



Chapter G

Lifestyle and Activity



G: Lifestyle and Activity

G1: Physical Activity

All families should take part in physical activity for at least 60 minutes per day. There is no upper limit! Exercise may have beneficial effects on lowering blood glucose; you may need to reduce insulin

Why exercise?

- Improves heart health
- Helps maintain a healthy weight
- Insulin works better
- Makes bones stronger
- Helps self-confidence and socialisation with friends
- Lowers cholesterol

Screen Time

All families should minimise the amount of time spent sitting (watching TV, computer/gaming, driving).

- Agree a family limit for screen time each day
- Set 'no screen time' rules to encourage kids to be active
- At weekends and holidays try to plan family activity time
- Make bedrooms a TV/laptop/tablet free zone - this also helps sleep

Physical activity for children and young people (5 – 18 Years)

 BUILDS CONFIDENCE & SOCIAL SKILLS	 MAINTAINS HEALTHY WEIGHT
 DEVELOPS CO-ORDINATION	 STRENGTHENS MUSCLES & BONES
 IMPROVES CONCENTRATION & LEARNING	 IMPROVES HEALTH & FITNESS
	 IMPROVES SLEEP
	 MAKES YOU FEEL GOOD









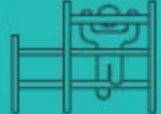


Be physically active

Spread activity throughout the day



Aim for at least
60
minutes everyday

All activities should make you breathe faster & feel warmer

 PLAY	 RUN/WALK	 BIKE	 ACTIVE TRAVEL		
 SWIM	 SKATE	<p>Include muscle and bone strengthening activities 3 TIMES PER WEEK</p>		 SPORT	 PE
 SKIP	 CLIMB			 WORKOUT	 DANCE

Sit less



LOUNGING

Move more

Find ways to help all children and young people accumulate at least 60 minutes of physical activity everyday

UK Chief Medical Officers' Guidelines 2011 Start Active, Stay Active: www.bit.ly/startactive

G2: Exercise

This information has been produced by Francesca Annan Paediatric Diabetes Dietitian, University College Hospital, the UK's leading diabetes and exercise expert. We are grateful to her for allowing us to share this.

Information about exercise and diabetes for children and young people on multiple daily injection therapy (MDI)

Being active is an important part of a healthy lifestyle.

Physical activity may be daily activities like walking or playing or sports.

About exercise

Different types of exercise (aerobic or anaerobic) have different effects in your blood glucose levels. Exercise that lasts for longer than 1 hour will typically have more of a blood glucose lowering effect.

What happens when you exercise?

This will depend on the type of exercise you do, the amount of insulin working in your body and how long you exercise for.

Different types of exercise have different effects on your blood glucose;

Aerobic exercise (which uses oxygen) will usually lower your blood glucose during and after exercise, examples include running, swimming, cycling.

- If your exercise lasts longer than 30 minutes you will probably need to reduce your insulin and/or have extra fast acting carbohydrate
- For exercise that lasts for less than 30 minutes you may not need to lower your insulin but you may need a little extra carbohydrate

Anaerobic exercise (does not need oxygen) may make your blood glucose rise during the exercise and fall after the exercise. Anaerobic sports are usually short, sharp & fast or strength and power sports. Examples include, sprinting, basketball, weight lifting.

- Some sports will be a mixture of aerobic and anaerobic exercise; e.g. football and team sports. Mixed exercise may produce steady blood glucose levels.

You will need to learn how different activities affect your blood glucose both during and after your exercise. To do this check your blood glucose levels before any exercise, every 20 minutes during exercise and at the end of the exercise and between 2 & 3am after vigorous/hard or long bouts of exercise.

Adjusting your insulin

You should aim to keep your blood glucose level around 7-8mmol/L before and during exercise you can adjust both the long acting background (basal) and fast acting food (bolus) insulin to do this.

Fast acting meal time insulin (bolus insulin)

If you eat 1-2 hours before exercise then you can make a reduction in your mealtime fast acting insulin dose to help prevent low blood glucose levels during sport. Make a similar reduction with food eaten after exercise to prevent low blood glucose levels after exercise.

You may need to lower your insulin by 25-75% if you give an injection with a meal 1-2 hours before exercise.

Background insulin

Your long acting background insulin may also need to be adjusted to help prevent low blood glucose levels after exercise. You may find this easier if you have 2 injections of long acting insulin a day, one in the evening and one in the morning. This will mean you can adjust your day time and night background insulin levels separately.

