

# Get Active

## Chapter 3

# Your Exercise Safety

### You Will Learn About:

1. Common exercise safety tips
  - a. How do I prevent low blood sugar?
  - b. Can I eat, drink alcohol or smoke before I exercise?
  - c. Can I exercise when I'm ill?
2. Foot care with your exercise
  - a. Running shoes
  - b. Socks
3. How to prevent muscle and joint injuries while you exercise
4. How to exercise safely in hot and cold weather
5. How to exercise safely with certain medical problems

## 1. Common Exercise Safety Tips

### How do I prevent low blood sugar?

Exercise lowers your blood sugar and helps manage diabetes. While you exercise, your muscles use the sugar in your blood. Your muscles use the sugar in your blood for many hours after you exercise too.

Check your blood sugar before and after exercise. Do this at least for the first 5 sessions, and anytime you make a change to your exercise program. Your blood sugar tells you how your body reacts to exercise.



Some diabetes medicines can cause low blood sugar (hypoglycemia). If you are **on** insulin or a medicine from the Secretagogue class of medication, take extra care. These medicines increase your risk of **low blood sugar**, especially after exercise.

#### Safety Alert!

You are at risk for low blood sugar (especially after exercise) if you take any of the following diabetes medicines:

- Insulin
- Secretagogue medicines such as:
  - Diamicron (Gliclazide)
  - Amaryl (Glimepiride)
  - Glyburide (Diabeta)
  - Repaglinide (Gluconorm)

Recall, low blood sugar (hypoglycemia) happens when your blood sugar is less than 4 mmol/L or you have the signs or symptoms of low blood sugar (e.g., feeling shaky, easy to bother, difficulty concentrating). Have a fast-acting carbohydrate with you, such as juice or sugar (glucose) tablets. Drink or eat this carbohydrate if your blood sugar is low. Read Section, 'Treat Diabetes: Chapter 4' on Low Blood Sugar to learn more.

If you are taking a medicine listed in the Safety Alert about the risk of low blood sugar with certain diabetes medicines, follow the steps below:

1. Check your blood sugar before exercise. If your blood sugar is less than 5 mmol/L, eat a snack before you exercise. This will help you avoid low blood sugar during or after exercise. This snack should have a slower acting carbohydrate and protein like reduced-fat cheese and crackers. Slower acting carbohydrates raise your blood sugar slowly over a period of time.

To avoid needing to snack before exercise, try to plan your exercise when your blood sugar is naturally higher. Plan your exercise about 2 hours after a meal (when your food is digested) or before taking your insulin.

2. Check your blood sugar after exercise. If your blood sugar is between 4 to 5 mmol/L after exercise, eat your usual meal. Have a snack if your meal is more than 1 hour away. This snack should have a slower acting carbohydrate and protein like a slice of wholegrain bread with reduced fat cheese. Slower acting carbohydrates raise your blood sugar slowly over a period of time. Your blood sugar will keep dropping hours after exercise. The snack prevents low blood sugar after your exercise.
3. Check your blood sugar before you drive. Your blood sugar must be above 5 mmol/L if you drive after exercise. This blood sugar level will prevent low blood sugar while you are driving. Recheck your blood sugar on long drives. Carry a fast acting carbohydrate and your glucometer with you in the car in case you need them.

**Safety Alert!**

If you treat an episode of low blood sugar (hypoglycemia), make sure your blood sugar is above 5 mmol/L for at least 45 minutes before driving

4. Your blood sugar levels will change after you start a new exercise program. You may have low blood sugar more often after you start. Talk to your healthcare team about your diabetes medicines if this happens. You will likely need the amount of diabetes medicine you take changed.

If you are **not** taking insulin or a medicine from the Secretagogue class of medicines, **low blood sugar is rare**. Still check your blood sugar before and after a few exercise sessions to know how your body reacts.

If you are taking insulin, avoid injecting insulin in an exercising muscle. For example, do not inject into your thigh if you are walking or cycling. Instead, inject insulin into sites on your belly.

If you have had previous episodes of low blood sugar take extra care. Take extra care if you cannot tell when you have low blood sugar too. Check your blood sugar before, during and after your exercise. Your blood sugar tells you how your body reacts to exercise. Have proper nutrition and timing of medicines to avoid low blood sugar.

