have certain kinds of eye problems.

II. How Does Exercise Help My Diabetes and My Health?

Whenever you move, your muscles burn blood glucose for fuel. The more you move the more glucose you burn! That means better blood glucose control for most people and better health for everyone.

- **Exercise makes you healthier because physical activity helps you in so many ways:**

1. Gives you more energy and strength.
2. Lowers your cholesterol.
3. Improves your circulation.
4. Helps manage your weight.
5. Strengthens your muscles, bones and joints.
6. Decreases your stress.
7. Improves your posture, balance and independent living.
8. Improves your well-being.
9. May help you sleep better.



- **When you don't exercise, your health risk is similar to the risk of smoking a pack of cigarettes a day — you are more likely to develop:**

1. Heart disease.
2. High blood pressure.
3. Osteoporosis.
4. Depression.
5. Obesity.
6. Colon cancer.
7. Stroke.
8. Poor circulation.
9. Insulin resistance and type 2 diabetes.

- **Do Not Become One of the Many Out of Shape Americans Because You Are Not Active**

1. Despite the importance of physical activity, less than 50 percent of adults in the United States are active enough to gain any health benefit from exercise!
2. It's easier than you think to be an exercise success!



III. How Do I Choose the Best Exercise Plan for Me?

Know How Physically Active You Should Be

Experts agree you need either:

- 30 minutes of "moderate intensity" aerobic activity (i.e. "cardio") 5 days a week
OR
- Vigorously intense aerobic activity 20 minutes or more a day, 3-5 days a week.

NOTE: More than 3 days a week of intense activity provides even more health and fitness benefits!

In addition, you should add flexibility and strength training to your routine:

- Flexibility activities 5 to 7 days a week.
- Strength training - 8 to 10 exercises, 10 to 15 repetitions of each exercise, 2-3 days a week.

Know How Hard You Should Work

1. Moderately intense physical activity means you are working hard enough to raise your heart rate and break a sweat, yet still be able to talk (but not sing).
2. Vigorously intense aerobic activity means you are breathing hard and fast, and your heart rate has increased quite a bit. You won't be able to say more than a few words without pausing for a breath.

Moderate Aerobic Activities

- **Walk briskly**
 1. Walk 1-3/4 miles in 35 minutes (20 minutes per mile) or 2 miles in 30 minutes (15 minutes per mile).
 2. Check out the walking program on page 18 for help getting started.
- **Ride a bike on level ground or with a few hills**
 1. Ride 4-6 miles in 30 minutes.
(8-12 miles per hour)



- **Swimming or water aerobics**
- **Dancing**
- **Pushing a lawn mower**

Vigorous Aerobic Exercises

- Jogging or running (1-1/2 miles in 15 minutes (10 min/mile)
- Riding a bike fast or up a hill
- Singles tennis or basketball for 30 minutes
- Swimming laps briskly for 15-20 minutes
- Jump rope for 15 minutes
- Dance fast for 30 minutes
- Aerobic classes
- Push a stroller 1-1/2 miles in 30 minutes
- Skate for 30-40 minutes
- Try an exercise video you can do at home
- Check exercise classes at your recreation or senior center (observe first to see if you want to try the class)

Lifestyle Activities

Getting started is the important thing – any exercise is better than no activity!

1. Plan active weekends
2. Take the stairs instead of the elevator
3. Park at the far end of the parking lot and walk to the office or store
4. Walk a few blocks before getting on the bus, and get off a few blocks before your stop
5. Pace when waiting for a bus or subway
6. Get up from your desk during the day to stretch and walk around
7. Carry your own groceries
8. Take a brisk walk for 10 minutes before lunch.
9. Walk your dog

10. Trade in your electric mower for a push model, rake your leaves, or wash your car by hand
11. Reduce your TV and computer time
12. Get up from the sofa and stretch for a few minutes every hour

