



## **Food, Exercise and Diabetes**

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Diabetes is the name given to a group of different conditions in which there is too much glucose (sugar) in the blood. Glucose is the main source of energy for our body and comes from the carbohydrate foods we eat. Carbohydrate foods include either starch or sugar and include bread, pasta, rice, cereals, fruits, starchy vegetables, milk based dairy foods and extras such as cakes, biscuits, lollies and chocolates. The body breaks carbohydrates down to glucose which then enters the blood stream. For glucose to enter the cells and be used for energy, a hormone called insulin must be available.

Diabetes occurs when the body either does not make insulin or when the insulin produced does not work effectively. This leads to increased blood glucose levels (BGLs) and diabetes.

### **Type 1 diabetes**

Type 1 diabetes accounts for 10-15% of all cases of diagnosed diabetes. It is an autoimmune disease, where the beta cells in the pancreas are destroyed and can no longer produce insulin to transport the glucose from the blood into the cells of the body for energy. This causes the BGLs to rise dramatically, which can cause serious illness. The treatment for type 1 diabetes is lifelong multiple daily injections of insulin or having a constant supply of insulin through an insulin pump. This is combined with blood glucose monitoring, following a healthy eating plan and physical activity.

### **Type 2 diabetes**

Type 2 diabetes accounts for 85 -90% of all cases of diagnosed diabetes. It occurs when the pancreas still produces insulin however this insulin does not work effectively enough (this is often called insulin resistance). This means that blood glucose levels increase. People who develop type 2 diabetes often do not seek medical advice immediately as the symptoms develop slowly and may not be obvious. Type 2 diabetes can result from a combination of genetic and environmental factors. The risk is greatly

increased by lifestyle factors such as high blood pressure, being overweight (in particular abdominal weight), insufficient physical activity and poor dietary choices. The treatment of type 2 diabetes involves healthy eating, physical activity and blood glucose monitoring. Oral medication or insulin may also be required.

### **Healthy eating and diabetes**

Healthy eating for people with diabetes is the same as what is recommended for the rest of the population. It is an important part of diabetes management in order to maintain a healthy weight and maintain optimal BGLs. The main areas of focus include consuming regular meals based on carbohydrates with a low glycaemic index (GI), focusing on foods low in salt and fat (in particular saturated fat) and including foods high in fibre. This meals including a good variety of fruit, vegetables, wholegrain breads and cereals, low fat dairy foods and lean meats as well as taking care to limit extra foods such as biscuits, cakes, pies, pasties and chocolates to occasional treats. Reducing portions size is essential for those who require weight loss.

Carbohydrate recommendations depend on a person's weight, age, diabetes medications and/or insulin regime, activity level and body composition goals. A person with type 1 diabetes needs to take care to understand the amount of carbohydrate they are consuming at each meal in order to match insulin dose and manage BGLs during exercise. Talk to an Accredited Practising Dietitian (APD) to determine your specific carbohydrate requirements and learn how to 'count carbohydrates.'

### **Exercise and diabetes**

There are many physical and psychological benefits of exercise for people with type 1 and type 2 diabetes. Long-term regular exercise may result in improvements in heart health by reducing blood pressure and cholesterol levels, improved glycaemic control by increasing insulin sensitivity and glucose uptake by the muscles, reductions in insulin and medication requirements, maintenance of a healthy weight and an improved sense of well-being.

People with type 1 diabetes and those with type 2 diabetes on certain oral medications (sulfonylureas) and insulin need to take precaution before, during and after exercise as there is a risk of hypoglycaemia (low BGLs) and/or hyperglycaemia (high BGLs) during and after exercise.

Effects of exercise on BGLs are individualised, therefore it is important for people with diabetes to learn their own response. This can be done by monitoring BGLs before, during and after exercise and working with their diabetes team to implement strategies to manage BGLs during planned activity. This may mean reducing the amount of insulin administered before exercise and/or increasing carbohydrate intake before and during exercise to manage hypoglycaemia. For people with type 1 diabetes, if BGLs are greater than 15mmol/L before exercise it is important to delay exercise and test for ketones (a result of inadequate insulin that can cause serious illness).

It is important to work with your diabetes team (Endocrinologist, GP, APD and Diabetes Educator) to help you manage your food intake and BGLs during exercise. A sports dietitian can provide further advice on optimising nutrition for training and enhancing performance during competition.



***About the author:*** *Kerryn has an interest in performance nutrition for a range of athletes, including those involved in team and individual sports. She is committed to providing evidence-based nutritional advice to both recreational and elite athletes of all levels in order to maximise performance. In addition, Kerryn has a special interest in athletes with diabetes with her knowledge supported by her work at Diabetes South Australia. Kerryn has personally been involved in a range of team and individual sports including waterpolo, netball, soccer and running.*