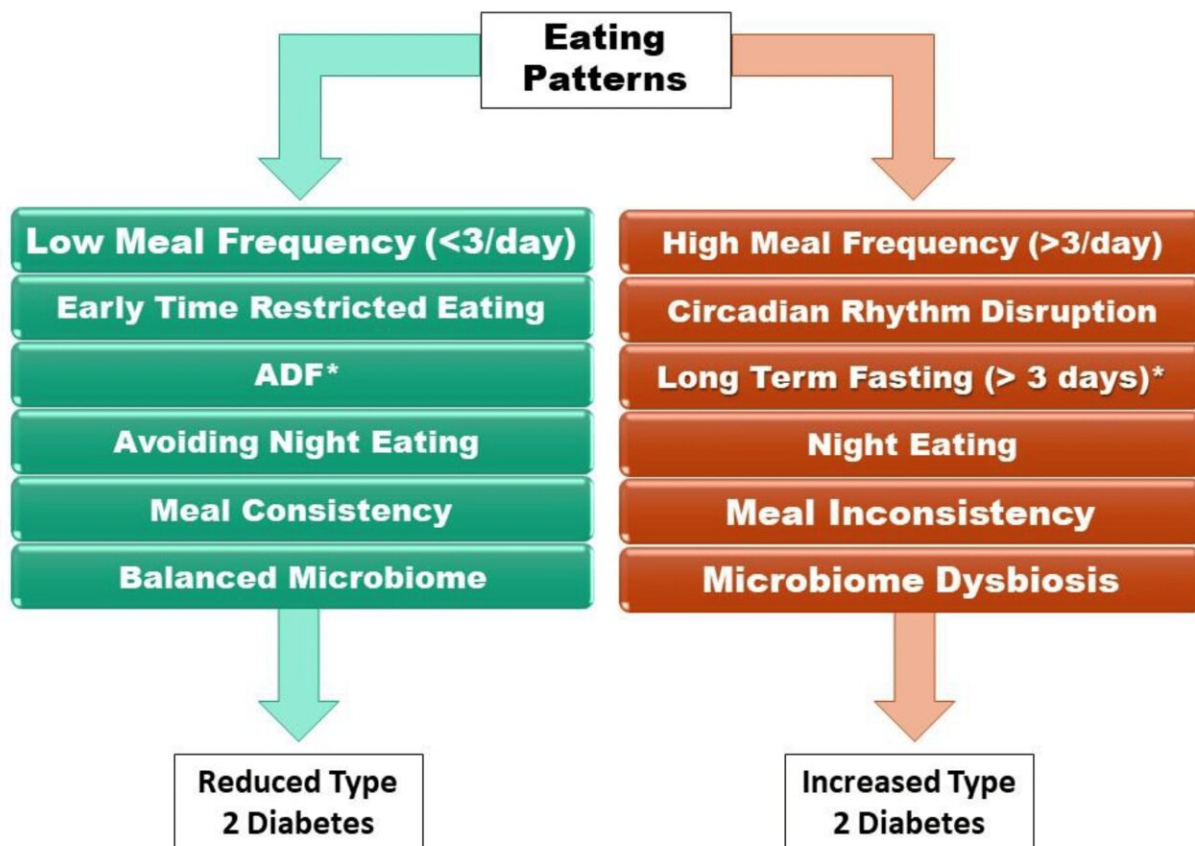


Fewer meals may help prevent type 2 diabetes and obesity, suggests research

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The effects of circadian eating pattern adjustments on T2D. Eating patterns that reduce T2D include lowering the meal frequency to below 3 meals a day and early time-restricted eating. Alternate-day fasting (ADF*) reduces T2D with a risk of eating disorders (bulimia and binge eating). Avoiding night eating, maintaining meal consistency and a balanced microbiome have been shown to reduce T2D. High meal frequency and disruption of the circadian rhythm increase T2D. Long-term fasting without a doctor’s supervision (*), eating at

night, meal inconsistency or consuming food that induces gut dysbiosis all increase T2D. Credit: *Nutrients* (2023). DOI: 10.3390/nu15071762

When intermittent fasting became all the rage among Hollywood celebrities, skeptics balked at the idea of skipping meals. But new research from the University of Georgia suggests the celebs might not have been that far off.

