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WHAT IS DIABETES

Diabetes is a serious condition where your blood glucose (also known as blood sugar) level is too high. This could be because your body doesn't produce enough insulin, the insulin it produces isn't effective, or your body can't produce any insulin at all.

GLUCOSE & INSULIN

We all need glucose to create energy. We create this energy by our bodies breaking down the carbohydrates that we eat or drink and this creates glucose. The glucose is then released into our bloodstream and transported to the parts of our body that need it the most. For people who have diabetes, their body may not have the ability to use glucose effectively and so the glucose builds up in the bloodstream, causing spikes in blood sugar levels. We need a hormone called insulin to move the glucose from our blood into our cells so it can be used for energy.

TYPE 1 DIABETES

About 8% of people with diabetes in the UK have type 1 diabetes. It's a serious and lifelong condition. However, we are still unsure as to what exactly causes type 1 diabetes, but research is being conducted every day to find out what may trigger this autoimmune condition.

In type 1 diabetes the cells in the pancreas which usually make insulin are attacked by the immune system and destroyed. Your body still breaks down the carbohydrate from food and drink and turns it into glucose. But when the glucose enters your bloodstream, there's no insulin to allow it into your body's cells. More and more glucose then builds up in your bloodstream, leading to high blood sugar levels.

https://www.diabetes.org.uk/diabetes-the-basics/what-is-type-1-diabetes

TYPE 2 DIABETES

Around 90% of people with diabetes in the UK have type 2 diabetes. It is a serious condition and can be lifelong.

In type 2 diabetes the body either can't make enough insulin or the insulin it does make doesn't work properly. Much like type 1 diabetes, your body still breaks down the carbohydrates you eat and drink. Then, the pancreas responds to this by releasing insulin. However, because this insulin can't work properly, your blood sugar levels keep rising. This means more insulin is released.

For some people with type 2 diabetes this can eventually tire the pancreas out, meaning their body makes less and less insulin. This can lead to even higher blood sugar levels and mean you are at risk of hyperglycaemia.

https://www.diabetes.org.uk/diabetes-the-basics/what-is-type-2-diabetes

There are also other more rare forms of diabetes such as MODY (maturity onset diabetes of the young), more information on those can be found here <u>Other types of diabetes | Diabetes UK</u>

WHAT ARE THE SYMPTOMS OF DIABETES?



The symptoms of diabetes (high blood glucose) levels include:

- Going to the toilet a lot to pass urine
- Feeling extremely thirsty
- Unintentional weight loss
- Being very tired
- Blurred vision
- Recurrent genital itching or thrush
- Wounds and cuts taking longer to heal

Consistently high blood sugars can lead to a condition called diabetic ketoacidosis (DKA). This happens when there is a severe lack of insulin and the body can't use glucose for energy, so it starts to breakdown other body tissue as an alternative energy. Ketones are the by product and are poisonous chemicals which can build up and cause the body to become acidic.

https://www.diabetes.org.uk/guide-to-diabetes/complications/diabetic_ketoacidosis

HOW IS DIABETES TREATED?

Type 1 diabetes

People with type 1 diabetes will need to replace insulin via injections or an insulin pump. They will also need to test their blood sugar level using a finger prick blood glucose meter, continuous blood glucose monitor or flash blood glucose monitor.

Sometimes people with type 1 diabetes have blood sugar levels that are too high (hyper) or too low (hypo). This is because it isn't easy to balance the insulin that is needed with their intake of carbohydrates, as well as other factors that affect blood sugars like exercise, feeling unwell and stress. So, testing blood sugars is an important part of managing the condition.

https://www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/treating-your-diabetes/insulin_

https://www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/testing

Type 2 diabetes

There are lots of different treatment options for type 2 diabetes, so each person will have an individual management plan for their condition. Some people can manage their condition with lifestyle changes such as getting support to eat healthy food or do more activity, but many also need medications that can include tablets, insulin, or other injectable medications. Not everyone with type 2 diabetes will need to test their blood sugars, this depends on the medication they use. People with type 2 diabetes who use insulin or certain tablets, should be testing their blood sugars as they are at risk of low blood sugars (hypos).

WHAT EQUIPMENT MIGHT A PERSON WITH DIABETES USE?



WHAT EQUIPMENT MIGHT A PERSON WITH DIABETES USE? TESTING GLUCOSE LEVELS

Blood glucose monitor: a handheld device which comes with a lancet to prick your finger to draw a small amount of blood, a digital display and place to insert test strips.



Flash glucose monitors and Continuous glucose monitors: Flash glucose monitoring | Diabetes UK





INSULIN DELIVERY

Insulin pens: a pen type device that is used to inject insulin.



