Caring for Your Child  
**Managing Blood Sugars during Exercise and Activity**

Your child should be physically active for at least 60 minutes every day. Check your child’s blood sugar before, during and after exercise to figure out if he needs extra carbohydrates or changes in insulin to keep his blood sugars within range.

**Be Prepared!**

- Carry juice, sports drink (Gatorade, Powerade), carbohydrate chews/gels, or glucose tablets to treat a low blood sugar.
- Teach your child’s coaches, gym teachers and other adults how to recognize and treat a low blood sugar.
- Talk with your child’s diabetes provider for more information about your child’s exercise and insulin routine.

**What does exercise do to blood sugars?**

- Exercise can make a blood sugar level go down 50-100 points within 20-60 minutes after starting exercise.
- Exercise helps the body use insulin better.
- Intense exercise can increase blood sugar levels right away or just after the activity (for example, running a race or swimming). However, the blood sugar level may drop hours after exercise has finished.

The feeling of being “pumped up” during exercise can be confused with the feeling of a low blood sugar. The only way to know is to test the blood sugar.

**Can my child exercise if he has ketones?**

**No.** Your child should not exercise with ketones and a high blood sugar.
- It can be dangerous to exercise if there are ketones.
- Exercise can further increase the blood sugar and cause diabetic ketoacidosis (DKA) more quickly.
- Your child should only exercise when blood sugars are in range or if blood sugar is high without ketones.
- If your child has ketones or is sick, follow guidelines for **sick day/ketone management**.
Can my child exercise if blood sugars are low before or during exercise?

- To safely exercise you must treat a low blood sugar first:
  - **Have your child eat 10-15 grams of fast acting carbohydrate**, (4 glucose tablets, 4 ounces juice, 3 carbohydrate chews or 8 ounces sports drink).
  - **Wait 15 minutes. Recheck** the blood sugar to make sure it is increasing.
  - If the blood sugar is still low, repeat the steps above.
  - If the blood sugar is less than 90 before exercise, he may need to eat an additional 15 grams of carbohydrate to prevent low blood sugars during exercise
  - Your child should not eat a snack containing fat or protein before having the fast acting carb. This will delay bringing the blood sugars back to target.

What is a delayed effect of exercise?

- Low blood sugars 4 to 24 hours after intense exercise or on a very active day
- Eating 30-60 grams of carbohydrate within 30 minutes after intense exercise or exercising more than 1 hour can help prevent a delayed low blood sugar.
  - Your child should eat a snack containing carbs and protein (glass of chocolate milk, peanut butter crackers, yogurt and fruit) to repair muscles, restore carbs in the muscle and liver, and prevent a delayed blood sugar.
- Your child may or may not need insulin coverage for this post-exercise snack. Please talk with your diabetes provider about correct insulin dosing for snacks after exercise.

**Important: Check during the night (at 3 – 4 a.m.) after a very active day to see what your child’s response is to the intense workout.**

How can you prevent low blood sugars before exercise?

- If the exercise or activity is planned, your child can prevent a low blood sugar by either decreasing insulin or eating more carbs before the activity.

**Insulin Changes:**
  - Reduce fast-acting insulin when the dose is given within 40-90 minutes of exercise.
  - Start by decreasing the fast acting insulin dose by 20% for the meal/snack before exercise if exercising 30 minutes or longer. You may need to adjust this dose based on blood sugar records.
  - Decrease your child’s long acting insulin dose by 20% the night before the day of heavy and extended exercise/activity. This would include very heavy activity that would go on all day such as sports camp or all-day sports tournaments.
• **Food Changes:**
  - Exercise lasting less than 30 minutes may not require eating additional carbs unless blood sugars are low (less than 90) before exercise.
  - If the pre-exercise insulin dose is not decreased and exercise lasts longer than 30 minutes, your child should eat an extra 15 grams of carb before exercising and for every 30 minutes of activity. Do not give fast acting insulin to cover these carbs.
  - If your child is exercising to lose weight, decrease the insulin taken before exercise to prevent low blood sugar levels. Do not increase the food.
  - Be sure to continue testing blood sugar to know if the carbohydrates you gave were enough to prevent a low blood sugar
  - Consider keeping a log to evaluate what was done and to keep track of what has worked in the past.

**Carbohydrate Guidelines for Exercise**

<table>
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<tr>
<th>Exercise up to 30 minutes</th>
<th>Eat 10-20 g carb before exercise if blood sugar less than 90.</th>
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</table>
| Exercise 30-60 minutes    | Eat 10-20 g carb before exercise if starting blood sugar is less than 90 and/or 90-125. Blood sugars 126-180 before exercise may not require extra carbs beforehand.  
  - May require 15-30 g carb every 30 minutes of exercise depending on blood sugar level. |
| Exercise 60-150 minutes   | Eat 30-60 g carb every hour to prevent low blood sugars.  
  - Consider eating 10-20 g carb every 20 minutes instead of larger amounts of carb every hour. |
| Exercise longer than 150 minutes | Eat 60 g carb every hour spread across the activity (20-30 g carb every 20 minutes) with appropriate insulin adjustments to control blood sugars. |

• **Low to moderate intensity exercise longer than 30 minutes may cause a low blood sugar and require carbohydrates every 30 minutes to prevent lows.**

• **High Intensity exercise may result in high blood sugars for a short period of time. No carb is needed during exercise unless blood sugars are less than 90.**

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