**Did You Know?**

Engaging in a prescribed exercise program is shown to lower your A1c (a measure of how well you managed your blood sugar over the past 3 months) by about 1 percent. This means exercise is just as effective as a diabetes medicine.

#### Can I eat, drink alcohol or smoke before I exercise?



Do not have alcohol, caffeine, cigarettes or marijuana before exercise. Alcohol, caffeine, cigarettes and marijuana can increase your heart rate. If your heart rate is above your target heart rate range, then exercise is not safe. Alcohol, caffeine, cigarettes and marijuana also make your exercise feel tougher.

Avoid exercise within 2 hours after a heavy meal. Your body needs time to digest all the food before it is ready for exercise. What you can do is some form of light physical activity such as going for a slow walk with your dog, family or friends. Follow your usual eating and medicine schedule. Fit your prescribed exercise into your day when you are not too full from a meal.

#### Can I exercise when I'm ill?

Do **not** exercise if you are ill with a chest infection or flu. If you have an infection and taking antibiotics you need to rest. Your body needs time to rest and to fight the illness. Talk to your doctor or exercise team about when you can return to exercise.



Allow yourself the time to rest. When you are feeling better, restart your exercise slowly over time. Restart your exercise by doing half the time and less intensity. Think about how long you stopped exercising. It will take the same amount of time to build back up.

For example, if you are prescribed to walk 2 miles in 40 minutes (a 20 minute per mile pace) and you stop exercising for 2 weeks then:

- Restart with 1 mile and build up slowly to 2 miles over the first week. Walk slower than your prescribed walking pace. Walk at a 22 minute per mile pace or slower.
- If you feel up to it, work on speeding your walking pace back to your prescribed pace during week 2

If you have questions, talk to your exercise team for help.

You may notice a change of blood sugar while you are ill. Changing blood sugars happen when your body is fighting an illness, especially if you become dehydrated (loss of body fluids). Check your blood sugar more often when you are ill. Respond and treat a low blood sugar when necessary. Do not stop taking your insulin. Ask your doctor if you need to adjust your medicines.

## 2. Foot Care With Your Exercise

You are more prone to get sores or blisters on your feet because of diabetes. You are more prone since diabetes impacts the flow of blood to your skin and nerves. Sores and blisters make walking uncomfortable. The sores or blisters will get worse with walking.

Do not exercise if you have an open sore or a blister on your foot. Sores and blisters take longer to heal when you are living with diabetes. Wait until your sores and blisters heal before you start your walking program or they could get much worse. Talk to your podiatrist or chiropodist. These two professionals are specialists in foot care.

Since your skin needs to be free of sores and blisters, ensure you buy and wear the right kind of socks and shoes. Below outlines shoes and socks for your exercise.

#### Rules with your running shoes

Use running shoes for your exercise. Do not use cross trainers, court shoes or walking shoes. Running shoes are more stable, have cushions and support. Have your feet checked and the way you walk observed before you buy running shoes. This kind of check is done by a professional and a qualified salesperson to determine your specific shoe needs.

Shop for shoes during the middle of the day. Shop at this time since your feet naturally expand due to swelling and activity.

Your shoes must fit you well. Try different models of shoes. If the shoes are too tight, you can get blisters, sores and bruises. Have 1 cm or ½ inch width of space between your longest toe and the end of the shoe. This extra space allows for swelling when you exercise. Wear your shoes indoors only for first 1 to 2 weeks. This time indoors determines if the shoes will work for you. These shoes last 6 to 12 months or about 500 miles (800 to 1200 km).

#### Rules with your socks

Wear socks without seams on the inside. The seams may lead to rubbing, blistering and foot ulcers. Buy socks made of synthetic materials (e.g., polyester) to help take away moisture from your feet. Diabetic socks or usual sport socks are made to take away the moisture. If you use sport socks, turn them inside out to avoid the seams. Cut the top elastic off too so the sock doesn't dig into your skin.

Light coloured socks help you find any wounds. You will see blood from blisters with light coloured socks. Check your feet regularly for wounds.

