

Type 1 Diabetes & Exercise
Webinar

Helping You To Manage Your Blood Glucose Around Physical Activity & Sport

#dontfearthehypo




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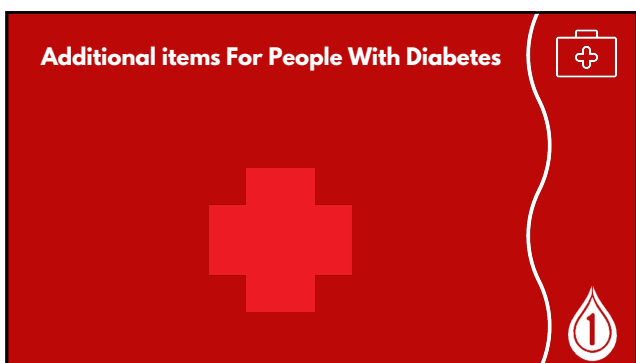
Equipment for Exercise

-  Carbohydrate snacks.
-  Mobile phone, esp. if exercising alone.
-  Water or isotonic drink (calorie free) for hydration.
-  Appropriate footwear.
-  Appropriate clothing.






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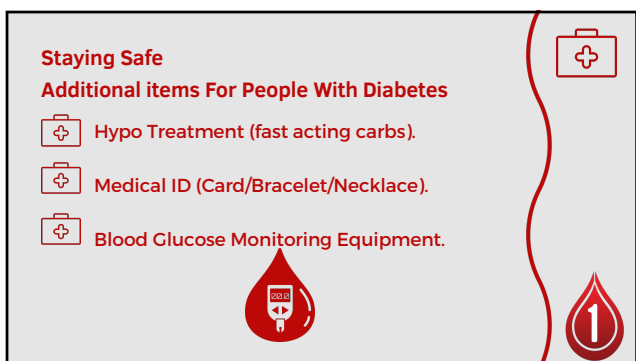
Additional items For People With Diabetes



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Staying Safe
Additional items For People With Diabetes

-  Hypo Treatment (fast acting carbs).
-  Medical ID (Card/Bracelet/Necklace).
-  Blood Glucose Monitoring Equipment.



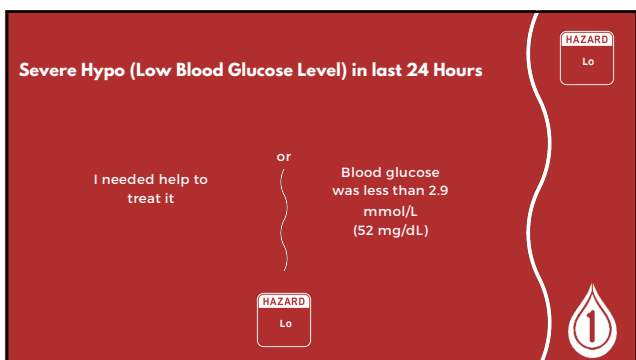
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Severe Hypo (Low Blood Glucose Level) in last 24 Hours

I needed help to treat it

or

Blood glucose was less than 2.9 mmol/L (52 mg/dL)





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Blood Glucose Level Higher than 14.9 mmol/L (270mg/dL)

Check for Ketones

Ketones less than 1.6 mmol/L

<p>Eaten less than 2 hours ago?</p> <p>Monitor blood glucose/ketone levels</p> <p>Can do low-to-moderate intensity of exercise</p>	<p>Eaten more than 2 hours ago?</p> <p>Consider a CORRECTION dose: 1/3rd of your normal correction</p> <p>Can do low-to-moderate intensity of exercise</p>
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Blood Glucose Level Higher than 14.9 mmol/L (270mg/dL)