Insulin pumps: currently available for people with type 1 diabetes, a small electronic device attached to the body via a cannula which delivers insulin regularly throughout the day and night.



HYPOGLYCAEMIA (HYPOS)

Low blood sugars (hypos) are a side effect of insulin and some other medications that people with diabetes take. It is very common for people with type 1 diabetes to have hypos, they can also occur in some people with type 2 or other types of diabetes. A hypo is when blood sugars are 4mmol/l or less. Certain things make hypos more likely, these include:

- Missing or delaying a meal or snack
- Not having enough carbohydrate at the last meal
- Doing a lot of exercise without having extra carbohydrate or without reducing insulin dose
- Taking more insulin (or certain diabetes medication) than needed
- Drinking alcohol on an empty stomach.

THE SYMPTOMS OF A HYPO INCLUDE:

- Trembling
- Sweating
- Fast Pulse/Palpitations
- Anxiety
- Irritable
- Headaches
- Blurred Sight
- Going pale
- Tingling in lips
- Tiredness/lack of concentration

It can be difficult to tell the difference between a hypo and an athlete looking as though they've put their all into the game, so it is worthwhile being aware of the symptoms. A hypo must be treated immediately, otherwise it can become worse leading a person to be drowsy and confused. They can also become unconscious or have a fit. This is a severe hypo and they would need help to treat it.

A hypo is treated by eating or drinking 15-20g of fast acting carbohydrate, this might be glucose or dextrose tablets, sweets like jelly babies, a sugary drink, glucose gel. Which hypo treatment people choose is individual. If you can, having a supply of hypo treatments readily available will be helpful. If a player is having a hypo, they will need to treat this straight away, which might be during a training session or match. It is important that as a coach you are understanding in this situation and allow them space and time to treat and recover.

SEVERE HYPOS AND WHAT TO DO

If someone is having a severe hypo, when they may be drowsy and confused or become unconscious or have a fit as described above, you will need to take immediate action. **DO NOT** give anything by mouth as they won't be able to swallow.

Take action quickly:

- Put them into the recovery position (on their side, with their head tilted back and knees bent)
- If you have been trained, give a glucagon injection (you don't have to be trained, but someone like a friend may have been trained)
- Call an ambulance- especially if you don't have a glucagon injection or they haven't recovered in 10 mins after the injection

If someone has had a severe hypo they should avoid all exercise for at least 24 hours after.

Important numbers

Someone with diabetes might tell you what their blood sugar levels are, so it's worthwhile having an idea of what the number means. You are not expected to give advice, the person with diabetes will have made a plan with their healthcare team and will take the lead. Always check with the person living with diabetes, or their caregivers, if adjustments need to be made.

If it's less than 4mmol/l: Their level is too low (hypo) and they need some fast acting carbs, they shouldn't do any exercise until it's above 5mmol/l and they will need to eat something to stop them going low again.

4-7mmol/l: This is generally where people should aim to have their blood sugars before they have eaten any carbs. If they are going to do any exercise, they will probably need to have something to eat beforehand, which contains carbs, to make sure their blood sugars don't go too low.

7-13mmol/l: slightly above target, safe to exercise but may need to think about the type of exercise they're doing. Less likely to need any carbs before exercise.

If it's above 13mmol/l: blood sugars are above target, and they will need to take action to help bring them down before doing exercise as this could cause levels to get even higher. If the high blood sugars are unexplained, they should test their urine or blood for ketones. Check with the person with diabetes, or their caregivers, whether adjustments need to be made before the session and encourage regular testing to check the levels are lowering.

MANAGING DIABETES WHEN EXERCISING

Blood sugar levels can affect athletic performance. For an athlete, it can be hard to predict what might happen to blood sugars during different types of sport as they are often a mix of different movements that can be anaerobic or aerobic. Added to this, there are other factors at play that also affect blood sugars. It is important to work with players and understand their needs. You won't need to give any medical advice, as this will be guided by their diabetes healthcare team.

Managing blood sugars in type 1 diabetes

Exercise can affect blood sugar levels in different ways, depending on the type of exercise someone is doing.

Aerobic exercise like long distance running and jogging usually causes blood sugar levels to go down. This means people with type 1 diabetes can be at risk of hypos when completing long duration activities. Anaerobic exercise like sprinting, weightlifting and other powerful explosive movements are more likely to cause blood sugars to go up and can mean people with type 1 diabetes are at risk of their blood sugar levels becoming too high (hyper).