### 3. How to Prevent Muscle or Joint Injuries While You Exercise

If you have any muscle or joint injuries, start your exercise program slowly. Also start your exercise program slowly if you have old muscle or joint injuries. Allow your body to rest and heal from any injury. Start your exercise program slowly to prevent feeling tired as well. Your exercise program should not cause any pain or discomfort. Stop your exercise if you have any pain or discomfort. Try to exercise at a lower intensity or use lighter weights. Lighter intensity may lower your pain and discomfort. Talk to your physiotherapist or exercise team for help.

Once you exercise on a routine, you may have some aches and pains. These aches and pains are from pushing yourself too hard. Pushing yourself too hard can cause injuries. To avoid injuries, ensure you:

- Exercise at the right intensity level as prescribed by your exercise team
- Take rest days
- Do full warm-ups and cool-downs

If you start to feel any aches in your feet, knees, hips or lower back, take action:

First

- Try a brand new pair of running shoes. Your old pair of shoes might be worn out. Worn out shoes no longer have the amount of cushioning and support you need

Next

- Walk at a slower pace. Take shorter steps while walking and see if this lowers your discomfort. Talk to your doctor or a physiotherapist if the discomfort persists



After exercise, it is normal to be sore and stiff. Feeling sore and stiff happens with new exercises or increased intensity levels. Feeling sore and stiff will disappear on its own. Do a cool-down and stretch to lower your sore and stiff feelings. If you feel sore and stiff for more than a week, see your doctor.

## 4. How to Exercise in Hot and Cold Weather

### Exercise in hot weather

High heat and humidity causes higher heart rates and blood pressures during exercise. Heat and humidity may also cause shortness of breath even with normal activity. You may also feel irregular heartbeats (palpitations), light-headed or dizzy. Hot days also increase the smog and pollution in the air. Smog and pollution may also cause irregular heartbeats, light-headedness or dizziness. See the Heat Safety Index and Air Quality Health Index to see if it is safe for outdoor exercise. Follow these steps:

#### 1) Check the Weather Report

Check the local weather report at the time of your exercise, and note the temperature, humidity and the air quality (smog alerts and the air quality health index).

#### 2) Check the Heat Safety Index

The Heat Safety Index can help you decide if it is safe to exercise and go outdoors. This index uses temperature and percentage of humidity (how much water is in the air) to create four safety zones: safe, alert, danger and emergency.