Check for Ketones

Ketones more than 1.5 mmol/L

Do NOT exercise today

Follow Your Sick Day Rules

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Summary

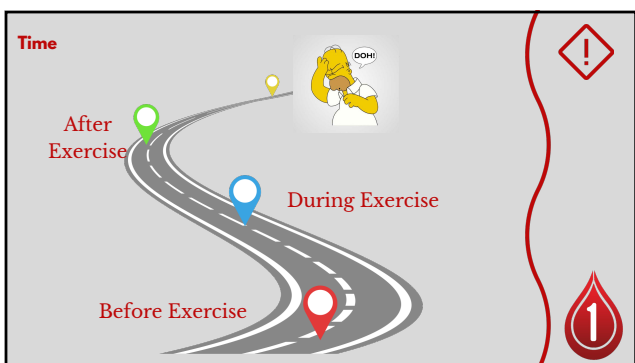
<p>1 SEEK MEDICAL ADVICE</p> <p>Talk to your Doctor before starting any new form of exercise. You must speak to your diabetes care team before making any changes to your diabetes management plan.</p>	<p>2 DRESS APPROPRIATELY</p> <p>Dress Appropriately for the activity you are doing, keep mobile phone close, especially if exercising alone, outside or away from home.</p>	<p>3 WATER & SNACKS</p> <p>Take water, or isotonic drinks, and snacks with you to keep your energy levels up. Staying hydrated is really important for people with type 1 diabetes.</p>	<p>4 DIABETES KIT</p> <p>Always carry your diabetes kit: hypo treatment, blood glucose testing kit, Medical ID, insulin.</p>	<p>5 RISK OF HYPO</p> <p>Exercise may increase the risk of getting a low blood glucose level. Your risk of getting a low blood glucose level may be increased if you have had a hypo in the previous 24 hours.</p>	<p>6 HIGH BLOOD GLUCOSE</p> <p>High blood glucose levels must be considered, exercising without adequate insulin on board may make your blood glucose go up. Always check for ketones if blood glucose is high.</p>
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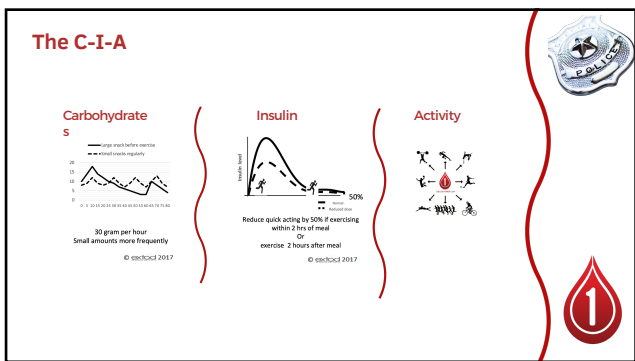

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Does Carbohydrate Loading Before Exercise Help in Preventing Low Blood Glucose Levels?



- Exercising with a full stomach feels awful
- Exercising with high blood glucose levels and inadequate insulin increases the risk of DKA
- Exercising with high levels of insulin on board increases the risk of low blood glucose levels
- in the presence of adequate insulin high blood glucose levels only provide enough additional energy to last a few tens of minutes at most
- Trying to load up on carbohydrates immediately before exercise as a fuel is a bit like trying to store electricity in a cable, it simply does not work



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Before Exercise

- It is best to exercise in a fasting state - little active insulin on board.
- Most people (& the evidence supports this) report that exercising first thing in the morning before breakfast is the most ideal for blood glucose levels because we are typically more insulin resistant in the morning & this may give some protection from hypoglycaemia.
- The next best time is 2 hours plus after your last meal/fast acting insulin - because the amount of active insulin is now small
- But, if that is not possible then




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Before Exercise

The evidence suggests reduce your bolus (fast acting) insulin for the meal by 50% and exercise within 90 minutes of the meal.

The reduced amount of circulating insulin allows the liver to release more glucose for exercise



Reduce quick acting by 50% if exercising within 2 hrs of meal
Or
exercise 2 hours after meal




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Before Exercise

The evidence suggests reduce your bolus (fast acting) insulin for the meal by 50% and exercise within 90 minutes of the meal.


The reduced amount of circulating insulin allows the liver to release more glucose for exercise

This Works on Multiple Daily Injections (MDI) & Insulin Pumps



Reduce quick acting by 50% if exercising within 2 hrs of meal
Or
exercise 2 hours after meal

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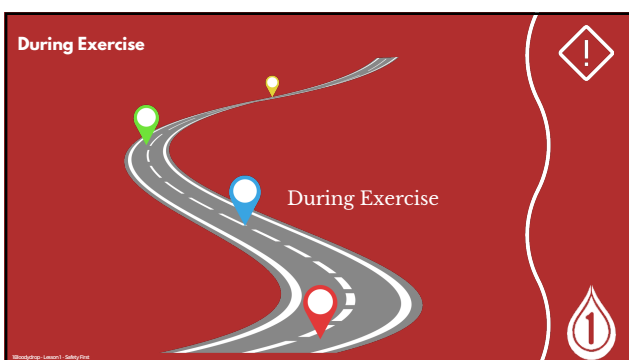