HYPERGLYCAEMIA

(high blood sugar levels)

Blood s	Anaerobic Short duration High intensity	 Sprinting with the ball Training with weights Speed cycling / tag warm-ups
ugar		- Stretching (should not affect blood sugar levels)
r level	Aerobic Longer duration Lower intensity	 Jogging Brisk walking during the game Dribbling with the ball

HYPOGLYCAEMIA (low blood sugar levels)

Several other things can affect what happens to blood sugar levels during exercise, such as how much carbohydrate was eaten before exercise, the pattern of blood sugar levels, hormones like adrenaline and how much insulin the person has taken. This means different activities will not always have the same effect on blood sugar levels.

There are different things a person with type 1 diabetes can do to help manage their blood sugars around exercise. You will not need to advise them on this, they should discuss their individual plan with their diabetes healthcare team.

Things they might do include:

- Adjust the amount of insulin they give before and after exercise
- Consume additional carbohydrates (depending on their blood sugar levels), either before or during exercise
- Test glucose levels as regularly as possible around sport or physical activity
- Alternate different types of exercise
- Carry their insulin and hypo treatments to make adjustments during sessions should they need to

It is very important that someone with type 1 diabetes tests their blood glucose level before exercise as this will help them to know what action to take. They may also need to test during the session and/or inject insulin, so be understanding of this as a coach.

Managing blood sugars in type 2 diabetes

Many people with type 2 diabetes will not need to test their blood sugar levels. If they take medication that can cause hypos (insulin or certain tablets) it is a good idea to test their blood sugars before exercise. They may also want to test during or after exercise and might need to have some carbohydrate or alter the type of exercise they do. This is not the case for everyone with type 2 diabetes, and many people don't need extra carbs to manage their blood sugars during exercise.

In some cases, they may also adjust the amount of the insulin they give but this will be discussed with their diabetes healthcare team.

COMPLICATIONS OF DIABETES

In people who have diabetes, high blood sugar, blood pressure and cholesterol over a long period of time can cause damage to the blood vessels and nerves in the body and lead to diabetes complications. These complications include sight loss, heart disease, stroke, foot problems and kidney problems, among others. Some complications might affect the type of exercise a person can do, they will be advised by their diabetes health care team about this.

More information on complications can be found here:

https://www.diabetes.org.uk/guide-to-diabetes/complications

HOW CAN YOU SUPPORT A PLAYER WITH TYPE 1 DIABETES? (Taken from personal experiences by the diabetes football community)

- Create an open dialogue about diabetes: Your players will be used to talking about diabetes as they are living with it every day. Help them feel comfortable in the environment they're in to discuss it openly and they will let you know if they need any support. This will also help better your understanding of what it's like to live day to day with diabetes and how to support your players best.
- Educate the team: Discussing diabetes openly with your team can help them better understand that diabetes is a serious topic. Your team will feel more comfortable with asking questions and knowing how to help their teammate should they need it when the time comes.
- **Don't single the player out:** It can be tough for any athlete to discuss diabetes openly, especially in a team sport, out of fear of drawing attention to themselves. You should

try to avoid giving your player special attention in front of the team. If you need to speak to them about their diabetes then do so in private. They may choose to speak openly about it, and have you support them by informing the team or they may choose to deal with it privately.

- End the stigma: By providing education to your team and creating a safe environment to discuss diabetes openly, you can break the stigma that players with diabetes cannot perform to their full potential. Players who have diabetes are able to perform just like anyone else; they, like anyone else, just need to prepare themselves for challenges they may face. Some of these preparations could include having their insulin and fast acting glucose available to make quick adjustments. Sometimes the player may feel they can't fully share what they're going through for fear of non-selection, so try to alleviate these worries if you can.
- **Creating safe environments:** Providing safe, hygienic places for your player to administer injections or make adjustments to their wearable technology will help their pre match and pre training routine (toilets are not considered a hygienic place for this scenario). Having fast acting glucose (hypo treatment) to hand in medical bags, changing rooms etc will also make your player feel more accepted and safe.
- Adapt: Your sessions can impact on the way your player's blood glucose levels respond. If you're going to adapt your sessions from time to time, inform the player as to whether they'll be lighter or more intense, as it can help with their preparation. Your player will work out their own routine for a game day.

FURTHER RESOURCES

Search 'exercise' at Diabetes UK's website (<u>www.diabetes.org.uk</u>)

https://www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/exercise

https://jdrf.org.uk/exercise-type-1-diabetes/

https://jdrf.org.uk/stories/experts-guide-exercising-type-1-diabetes/

ABOUT THIS GUIDE

The Diabetes Football Community (<u>https://thediabetesfootballcommunity.com</u>) discussed and decided on the key points that they felt would be most useful for coaches in helping people with diabetes play football. FAW then produced this guide.

Thanks to Diabetes UK for providing the content for this guidance document and to JDRF UK for coordinating its creation.

www.diabetes.org.uk

www.jdrf.org.uk



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