Flexibility Activities

By adding flexibility exercises to your workout routine you can help keep your muscles and joints relaxed and mobile so you can move easily and maintain your independence as you grow older. It is important to do flexibility exercises 5 to 7 days a week as part of your overall fitness plan. Examples of these activities include:

- **Stretching Exercises**
- **Yoga**
- **T'ai Chi**

Strength Activities (Resistance Exercise)

Help build your muscles and bones, improve your posture and balance, and prevent osteoporosis by performing any of the following resistance activities 2 to 3 days a week:

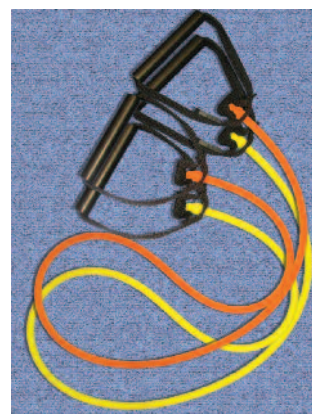
- **Weight lifting**
- **Sit-ups and push-ups**
- **Raking and carrying leaves**
- **Climbing stairs**
- **Wearing a backpack**
- **Lifting and carrying groceries**

NOTE: If you have diabetic retinopathy DO NOT lift weights before checking with your doctor.



Strength Training Basics

1. Warm up before you begin with light cardio (such as biking, walking or lifting weights lightly).
2. Lift slowly (3 seconds to lift the weight and 3 seconds to lower it). Don't swing the weights to get momentum.
3. Do not hold your breath. Exhale with effort (as you perform the hardest part of the lift).
4. Maintain good posture. Keep your back straight and contract your abdominal muscles.
5. Choose 8 to 10 exercises if you are a beginner.
6. Select a weight you can lift for 10 to 15 repetitions. The weight should be heavy enough that you struggle with the final repetition but still keep good form.
7. Do 1 to 3 sets of each exercise.
8. Rest 1 minute between sets to build muscle endurance and up to 3 minutes to focus on strength.
9. If you want to get stronger increase the weight once you can easily lift 15 repetitions.
10. Don't lift weights until you speak with your doctor if you have diabetic retinopathy.



Working out with bands and tubing

Using rubber exercise bands or tubing makes it easy to work out at home or at the gym.

Advantages:

1. They are inexpensive and versatile.
2. You can use them anywhere.
3. You can store them in a closet or drawer.

4. They come in different colors representing different tension levels.

Plan of use:

1. Start with the lightest tension and build.
2. You can begin with a set of four for a reasonable price. Purchase at least two of different intensity so you have them when you get stronger and are ready for the next level.

Using Dumbbells:

Dumbbells work too!

1. Start with a dumbbell you can lift 15 times.
2. Increase to the next weight once the starting weight becomes easy.

What if I Can Not Stand Up to Lift Weights?

No problem. Do all your exercises sitting in a chair. Rubber tubing and dumbbells are both easy to use while you are sitting down. Check your library for video tapes of chair exercises.



Strength Training Starter Program

General Instructions:

1. Repeat all exercises for 10 to 15 repetitions. Perform 1 to 3 sets (of repetitions). Repeat 2 to 3 days per week.
2. Stop exercise if you feel pain.
3. Exercises #1 and 4 can be done with dumbbells or elastic exercise tubing.
4. Exercises #1, 3 and 4 can be done while seated.
5. Rest up to one minute between sets.
6. Perform exercises slowly (3 seconds to lift and 3 seconds to lower).
7. Pause 1 to 2 seconds before returning to starting position.
8. Breathe out when you lift ("exhale with effort").
9. Select heavier resistance when 15 repetitions feel easy.

NOTE: Check with your doctor before doing any resistance exercise

Exercise #1:



Lateral Raise
(Strengthens shoulder muscles)
1. Stand with feet shoulder width, knees slightly bent, abs tight.
2. Gripping tubing, begin with arms at sides.



3. Lift arms until hands reach height of chest, with elbows slightly bent. Do not shrug shoulders up.
4. Return to start.