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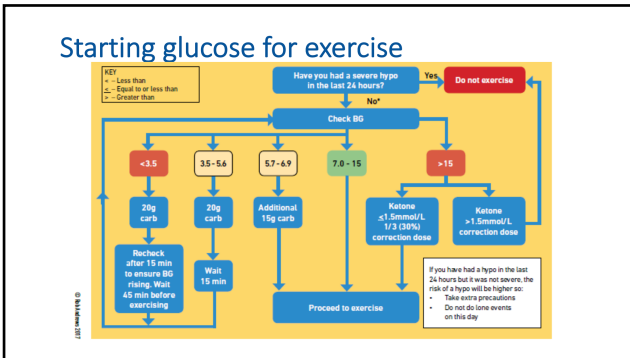
During Exercise



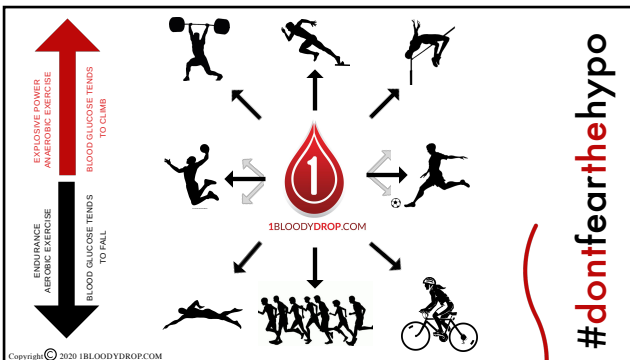
During Exercise



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Insulin Reductions - For Pump Users

If you use an insulin pump you can think about reducing basal insulin too. The evidence suggests this is best done for exercise 3 hours plus since last meal.

	Exercise ~ 30 minutes	Exercise ~ 60 minutes
Aerobic	50% basal reduction, performed 90 min before exercise or 100% reduction at exercise onset	50%-80% basal reduction, performed 90 min before exercise or 100% reduction at exercise onset
Resistance (anaerobic)	No reduction	50% basal reduction, performed 90 min before exercise
High intensity interval training	No reduction	No reduction
Mixed (aerobic and anaerobic)	100% reduction at exercise onset	50% basal reduction, performed 90 min before exercise or 100% reduction at exercise onset 20-30% reduction

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Low Carb Diets & Exercise

- Low carbohydrate diets appear to work quite well for short duration low intensity activities
- Low Carbohydrates seem to be less effective in longer duration and/or higher intensity activities
- Elite athletes with type 1 diabetes sometimes use low carbohydrate diets for short durations in their training cycle to promote fat metabolism, but they usually switch back to moderate or even high carbohydrate diets to maintain and/or improve performance
- This is not typically recommended though because it causes additional challenges on managing blood glucose levels and may require close clinical supervision

CARB FREE FOOD

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Carbohydrates During Exercise

