Exercising with Type 1 Diabetes
Safety Tips for Kids

Why is Exercise Important?

All adolescents and teenagers should get 90 minutes of exercise per day, and 20 to 30 minutes of this should be vigorous intensity. Exercise is especially important for children with type 1 diabetes because it can lower overall A1c values, cholesterol, triglyceride and blood pressure levels. It also improves heart, muscle and bone health, and decreases the risk of developing many diseases.

"Hi! My name is Jane and I'm 13 years old. I love to play soccer and basketball but I was scared to exercise after the doctor told me I have Type 1 Diabetes. I've learned that there is nothing to be afraid of, as long as I'm aware of what I am eating and how much insulin I take. Take a look at this information to find out more, so that you can be active just like me!"

Maintaining Blood Sugar Levels During Exercise

Our research shows that maintaining blood sugar levels between 5 and 8mmol/L at most times is best if you want to be a successful athlete. But exercise can cause both hyperglycemia and hypoglycemia is you are not prepared.

The type of exercise also changes how our bodies use energy and insulin. There is **aerobic** and **anaerobic activity**, and you should try to include a bit of both throughout the week!

Aerobic activity
(running, swimming, cycling)
Longer-lasting, lower-intensity exercise that may cause low blood sugars as the body continues to use up energy

Anaerobic activity
(hockey, weight lifting, sprinting)
Shorter-lasting, higher-intensity exercise that may cause high blood sugars because of adrenaline and lactic acid

How Food Helps with Exercise

Carbohydrates
i.e. breads, fruits, beans, milk
This is the major form of fuel needed during exercise. As activity levels increase, the body's demand for carbohydrates also increases. Some turns into glucose to be used right away but most of it gets turned into glycogen to be stored for later.

Proteins
i.e. meats, cheese, eggs
These foods build muscle and strengthen bones and tissues. These should be consumed with carbohydrates and insulin for muscle development and maintaining blood sugar levels.

Fats
i.e. nuts, oils, butter
These foods are stored in the body and mostly used during longer-lasting forms of exercise. They work with carbohydrates to give the body energy. You should try to eat sources of unsaturated fats but limit sources of saturated and trans-fats

Ex Carbs: A Source of Extra Fuel

If you're going to be active for longer than 30 minutes, you will likely need extra carbohydrates called "Ex Carbs", which don't require extra insulin. The amount of Ex Carbs can vary.

	What to Consider	Why?
1	Blood sugar levels before exercise	The higher this level is, the less energy you will need from Ex Carbs
2	Amount of insulin already in your body before starting the activity	Higher insulin levels may mean you need more Ex Carbs to avoid low blood sugars
3	Your body weight	The bigger you are, the more energy you need from food
4	Type of exercise	Length you will be active, whether it is aerobic or anaerobic and intensity level change energy needs

It is best to spread out your Ex Carbs during activity. Start with a small portion 20 minutes before exercise and then eat a little more every 20 minutes after. Liquid Ex Carbs, like sports drinks, are generally a better option because they are easier to eat and enter the blood stream faster.

For more information on this, visit: www.excarbs.com

Adjusting Insulin for Exercise

Always talk with your diabetes care team before changing insulin doses. Here are some tricks they may have you try:

To prevent exercise-related <u>hyperglycemia</u>

Before exercise, you may need to

- Take a small bolus of insulin
- Increase your basal insulin infusion rate during activity if you're on a pump

After exercise, you may need to

- Take a correction dose of insulin
- Do a cool-down activity to use up extra glucose

To help prevent exercise-related <u>hypoglycemia</u>

During exercise, you may need to:

- Reduce your basal insulin infusion rate if on a pump
- Consume Ex-carbs

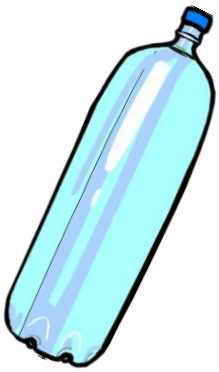
After exercise, you may need to:

- Consume a snack with protein and carbohydrates
- Reduce the amount of insulin you take

Did you know…

That exercise increases your muscle sensitivity to insulin? Pretty cool! But this means you need to be careful how much insulin you take after being active because you likely need less than usual

Exercising Safely: Other Tips to Consider



Make sure you are prepared before, during and after your activity to prevent emergencies. Kids should always:

- Wear a Medic Alert bracelet
- Bring all diabetes supplies to activities outside of the home
- Stay hydrated (2-4 cups of fluid every hour of exercise)
- Monitor blood glucose levels every 30 minutes
- Keep fast-acting sugars handy incase hypoglycemia is experienced
- Make sure blood glucose is above 7mmol/L before bed because exercise changes the body's use of insulin for 12 to 24 hours after completing the activity

Created by the Clinical Nutrition Department, 2016.
This handout is based on: Riddell, M. (2016). *Getting pumped! An insulin pump guide for active individuals with type 1 diabetes.*