Exercise #2:



Wall Push
(Strengthens chest, arms and shoulder muscles)
1. Stand at arm's length from wall with hands flat on wall.
2. Keep feet-shoulder width apart.



3. Keeping back straight, push slowly away from wall.
4. Return slowly to wall (start position).

Exercise #3:



Wall Angels
(Strengthens back and shoulder muscles)

1. Start with lower back and shoulders flat against wall.
2. Keep feet 12 to 18 inches apart from wall.



3. Raise arms until elbows reach height of ears.
4. Return slowly to start.

Exercise #4:



Biceps Curls
(Strengthens upper arms)

1. Stand with knees slightly bent.
2. Grip tubing keeping abs tight.



3. Keep elbows at side and lift weights.
4. Return slowly to start.

Exercise #5:



Abdominal Crunches
(Strengthens abdominal muscles)

1. Lie flat on bed or floor, knees bent.
2. Choose from 3 hand positions:
 - Across chest, (as pictured in Start);
 - Reaching (as pictured in Finish); or
 - Behind your head (making sure not to pull on your neck).



3. Curl up slowly so shoulders rise off floor.
4. Return slowly to start.

NOTE: Do not do this exercise if your doctor has told you have diabetic retinopathy (eye disease).

IV. How Do I Take the First Step?

Plan Your Weekly Goals in Writing!

Experts recommend that you write down your weekly goals and immediately reschedule any sessions that you miss. As always, be sure to check with your doctor before you begin exercising.

Here's a sample plan.

	Activity	Time of Day	Amount
Monday	Walk at lunch	Noon	20 minutes
Tuesday	Stretch	Before Dinner	10 minutes
	Strength Training		15 minutes
Wednesday	Stretch Class	12:30 PM	45 minutes
Thursday	Stretch	Before Bed	10 minutes
	Strength Training		15 minutes
Friday	Stretch	5:00 PM	10 minutes
	Walk home		45 minutes
Saturday	Walk to Grocery Store Wash Car		
Sunday	Stretch	9:30 AM	10 minutes
	Walk in park		30 minutes

Fill in your Own Activity Chart on pages 21 and 22.

Once you start you'll need some strategies for sticking with it. Here are some of the best.

- Keep records of your progress.
- Reward yourself (with a movie, massage, book, or new clothes).
- Listen to music or books on tape while you exercise so you don't get bored.
- Exercise with a partner to keep you motivated (or alone if you prefer some time to yourself).
- Imagine yourself exercising and "rehearse" it in your mind every day.
- Set realistic goals.
- Seek out positive social support and avoid those who discourage you.
- Don't get discouraged if you don't see immediate results.
- Don't give up if you miss a day; just get back on track the next day.
- Build some rest days into your exercise schedule.
- Keep it simple.
- If you have trouble preventing low blood glucoses, contact your Diabetes Health Care Team.



So there you have it ... everything you need to know to increase your physical activity and improve your health. **The next step is up to you!** Remember that everyone can share the joy of movement. You'll feel more alive when you're physically active. You will have more energy, a brighter outlook, and be healthier. You owe it to yourself. ***It's never too late to start!***

