Intermittent fasting for type 2 diabetes

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Intermittent fasting is an eating pattern that involves periods of voluntary fasting. There are several methods, which involve various time frames for fasting and eating. There may be health benefits of intermittent fasting for people with type 2 diabetes.

Many people believe that intermittent fasting (IF) can aid weight loss and offer other health benefits.

This article looks at whether this eating pattern might be beneficial for people living with type 2 diabetes.

1. What is intermittent fasting, and how does it work?

IF is an eating regimen that cycles between periods of eating and periods of voluntary fasting or very low calorie intake. Researchers believe that IF leads to a metabolic switch from the use of glucose as the primary energy source to the use of fat.

IF can also have a positive effect on the circadian rhythms of both gut biology and the release of insulin and growth hormone. In these ways, it can improve energy metabolism and weight regulation.

There are several IF methods, which involve fasting for different periods:

Time-restricted feeding

This type of IF involves eating during only a certain number of hours each day. A popular plan is the 16:8 method, which requires a person to fast for 16 hours and eat during an 8-hour window.

Alternate-day fasting

People following this pattern alternate between a “fast day,” when they consume no or minimal calories (up to 500), and a feasting day, when they can eat as much as they want.

Periodic fasting

This type of fasting involves no or minimal calorie intake for 24-hour periods. Examples are the 5:2 diet and Eat Stop Eat.

With the 5:2 method, a person eats normally on 5 days of the week and then eats about 500 calories during each of the 2 fasting days, which should not be consecutive.

People adhering to the Eat Stop Eat regimen have to refrain from food and calorie-containing drinks for an entire 24-hour period once or twice

2. Why does blood sugar go up when fasting?

When a person is fasting, their blood glucose levels decrease. This triggers the pancreas to make and release more glucagon, a hormone that keeps glucose from dropping too low.

Glucagon does this by causing the liver to break down glycogen (stored glucose) and release the glucose back into the bloodstream. Glucagon also stops the liver from taking in and storing glucose, so more glucose stays in the blood.

There is a feedback system that lets the body know when no more glucagon is needed. When everything is working as it should, the body will produce insulin to move glucose out of the blood and into the cells to rebalance the increased glucose levels.

However, in someone who has diabetes, the pancreas does not make enough insulin or the body does not use insulin effectively. As a result, the increased levels of glucose stay in the bloodstream.

3. Does research suggest that IF improves markers of health in humans?

Most IF research has involved animals rather than human participants. The evidence to support health improvements in people is promising, but many of the clinical studies to date have been relatively short-term interventions over a period of months.

A 2018 review article stated that nearly all IF studies resulted in some degree of weight loss, ranging from 2.5% to 9.9%, and associated fat mass loss. However, there is little research to suggest that IF is superior to other diets and eating patterns in promoting weight loss.

The use of an IF diet may also have a beneficial effect on blood pressure. In one study, researchers observed 1,422 people for 1 year while they followed a fasting program. The participants experienced reductions in both systolic and diastolic blood pressure.

In another study, which involved adult males, researchers found that IF provided metabolic and cardiovascular benefits, such as a decrease in total cholesterol and low-density lipoprotein (LDL) cholesterol.

Scientists know that insulin resistance improves with calorie restriction. After a period of fasting, insulin sensitivity increases and insulin levels decrease. These changes result in improved blood sugar levels both during fasting and shortly after eating.

3. What are the suggested benefits of IF for people with type 2 diabetes?

IF can have various health benefits for people with diabetes, including:

- improving insulin sensitivity, thus leading to lower insulin requirements
- normalizing fasting blood glucose levels
- reducing hemoglobin A1c levels

Many people with type 2 diabetes also have metabolic syndrome, hypertension, or hyperlipidemia (high cholesterol). IF may improve these metabolic parameters.

4. What are the possible risks of IF for people with type 2 diabetes?

IF can produce various side effects, such as:

- dizziness
- nausea
- insomnia
- syncope (fainting)
- falls
- migraine headaches
- weakness that limits daily activities
- excessive hunger pangs

Having a chronic disease such as diabetes may increase a person's risk of experiencing many of these negative effects.

There is also a risk of hypoglycemia in people with type 2 diabetes, especially those who are taking insulin or medications such as sulfonylureas. This risk is lower with other diabetes medications, but it still exists.

Dehydration is a risk as well. Even though a person can consume calorie-free liquids on "fasting days," dehydration can occur unless they drink additional fluids.

Dehydration can then lead to hypotension. On fasting days, people may need to reduce or completely stop some medications. These include diuretics, antihypertensives, and diabetes medications that can lead to dehydration, such as SGLT-2 inhibitors.

However, it is essential never to stop taking a medication or change the dosage without speaking with a doctor first.

5. Can IF reverse type 2 diabetes?

loss, a reduction in waist circumference, and a decrease in hemoglobin A1c levels.

However, because relapse of diabetes is a possibility, it is more accurate to say that these individuals are in remission.

In another study, the Diabetes Remission Clinical Trial (DiRECT), the researchers randomized the participants into one of two groups: weight management and pharmacological therapy. They found that 46% of the participants in the weight management group experienced diabetes remission.

Still, the research to date is limited and further studies are necessary.

6. Are there any reasons why someone with type 2 diabetes should not try IF?

IF may worsen symptoms in people with hard-to-regulate blood sugar levels and in those with labile diabetes, which some may also refer to as brittle diabetes.

There is minimal research on the effects of IF in certain populations, such as people who are pregnant or lactating.

People at higher risk of developing side effects such as hypoglycemia, dehydration, and hypotension should also avoid IF. This category includes older adults, people with compromised immune systems, and those with a history of traumatic brain injury or dementia.

Deliberately engaging in fasting can also worsen the challenges that people with eating disorders face.

7. How can people with type 2 diabetes try IF safely?

A person with diabetes should consult their doctor before starting IF to

guidance on adjusting the dosages and timing of their medications to reduce the risk of hypoglycemia.

Individuals trying IF should check their blood sugars more frequently — ideally, every 2–4 hours — especially at first.

People with hypoglycemia should break their fast immediately and treat their low blood sugar with 15 grams of carbohydrates in the form of glucose tablets or gels. They should consult a doctor before restarting the fast.

It is also important to drink additional fluids during the fasting period to reduce the risk of dehydration and hypotension. A doctor may recommend stopping or reducing the dose of some diabetes medications, diuretics, and antihypertensives.

People should maintain a balanced diet on nonfasting days and avoid processed, fatty, and sugary foods. Doing so will mean that they do not reverse the positive effects of the fasting days.

8. Could any diet takeaways from IF be helpful for people with type 2 diabetes?

There are a few diet takeaways from the science of IF. Insulin sensitivity changes with a circadian rhythm, decreasing throughout the day and into the night. Therefore, meals that a person consumes at night have an association with higher glucose and insulin levels.

Limiting the hours of eating to a time earlier in the day — for example, selecting an 8-hour window between 7 a.m. and 3 p.m. or even 10 a.m. and 6 p.m. — is effective in boosting metabolism and aiding in weight loss.

People should also try to avoid eating and snacking shortly before going to bed. Not snacking between meals will facilitate the metabolic switch from the use of glucose for energy to the use of fat.