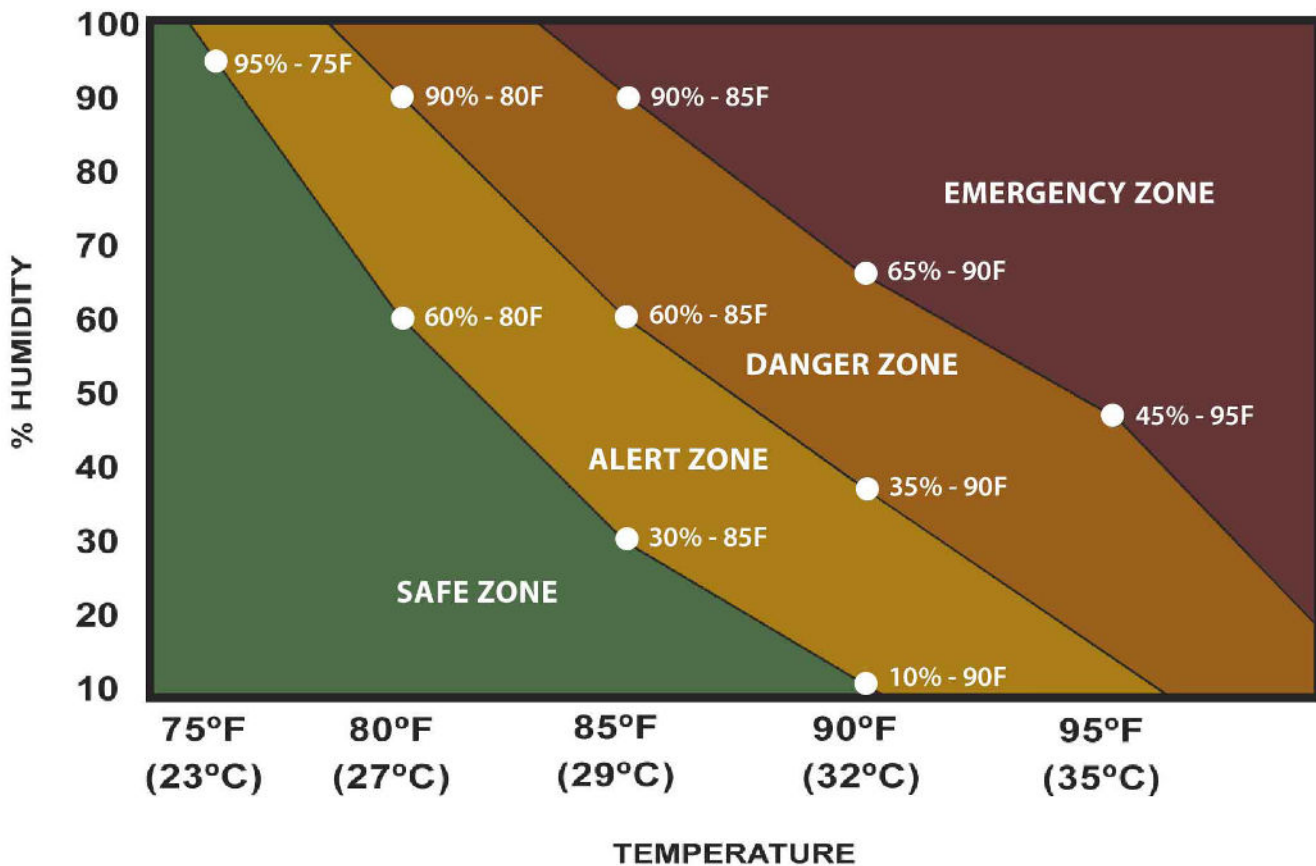
## Get Active

### Chapter 3: Your Exercise Safety

To use this index:

- Find the current local temperature along the bottom of the scale
- Find the current percentage of humidity along the left hand border of the scale
- Find the point on the graph where these two points come together. See what safety zone this point is found in
- Follow the instructions in the 'what you do for each heat safety zone' chart

**Heat Safety Index**



**What You Do For Each Safety Zone**

Safe	Alert	Danger	Emergency
<ul style="list-style-type: none"><li>• Exercise as usual</li><li>• Safe to exercise outdoors</li></ul>	<ul style="list-style-type: none"><li>• Decrease your exercise intensity (slow your walking pace)</li><li>• Watch for symptoms (e.g., shortness of breath, increased tiredness)</li></ul>	<ul style="list-style-type: none"><li>• No outdoor exercise</li><li>• Exercise in an air conditioned environment only</li></ul>	<ul style="list-style-type: none"><li>• Avoid going outdoors</li></ul>

**Check the Air Quality**

It is important that you check the air quality before you exercise outdoors. When you check the air quality you are seeing how much air pollution there is. Air pollution happens when many pollutants (a substance that is harmful to your health) are in the air. Air pollution is a health concern for all people. It is an even greater concern for people living with heart or lung disease, older people and younger children.

When you check the weather report for air quality, look for:

- The Air Quality Health Index (AQHI)

## Get Active

### Chapter 3: Your Exercise Safety

Air pollution can be measured by the AQHI. This index tells you the level of common air pollutants.



In Ontario, the range for the index is 0 to 10. The lower the number, the better the air quality. If you live outside of Ontario, go to your local public health website to find out how your area lists the air quality index.

Check the air quality index before you exercise outdoors then follow the instructions in the ‘what you do for each air quality category’ chart.