The review found that a specific type of restricted eating may reduce the chances of developing type 2 diabetes and improve your overall health. Known as time-restricted eating, this type of fasting means having regular but fewer meals, cutting out late-night snacks and not eating for 12 to 14 hours (often overnight).

After a comprehensive review of published, peer-reviewed studies, the researchers found a connection between number of meals and obesity and type 2 diabetes.

"What we've been taught for many decades is that we should eat three meals a day plus snacking in between," said Krzysztof Czaja, an associate professor of biomedical sciences in UGA's College of Veterinary Medicine. "Unfortunately, this appears to be one of the causes of obesity."

The three meals and snacks style of eating prevents [insulin levels](#) from going down during the day, and, with the amount of calories and sugars Americans consume on average, that can overload the body's insulin receptors. That leads to insulin resistance and often type 2 diabetes.

"That's why it's so hard to lose body fat," Czaja said. "We are not giving our bodies a chance to use it. Having fewer meals a day will allow these

fat deposits to be used as an energy source rather than the sugar we keep consuming."

Modern eating approach disrupts body's biological clock

The researchers found that time-restricted eating allows the body to relax and lower insulin and glucose levels, which in turn can improve insulin resistance, brain health and glycemic control. It can also reduce [calorie intake](#) by around 550 calories per day without the stress of calorie counting.

Previous studies have shown disruptions to sleep and meal schedules can change both the type and amount of bacteria and other microorganisms in the digestive tract. But fasting may positively alter the [gut microbiome](#), potentially staving off inflammation and a variety of metabolic disorders.

Additionally, the review suggests time-restricted eating can help regulate hormones responsible for appetite regulation and energy levels.

Regular meal schedules, eating breakfast and decreasing meals and snacks can help guard against obesity and type 2 diabetes, according to the publication. And not all breakfasts aren't created equal. Aim for healthy fats and protein, like eggs, and avoid the sugar-filled breakfast cereals and pastries.

Although time-restricted eating appeared to improve health, the researchers found that other types of restricted eating, such as fasting for days on end, provided few benefits.

Regular but fewer meals can stave off obesity and

metabolic disorders

More than four in 10 Americans are clinically obese, meaning their weight is higher than what is considered a healthy range for their height. Almost 10% are severely obese, according to the Centers for Disease Control and Prevention.

Obesity may lead to a variety of health conditions, including type 2 diabetes, heart disease and even some cancers.

"Obesity is an epidemic right now, especially in the United States," Czaja said. "It is a preventable disease. When we started looking at the research, we found that ancient humans didn't eat every day. That means our body evolved not needing food every day."

The modern approach of three meals plus snacks became popular decades ago, and it's a hard pattern to break.

"But our gut-brain signaling is not designed for this type of eating," Czaja said.

The researchers caution that eating is not a one size fits all situation. Smaller, less active people need fewer calories on average than taller athletes, for example. So for some, one meal of nutrient-rich food might be another while others may need more.

But one thing was very clear from the literature they reviewed: Fewer [meals](#) of high-quality food is a good guideline for individuals at risk of developing type 2 diabetes and obesity.

"Also definitely avoid late-night eating," Czaja said. "Our midnight snacks spike insulin, so instead of us going into a resting state when we sleep, our GI is working on digestion. That's why we wake up in the

morning tired—because we don't get enough resting sleep."

The work is published in the journal *Nutrients*.

More information: Carlee Harris et al, Can Circadian Eating Pattern Adjustments Reduce Risk or Prevent Development of T2D?, *Nutrients* (2023). [DOI: 10.3390/nu15071762](https://doi.org/10.3390/nu15071762)

Provided by University of Georgia

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