Long acting insulin doses will need to be reduced when you are going to be active all day, when your activity is strenuous and if you are exercising again the next day. Background insulin may need to be reduced by 25-50%.

Blood glucose before exercise

Aim to have a blood glucose level around 7-8mmol/L before and during exercise. If your blood glucose level is above 14mmol/L you should check for ketones. You can exercise with a higher blood glucose level without ketones, but you must check your blood glucose levels and drink plenty of fluid. If your blood glucose level is between 5 and 8mmol/L start having any exercise snacks at the beginning of your activity.

Use the table as a guide

Blood Glucose	Aerobic Exercise	Anaerobic Exercise
<5mmol/L	Bring blood glucose back to normal, have extra carbohydrate at least 1g/kg per hour of exercise	Bring blood glucose back to normal, have extra carbohydrate at least 1g/kg per hour of exercise
5 -8mmol/L	Have exercise snacks, 15g for each 30minutes of activity.	No changes required if the activity is <30minutes. Consider exercise snack if exercise lasts longer than 30minutes.
8 – 11mmol/L	No change required for activities <45 minutes. If exercise lasts longer than 45minutes exercise snacks will be needed.	No changes required if exercise is <30 minutes. Exercise snacks may need additional insulin.
11 + mmol/L	Check for ketones and correct* blood glucose. Have exercise snacks with insulin for performance. Drink fluid during exercise	Check for ketones and correct* blood glucose. Have exercise snacks with insulin for performance Drink fluid during your exercise

*Only use half corrections during exercise

If you have a high blood glucose level and ketones you should delay exercise until the ketones are no longer present.

Keep a record of the insulin adjustments you make and your blood glucose responses to different types of exercise. This will help you to plan the insulin adjustments you need to make.

Exercise Snacks

If you are exercising for 60 minutes or longer it is a good idea to have some carbohydrate during your exercise. Try and spread your extra carbohydrate across the exercise by having something every 20 minutes. If your activity lasts 60 minutes or longer, you should also think about eating some supper before bed.

Aerobic exercise that is intense or that lasts longer than 45 minutes can need 1g carbohydrate for every kilo you weigh. You will need more carbohydrate if you have not adjusted your background or food insulin doses.

To start, try having 15g of carbohydrate for each 30 mins of activity and monitor regularly (every 30 minutes). If you have adjusted your insulin doses you should need less carbohydrate to prevent hypoglycaemia.

Suitable exercise snacks include:

- Sports drinks/gels
- Jelly sweets
- Ordinary sugar containing drinks
- Dried fruit
- Jaffa cakes



Drinks for Sport

It is also important when you are being active that you have plenty to drink.

- Drink 2-300ml before any exercise.
- Try and drink during your exercise as well, about 100ml every 10-15 minutes.
- If you are exercising for an hour or more always have a sports drink, then you get the fluid you need and the extra carbohydrate as well.
- If you are exercising for less than 60 minutes water is fine.



After exercise

After exercise you may have low blood glucose levels for up to 12 hours later. Usually after exercise you will be more sensitive to your insulin and may need less.

Eat a snack/meal before bed whenever you do 60 minutes or more exercise in the afternoon or evening. A mixture of carbohydrate and protein helps your muscles and liver to replace their energy stores. Examples of good bed time snacks include milk shake and fruit, cereal and milk, crumpets with peanut butter. The bedtime snack usually does not need any fast acting insulin.

If you have high blood glucose levels at the end of exercise you can use a $\frac{1}{2}$ correction dose. Wait 30 minutes and recheck the blood glucose to see if it starts to fall on its own before giving a correction dose.

- Check BG levels regularly, as after 1-2hours the BG will fall.
- You may find that high levels at the end of exercise will fall without additional insulin.
- If your BG is always raised at the end of exercise make changes to your insulin to prevent this from happening.

G3: Sleep

When thinking about diabetes, we know that there are four important factors that help to keep blood glucose stable:

1. insulin
2. healthy food
3. exercise
4. sleep

Sleep helps to maintain a healthy weight as well as controlling glucose levels. Growth hormones are released when you are asleep. It is important to get the right amount of sleep to grow properly. Sleep heals and repairs heart and blood vessels, especially important for people with diabetes. With regard to mental health, a good night's sleep helps the brain work properly. It helps us to learn, remember, solve problems, be creative and make decisions, as well as safeguarding against stress, mood swings and depression.

