



Diabetes and competitive swimming

This fact sheet covers how you are able to swim competitively, if you are living with diabetes.

What is diabetes?

Having diabetes means blood glucose (also known as blood sugar) levels are too high. There are several types of diabetes. The most common types are type 1 diabetes and type 2 diabetes. Type 1 diabetes is an autoimmune condition which means the body's own immune system attacks and destroys the cells in the pancreas which make insulin. We don't know the exact cause of this immune attack, but researchers are working hard to find out. Insulin is a hormone that moves sugar from your blood into your cells where it is used for energy. In type 2 diabetes, your pancreas either doesn't make enough insulin, or the insulin it does make can't work properly (you have insulin resistance).

People with type 1 diabetes have to treat their condition by replacing insulin via injections or an insulin pump. A healthy diet and lifestyle also help to reduce the risk of long term complications associated with diabetes such as heart disease, nerve damage, sight loss and kidney disease. People with type 2 diabetes may treat their condition with a healthy diet and lifestyle, but many also require medication that can include tablets, injectable medications and insulin.

What you need to know about diabetes and competitive swimming

Diabetes shouldn't stop you from swimming or achieving your goals. Here are a few things to consider.

Testing blood sugar levels

- Many people with diabetes will be asked to test their blood sugar levels regularly, especially if they treat their condition with insulin or certain other medications that can cause hypos (low blood sugar levels).
- When you're swimming, testing blood sugar levels can help you understand the effect it has. Longer distance swimming is more likely to cause hypos (low blood sugars), whereas short distance, sprint style races could raise blood sugars. During competition you have the added effect of adrenaline and other stress hormones which also raise blood sugar. It can be difficult to predict the effect exercise will have on blood sugar, especially if you are participating in mixed activities. Testing as often as possible can help you to manage your levels.

Diabetes medications

- If you treat your diabetes with insulin or medications that can increase risk of hypos (like sulphonylureas), swimming can also cause blood sugar levels to be lower than normal. You should talk to your healthcare team before you start any new type of exercise, they can help you with concerns like hypos.
- Additionally insulin sensitivity can be increased for several hours (24-48 hours) after exercise, meaning people who treat their condition with insulin are at higher risk of hypos during this time. Insulin sensitivity is how well your body is using insulin to get your blood sugar levels down. People with high sensitivity need less insulin than those with low sensitivity.
- You may need to adjust the dose of your basal (long acting) or bolus (short acting) insulin when you swim. For example the closer to your swim your last meal or snack was, the more likely it is that you will need to reduce your bolus (or meal time) insulin dose. These changes may be needed for pens or insulin pumps. This is very individual and your diabetes healthcare team can advise you on an individual plan.

Diabetes kit

- For people who use an insulin pump, manufacturers will be able to advise on how water resistant your particular model is. It is usually okay to disconnect your pump for up to an hour, but your diabetes healthcare team should give you individual advice.
- Manufacturers will also have information on whether kit like continuous glucose monitors or flash glucose monitors are water resistant. Each model is different so it's best to check with the manufacturer of the monitor.

Diabetes complications

- If you have a complication of diabetes it's always best to speak to your diabetes healthcare team before starting a new form of exercise.
- Check your feet daily, continuing to do this after swimming can help to prevent any problems.
- If you have retinopathy, get advice about whether you are safe to dive. This doesn't mean you can't take part in swimming or other disciplines. Retinopathy is a type of eye disease that people with diabetes are more at risk of getting. It happens when blood vessels supplying the retina become damaged.

Hypo and hyperglycaemia

- The effect exercise has on your blood sugar levels is individual to each swimmer but it can cause your levels to be lower or higher than normal depending on the type of exercise and how intense it was.
- You may not be able to spot the symptoms of hypoglycaemia when you are swimming or taking part in other types of exercise. This is because exerting yourself and having a hypo can feel similar.
- Your diabetes healthcare team should talk to you about the blood sugar levels to aim for before and after exercise to ensure you exercise safely.

Tips for competitive swimming with diabetes

Do:

- inform Swim England and competition organisers that you have diabetes and the treatments you use and wear diabetes ID
- work with your diabetes healthcare team to come up with an individual plan for managing your diabetes medications around swimming
- check your blood sugar at least half an hour before swimming and take action depending on your level. Treat hypos as usual, but you may also need an additional snack before you swim if your level is between 4-7mmol/l
- carry hypo treatments with you if you use insulin or medications that can increase risk of hypos (like sulphonylureas) and keep these poolside
- test your blood glucose during the swim as it's helpful to see the effect swimming has on your blood sugar level. This information can help you and your diabetes healthcare team to work out the best plan for managing blood sugar in the future
- check for any cuts or grazes after you swim that you could have from the side of the pool and make sure they heal properly. Check your feet daily and do so when doing any form of exercise
- wear flip flops or similar footwear around the pool to avoid injuries and reduce the chance of infections.

Avoid:

- swimming if you have had a severe hypo in the last 24 hours. You should also discuss a plan with your diabetes healthcare team about what to do if blood sugar levels are high. If your blood sugar levels are 15mmol/l, you should test your blood or urine for ketones and limit activity. You may be advised not to do any exercise in this case.

Remember:

- increased insulin sensitivity can last for several hours after exercise. So you will need to continue to test your blood sugar after you swim and especially before bed.

What about medication in competition?

- Medication is an essential part of diabetes treatment, especially for people with type 1 diabetes. Your diabetes healthcare team should work with you to find a management plan that takes account of your sport.
- Insulin is a medication that falls under the prohibited list according to WADA and UKAD. If you are a swimmer who may be subject to doping control tests you can apply for a Therapeutic Use Exemption (TUE) to permit the use of insulin under the following criteria:
 - the athlete would experience significant health problems without taking the prohibited substance or method
 - the therapeutic use of the substance would not produce significant enhancement of performance, and
 - there is no reasonable therapeutic alternative to the use of the otherwise prohibited substance or method.

- Your diabetes healthcare team can help provide the information to support a TUE application should keep medical declaration forms up to date and submit to Swim England, particularly if any changes are made.
- Most other diabetes medications are permitted, but you should check the UK anti-doping rules and the Globaldro website.

Specific tips for competing in other disciplines with diabetes

Open water swimming:

- **Do:** think about the temperature of the water. Really cold water can make you more likely to have hypos and it might be harder to treat if you are out in open water.
- **Do:** wear appropriate footwear at all times before getting in the water. This will protect your feet from temperature and sharp objects.

If swimming abroad:

- **Do:** make sure to take a copy of your prescription and take extra medication and supplies than you would normally need, in case any get lost or stolen.
- **Do:** take a letter from their diabetes healthcare team may also be helpful.
- **Do:** test your blood sugar more often as changes in temperature can affect blood sugar levels.
- **Do:** ensure your insulin and diabetes kit are always stored at the appropriate temperature.

Additional advice

For more information, please visit the following websites.

Diabetes UK: diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/exercise/swimming-diabetes

Runsweet Diabetes and sport: runsweet.com/diabetes-and-sport/swimming/

Globaldro: globaldro.com/UK/search

UKAD Protection Sport: ukad.org.uk/

British Swimming Anti-Doping: britishswimming.org/performance/swimming/anti-doping/

Extod: Exercise for Type 1 Diabetes: extodorg.ipage.com/advice-for-patients.html