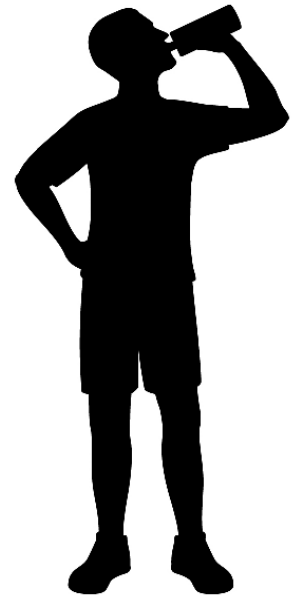
#### What You Do for Each Air Quality Category

Low Risk 1 to 3	Moderate Risk 4 to 6	High Risk 7 to 6	Very High Risk 4 to 6
<ul style="list-style-type: none"><li>• Exercise as usual</li><li>• Safe to exercise outdoors</li></ul>	<ul style="list-style-type: none"><li>• Decrease your exercise intensity</li><li>• Watch for symptoms</li><li>• Consider rescheduling your outdoor exercise</li></ul>	<ul style="list-style-type: none"><li>• No outdoor exercise</li><li>• Exercise in an air conditioned environment only</li></ul>	<ul style="list-style-type: none"><li>• Avoid going outdoors</li></ul>

#### 1) Stay hydrated (ensure you drink plenty of water)

Drink water before, during and after your exercise. Dehydration (loss of body fluids) can lead to higher heart rates, shortness of breath and feeling dizzy. If you exercise for up to 1 hour, follow the guidelines below:

- Drink 6-8 ounces of water (about 175 to 240mL) before exercise
- Drink 6-8 ounces of water (about 175 to 240mL) every 20 minutes during exercise and after you cool down
- Do not wait until you feel thirsty
- **Speak to your doctor if you have limits on how much fluid you can have each day**



#### 2) Wear light coloured, loose, comfortable clothing



This clothing reflects the sun and allows air flow to help you stay cool. Choose a fabric that helps sweat move away from your body. Dry wick (synthetic man-made) fabrics work best. Wear a hat or visor and use sunscreen to protect your skin. If you are traveling, give yourself about a week to adjust to the new temperature.

#### 3) Check your blood sugar

Your blood sugar changes based on the weather. Each person responds differently. Your blood sugar levels can lower in hot weather. Your blood sugar is lower because your blood vessels in your skin open wider. Your blood vessels are open wider to keep you cooler. Also, insulin acts quicker during warm weather. This is because of more blood flow to your skin as your body tries to stay cool.

Your blood sugar can also be higher in hot weather. Higher blood sugar happens when you are dehydrated (loss of body fluids) or your body is under stress. Stress like dealing with the heat and humidity. Be aware and check your blood sugar more often in hot weather. Some diabetes medicines make you more likely to become dehydrated and sunburnt. Talk to your pharmacist about your medicines.

### Exercise in cold weather

Cold weather can make your exercise feel tougher. Cold weather makes your arteries tighten. When your arteries tighten, it is harder for blood to get through to deliver oxygen to your heart and exercising muscles. Cold weather also causes your heart rate and blood pressure to rise. High heart rates and blood pressures make your heart work too hard and put you at risk for heart problems.

You may prefer to exercise outdoors even when it's cold. Follow the precautions below for safe exercise:

- Do not exercise outdoors if the temperature with wind chill is below  $-10^{\circ}\text{C}$ . Your body will have to work too hard with colder temperatures
- Wear layers of clothing. Layers of clothing includes a hat to help keep warm. Remove a layer of clothing if you get too warm. Staying warm will make exercise feel more comfortable. It also keeps your arteries wider to let blood flow to your heart and muscles
- The layer of clothing next to your skin should be moisture wicking “dry-fit” material. Clothing material such as polyester or a ribbed shirt with wool/cotton blend. You will be too cold if the layer on your skin gets wet from your sweat



- Cover your mouth and nose with a scarf. This scarf helps warm the air you breathe and keeps you warmer
- Wear your running shoes outdoors. Your running shoes have the best traction and are lightweight
- Slow down if it is windy or icy. A slower pace prevents falls
- Keep hydrated (drink plenty of water), even during the winter
- Keep your glucometer and insulin at room temperature. They will not work if they have been frozen. Unopened insulin can be kept in the fridge
- Choose an exercise route clear of snow and ice to avoid falls

## 5. How to Exercise with Certain Medical Problems

You can still exercise with certain medical problems. Talk to your family doctor or exercise team before you exercise if you have any of these problems.