How much sleep do I need?

The average person spends around a third of their life asleep. In this time, our bodies are able to replenish energy stores and make repairs, while our minds organise and store the memories of the day before. The amount of sleep you need depends on your age, sex, health and other elements. Sleep cycles change as we grow older.

Find out how much sleep you need, using the sleep wheel below:

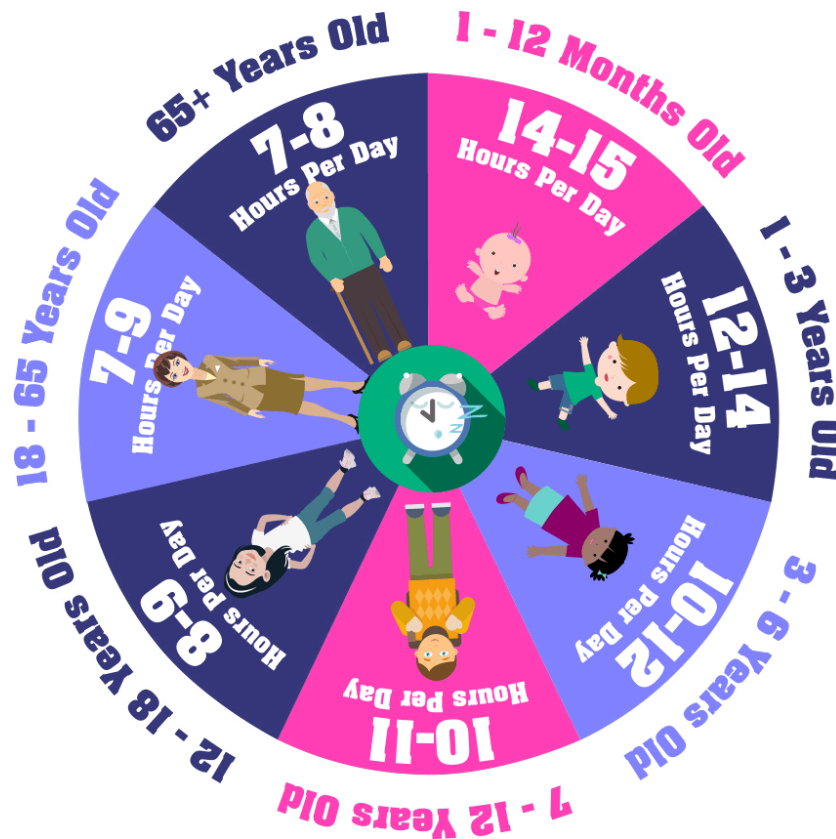


image from
thesleepcharity.org.uk

Top 10 Tips for a Healthy Sleep Cycle

1. Keep a regular sleep/wake schedule (have an alarm for bedtime as well as morning time). Having a 'going to bed routine' is also helpful for getting your body and mind ready to go to sleep. Keep track of what activities help you relax and try to incorporate these into your routine (e.g. reading/journaling/listening to music/turning off phone).
2. Get out into natural light as soon as is practical in the morning (preferably around the same time every day).
3. Engage in daytime exercise (but avoid at least 2 hours before bedtime as too close to bedtime it can prevent sleep).
4. Avoid stimulants that contain caffeine 8 hours before bedtime (Cola drinks, energy drinks, coffee, tea,).
5. Don't eat too close to bedtime as doing so can disrupt sleep (our body is concentrating on digesting food, instead of repairing and replenishing our energy stores).
6. Eat regular meals at regular times, instead of snacking throughout the day (this helps strengthen our internal body clock and keep us a healthy weight).
7. Reduce electronic use at least an hour before bedtime and avoid electronic use in the bedroom. Consider turning off the WiFi when young people go to bed.
8. Ensure the bedroom is cool, dark and quiet before bed (this helps us relax and drift off to sleep easily).
9. Ensure that bedroom clocks are not visible as this can be distracting and stressful.
10. Avoid alcohol and nicotine (if applicable) as this disrupts sleep patterns by acting as a stimulant and making our sleep fragile.

The above information has been taken, with thanks, from the UK sleep charity website. For further information, tips and sleep resources, please access the sleep charity website on:

<https://sleepcharity.org.uk/>