

Does it matter what time of day I eat? And can intermittent fasting improve my health? What the science says

August 3 2023, by Frederic Gachon and Meltem Weger



Credit: AI-generated image ([disclaimer](#))

Early hunter-gatherers faced long periods of fasting. Their [access to food](#) relied on successful hunting, fishing, and the availability of wild plants.

Over time, the development of modern agriculture and the transition to industrialized societies [changed our regular eating patterns](#), shifting our dinner time to later in the day to accommodate work schedules.

Today, with access to an abundance of food, we rarely experience prolonged periods of fasting, except for [weight loss](#) or religious practices. It's [now common](#) to have four or more meals a day, with the most calories consumed later in the day. Frequent snacking is also common, over a window of around 15 hours.

However, research increasingly shows our [health](#) is not only affected by what and how much we eat, but also *when* we eat. So what does this mean for meal scheduling? And can intermittent fasting help?

Our body clock controls more than our sleep

Our internal biological timekeeper, or [circadian clock](#), regulates many aspects of our physiology and behavior. It tells us to be awake and active during the day, and rest and sleep during the night. It can also tell us the best time to eat.

Our body is biologically prepared to have food during the day. Food digestion, nutrient uptake and [energy metabolism](#) is optimized to occur when we're supposed to be active and eating.

Working against this default stage, by regularly eating when we're supposed to sleep and fast, can compromise these processes and impact our health. [Erratic eating patterns](#), including late-night meals, have been linked to [weight gain](#) and a greater risk of metabolic disease.

Shift-workers, for example, and people who work evening, night or rotating shifts, have a higher risk of obesity, heart disease and diabetes.

But adopting an eating pattern that aligns with our circadian rhythm can reduce these risks.

So can intermittent fasting help?

Nutritional interventions are increasingly focused not only on "what" we eat but also "when." Intermittent fasting is one way to restrict the timing, rather than the content, of what we eat.

There are [several types](#) of intermittent fasting, one of which is time-restricted eating. This means eating all our calories in a consistent 8–12 hour, or even shorter, interval each day.

But is it backed by evidence?

Most of what we know today about intermittent fasting and time-restricted eating is from [mouse studies](#), which demonstrate remarkable weight loss and overall [health benefits](#) associated with these types of dietary interventions.

However, some aspects of mouse physiology can be different to humans. Mice need to eat more frequently than humans and even a short period of fasting has a more significant physiological impact on mice. One day of fasting in mice leads to a 10% [loss of body weight](#), whereas humans would need to fast for 14 days to achieve [similar results](#). This makes a direct translation from mice to humans more complicated.

While health benefits of [intermittent fasting](#) and [time-restricted eating](#) have also been observed in humans, the findings in respect of weight loss are less clear. Current data suggest only modest, if any, weight loss in human participants who undergo these diet regimens when compared to calorie-restricted diets.

Drawing [definitive conclusions](#) in humans may be more [difficult](#) because of the small sample sizes and [individual differences](#) in metabolism, variations in [study design](#) (such as the use of different protocols with varying times and duration of food restriction), and participants not complying with their instructions.

Health benefits could be due to eating fewer calories

Most studies describing the health benefits of [time restricted eating](#) or [intermittent fasting](#) also found these diets were accompanied by calorie restriction: reducing the time of food access implicitly leads people to eat less.

Studies that controlled [calorie intake](#) did not detect any more benefits of intermittent fasting than [calorie restriction](#) alone.

The weight loss and health benefits observed with intermittent [fasting](#) is likely attributed due to the resultant reduction in [calorie intake](#). [Similar findings](#) have been reported for time-restricted eating.

Benefit of following our body clock

Nevertheless, time-restricted eating offers additional health benefits in humans, such as improved glucose metabolism and blood pressure, even without differences in calorie intake, in particular when restricted to the [earlier part of the day](#) (that is, when having a six-hour eating window with dinner before 3pm).

Restricting food intake to the daytime for shift-workers [can alleviate](#) metabolic differences caused by shift-work, whereas this effect is not observed when food intake is restricted to [nighttime](#).

One idea is that consuming [food](#) early, in alignment with our circadian rhythm, helps to [synchronize our circadian clock](#). This restores the rhythm of our autonomous nervous system, which regulates essential functions such as breathing and heart rate, to keep our physiology "tuned," as it was shown [in mice](#).

While there's much still to learn from research in this field, the evidence suggests that to maintain a healthy [weight](#) and overall well-being, aim for regular, nutritious meals during the day, while avoiding late-night eating and frequent snacking.

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