### Loss of feeling in your feet

Check your feet for sores often. If you do not have much feeling in your feet, you may not notice sores. Do not do weight-bearing exercise like walking if you have open sores on your feet. Instead, use an exercise bike until the sores have healed. Talk to your doctor if you have sores on your feet.

### Eye Problems

It is safer to exercise on a stationary (exercise) bike if you have poor eyesight. Have your eye pressure checked by your eye doctor. Your eye doctor will check for glaucoma and ensure it is safe for you to exercise. If you have retinopathy, avoid resistance training. Resistance training can make your retinopathy worse. Discuss your exercise program with your eye doctor.

#### **An amputation or physical limitation from a stroke**

There are many exercises you can do depending on the affected body part. Try a stationary bike, an arm ergometer, or swimming. Many of the resistance training exercises are still effective. Talk to your exercise team for your custom program.

#### **Knee, back or shoulder pain or injury**

If you suffer from knee, back or shoulder pain, you can still exercise. It is crucial that you perform exercises with the correct technique. Technique is the way you perform your exercise. The exercises using your injured body part can be changed or avoided. Only do exercises that do not cause any pain. Do exercises in a position that feels right for you. Talk to your physiotherapist or exercise team to find exercises for your specific needs.

#### **Arthritis**

Exercise and movement of the joints help improve arthritis pain. It is important to progress your exercise slowly. See how you feel 1 to 2 days after an exercise session. Listen to your body. If you have joint pain, stop your exercise and take a rest day. Try your exercise again the next day.

#### **Charcot's Foot**

Charcot's foot is a condition that weakens the bones in your feet. Avoid any unneeded activity on your feet. You can do many resistance training exercises sitting in a chair. Use a stationary bike or an arm ergometer for exercise. Talk to your exercise team for help.

#### **Dialysis appointments due to chronic kidney disease**

A good time to exercise will vary if you have dialysis throughout the week.



It will depend on your symptoms and your energy level. Start with small sessions of exercise. Try 5 to 10 minutes of exercise at a level that feels right to you. Talk to your doctor or your exercise team for help.

### **Heart Disease and Stable Angina**

If you have heart disease, speak with your doctor before you start an exercise program.

Angina is symptoms that occur when your heart does not get enough oxygen. Symptoms of angina include:

- chest pain
- chest tightness
- arm pain
- jaw pain
- back pain between your shoulders
- shortness of breath

Stable angina is angina symptoms at a known intensity level of exercise. Keep your exercise intensity below this level to avoid angina symptoms. Talk to your exercise team about the right level of exercise for you. Have your nitroglycerine with you while you exercise. Know what to do if you have angina symptoms while exercising. Slow your exercise pace and stop exercising. Take your angina medicine as prescribed. If your symptoms do not resolve, get immediate medical attention. If you live in Ontario, call 9-1-1.

For more detailed information about heart disease visit our Cardiac College website at [www.cardiaccollege.ca](http://www.cardiaccollege.ca)

### **Chronic Obstructive Pulmonary Disease (COPD) or breathing problems**

Chronic Obstructive Pulmonary Disease (COPD) is a disease that causes

restricted air flow to your lungs. With COPD, shortness of breath will limit your exercise. Your exercise depends on the how much your lungs are affected. Exercise at a level where your breathing feels right. Stay within this level. Start with small sessions of exercise, about 5 to 10 minutes long. Talk to your doctor or exercise team for help.

### Summary:

- Exercise lowers the sugar in your blood. If you take insulin or a medicine from the Secretagogue class of medicines you are at risk for low blood sugar (hypoglycemia) especially after exercise.

#### Safety Alert!

You are at risk for low blood sugar (especially after exercise) if you take any of the following diabetes medicines:

- Insulin
  - Secretagogue medicines such as:
    - Diamicon (Gliclazide)
    - Amaryl (Glimepiride)
    - Glyburide (Diabeta)
    - Repaglinide (Gluconorm)
- 
- Take a break from exercise if you are ill and return to exercise slowly
  - Do not exercise if you have blisters, sores, muscle or joint pain
  - The weather changes your blood sugar levels, take actions as needed to prevent problems
  - You can exercise with other medical problems, work with your doctor or exercise team to adjust exercise to meet your needs