V. A Sample Walking Program**

	Warm Up	Target Zone Exercising*	Cool Down Time	Total Time
Week 1 Session 1	Walk normally. 5 min.	Then walk briskly. 5 min.	Then walk normally. 5 min.	15 min.
Session 2 Repeat above pattern another time during the week.				
Session 3 Repeat above pattern another time during the week.				
Continue with at least 3 exercise sessions during each week of the program. If you find a particular week's pattern tiring, repeat it before going on to the next pattern. You do not have to complete the walking program in 12 weeks.				
Week 2	Walk 5 min.	Walk briskly 7 min.	Walk 5 min.	17 min.
Week 3	Walk 5 min.	Walk briskly 9 min.	Walk 5 min.	19 min.
Week 4	Walk 5 min.	Walk briskly 11 min.	Walk 5 min.	21 min.
Week 5	Walk 5 min.	Walk briskly 13 min.	Walk 5 min.	23 min.
Week 6	Walk 5 min.	Walk briskly 15 min.	Walk 5 min.	25 min.
Week 7	Walk 5 min.	Walk briskly 18 min.	Walk 5 min.	28 min.
Week 8	Walk 5 min.	Walk briskly 20 min.	Walk 5 min.	30 min.
Week 9	Walk 5 min.	Walk briskly 23 min.	Walk 5 min.	33 min.
Week 10	Walk 5 min.	Walk briskly 26 min.	Walk 5 min.	36 min.
Week 11	Walk 5 min.	Walk briskly 28 min.	Walk 5 min.	38 min.
Week 12	Walk 5 min.	Walk briskly 30 min.	Walk 5 min.	40 min.

****Check with your doctor before you begin exercising.**

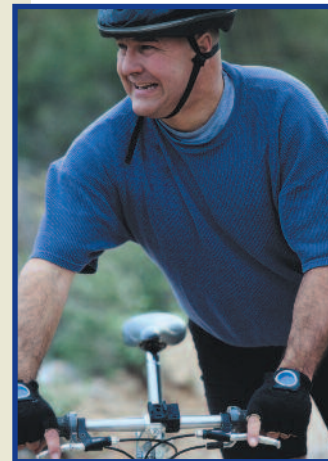
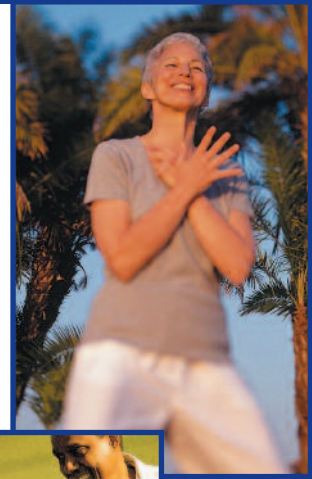
Week 13

Check your pulse periodically to see if you are exercising within your target zone. As you get more in shape, try exercising within the upper range of your target zone. Gradually increase your brisk walking time to 60 minutes, 3 or 4 times a week. Remember that your goal is to get the benefits you are seeking and enjoy your activity.

****Here's how to check if you are within your target heart rate zone:**

1. Right after you stop exercising, take your pulse: Place the tips of your first two fingers lightly over one of the blood vessels on your neck, just to the left or right of your Adam's apple. Or try the pulse spot inside your wrist just below the base of your thumb.
2. Count your pulse for 10 seconds and multiply the number by 6. Start with zero when you count: 0-1-2 and so on to 10.
3. Compare the number to the right grouping on the next page: Look for the age grouping that is closest to your age and read the line across. For example, if you are 43, the closest age on the chart is 45; the target zone is 88-131 beats per minute.

****Check with your doctor before you begin exercising.**



Source: *Exercise and Your Heart*, National Heart, Lung, and Blood Institute/American Heart Association, NIH Publication No. 93-1677.

Age	Target Heart Range Zone
20 years	100-150 beats per minute
25 years	98-146 beats per minute
30 years	95-142 beats per minute
35 years	93-138 beats per minute
40 years	90-135 beats per minute
45 years	88-131 beats per minute
50 years	85-127 beats per minute
55 years	83-123 beats per minute
60 years	80-120 beats per minute
65 years	78-116 beats per minute
70 years	75-113 beats per minute



Now it's your turn — go ahead, give it a try! Be realistic — it's not how much you do when you're just beginning, but that you simply do something. Every journey begins with a single step.

Check with your doctor before you begin exercising.



MY TARGET HEART RANGE ZONE IS _____

	ACTIVITY	TIME OF DAY	#OF MINUTES	BLOOD GLUCOSE		HEART RATE	NOTES
				Before Exercise	After Exercise	Before Exercise	
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							
Sunday							

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