30 gram per hour
Small amounts more frequently

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Insulin Sensitivity

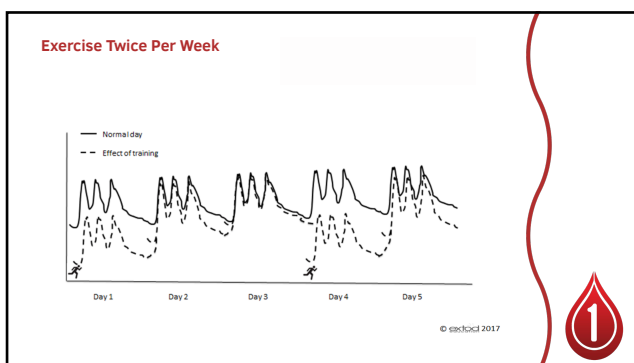
Normal day
After training

QA reduce 50%
Basal reduce 20%

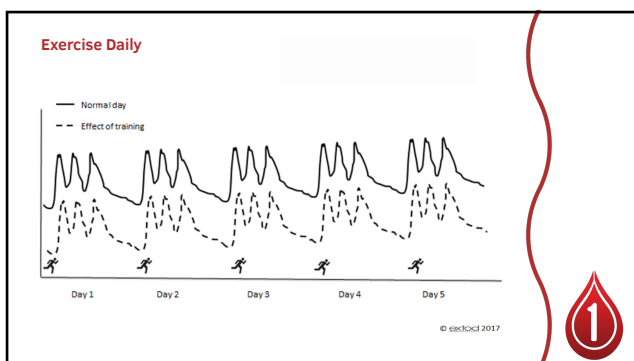
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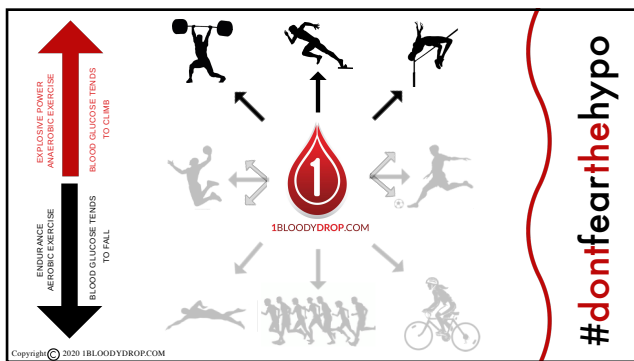
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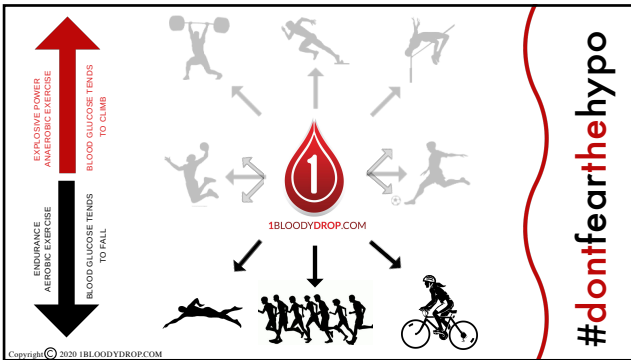
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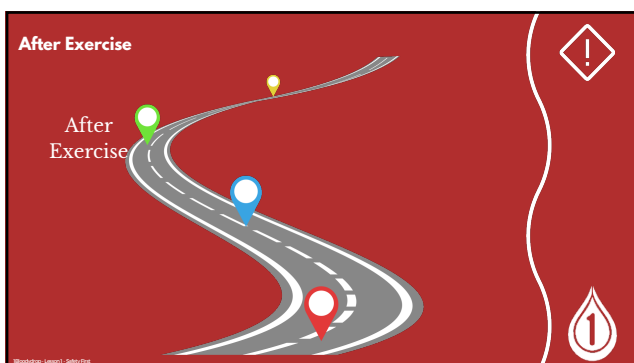
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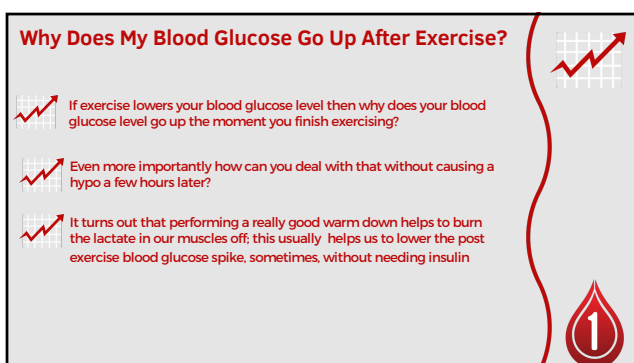
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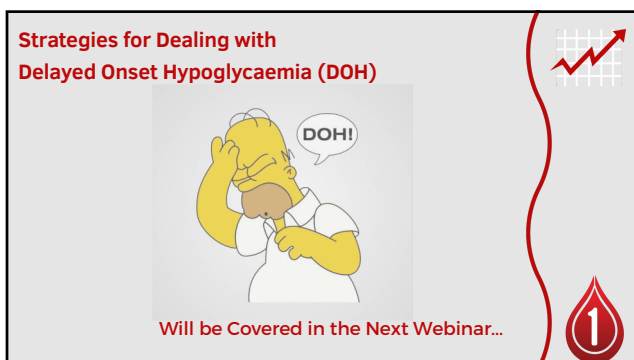
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