



Intermittent Fasting; Can it provide good health?

By Dr. Delia Roberts

The COVID-19 pandemic has affected the health and economic security of everyone, regardless of profession, culture or citizenship. It's brought our focus towards health in way that has never been seen before in North America. As we move forward from this worldwide crisis, it's a good time to consider the choices we make to practice (or not) healthy behaviors. Intermittent fasting has gained huge media attention as a cure-all, but once again, it's hard to separate out fact from fad, reality from wishful thinking. Here is a look at the current research about the health benefits of fasting and the pros and cons of this approach to feeding.

There are three main ways of using fasting for weight management and health. The first type uses alternating days of fasting (ADF) though a small amount of food (less than 500 calories per day) is sometimes allowed on fast days, alternating with days where there are no restrictions at all. The second type of fasting allows five days of unrestricted feeding, followed by two days of fasting or very low calorie intake (5:2) The third regimen is known as time restricted feeding (TRF), where food intake is allowed only for an eight to ten hour window early in the day, and the individual fasts for 14-16 hours. Often food intake is stopped in the later afternoon or early evening. Right away we can see one of the benefits of intermittent fasting; you don't have to count calories or avoid your favorite foods, the rules are very simple. You can either eat whatever you want, or you can't eat at all.

Animal Research Shows Positive Outcomes

In a 2019 publication in the *New England Journal of Medicine*, the results of numerous animal studies are presented. Each and every one of them pointed towards fantastic health outcomes when rats and mice are fed strict diets at certain times of day. In these studies the total calories are often quite low and the intervention begins when the animals are quite young. It all sounds pretty convincing - you get to eat your cake, be healthy and live longer too! Unfortunately though, human studies are far less numerous, often conducted with small numbers of people, for short periods of time, with varying protocols, and not surprisingly, show very mixed outcomes. At the very least, it's hard to conduct diet-based studies on humans who engage in all kinds of different behaviors and who don't always stick with the diet that they are supposed to be eating.

Human Research Shows Mixed Results

Overall, regular periods of fasting seem to shift the body's metabolism away from a reliance on carbohydrates towards burning fats, at least during periods of fasting or very low calorie intake. In obese people, insulin sensitivity is improved, which helps to prevent type II diabetes. Cardiovascular disease risk



factors are also better, including lower blood pressures and in some cases, improved blood lipid profiles. The switching back and forth between burning fats during fasting and carbs during feeding seems to create a tighter control of these processes, increasing the production of antioxidants and lowering the inflammation that can lead to inflammation and atherosclerosis. Fasting also seems to help with basic protein and cellular maintenance; old cells are refreshed, damaged ones removed and their components recycled. This effect has been particularly apparent in the brain, where age and disease-induced damage is reduced and regeneration is improved.

Sounds pretty good, doesn't it? But when we look a little closer, we find that there are problems with reports that sing the praises of fasting. For one, they cite many small studies, and have conveniently glossed over the numerous studies that have not had positive outcomes. For example, if the tests are run on the day after fasting, the results are much better than if they are run after the day where the person binged on pizza and ice cream. And in many of the studies that show weight loss and health benefits, non-fasting days are not actually fast days. In these studies, participants followed a controlled calorie intake, Mediterranean style diet rich in unprocessed fruits and vegetables on non-fasting days.

The Benefits are the Same as Seen with Any Weight Loss

Metabolically, most overweight or obese people lose weight when on a fasting regimen, which is a good thing! Many of the poor health outcomes that go away with fasting are actually due to the constant intake of excess calories. The problem is, the amount of weight lost is not actually more than people lose when following standard calorie restriction diets – and like with any severe diet, they don't keep the weight off. As soon as normal feeding is resumed, the weight comes back on. At first intermittent fasting it sounds easy; getting to eat what ever you want most of the time, and all you have to do is be really 'good' for a short period of time. But it's really tough to stick with fasting, and it can take a month or two before the hunger, fatigue, confusion and irritability felt with fasting goes away. In fact, up to 40% of participants drop out of these studies, let alone continue on with the fasting protocol beyond the couple of months required by the study. And for forestry workers in high risk situations, any condition that leads to increased fatigue, loss of concentration, confusion, or poor attention can be downright dangerous!

The effects also seem to differ between people who are obese and people who are a healthy weight or even overweight, with the health benefits being tied to the weight loss. In non-obese women, fasting has been shown to cause an increase in insulin resistance, a worsening of blood lipid profiles and severe irritability! In studies with healthy-weight men and women, the stress hormone cortisol also increases. High cortisol has been shown to be linked to poor immune function, muscle mass losses and negative changes in the brain. In addition, in non-obese individuals, food intake following the fast was increased to compensate for any caloric deficit preventing significant weight loss.

Time Restricted Feeding May Provide a Healthy Alternative

Time Restricted Feeding (TRF) may provide a good alternative to the more difficult programs that require a full day of fasting. In TRF, food is only consumed during an 8-12 hour period, coinciding with daytime and the usual portion of the day where physical activity takes place. The approach is simple to implement and can be introduced in stages to allow for a period of adjustment. At first food can be eliminated following the evening meal, then gradually, the evening meal moved up to the late afternoon or as soon after work as possible. Weight loss is often achieved by the single step of avoiding late night meals or evening snacking. In addition, the few reports that have been published on TRF and weight loss in humans seem to suggest that muscle mass is preserved better than when the weight loss occurs by caloric restriction or fasting.

Metabolic benefits are also achieved with TRF, because many of the body's processes fluctuate with different daytime/nighttime levels (circadian rhythm). This is especially true for the various hormones and functions that result in growth and repair, digestion and in energy production and storage. For example, the insulin response to glucose is different during the daytime when feeding is expected than at night, when at least evolutionarily, people did not eat. This is one of the reasons that workers on night shift often gain weight and have poor health outcomes. Although most of the research is once again from animal studies, the indications are that by using TRF to limit nighttime food intake, many of the metabolic benefits of fasting are achieved. These benefits include improved insulin sensitivity, lower body fat, better cardiovascular health, reduction of neurodegenerative diseases, and less inflammation and better immune response.

PROS	CONS
Simple, you either get to eat what ever you want, or you don't eat at all	Starvation leads to bingeing, and hunger encourages foods that are high in calories and low in nutrients
Higher satisfaction ratings because you get to eat what ever you want	Hunger and restrictions on fast days/hours very hard to stick with (up to 40% drop out rate)
Effective weight loss (3-10% body mass loss)	No difference in the short term from calorie restricted diets, in the long term weight is regained when you stop fasting
Improved health within 2-4 weeks	Changes lost within 2-3 weeks once normal eating is resumed
Animal studies show large improvements in protection against oxidative damage, better tissue repair, improvements in cardiovascular health, diabetes, high blood pressure, cancer, neurodegenerative diseases	Rodents show changes much faster than humans, many of these studies start the treatment with young animals and are consistent as the animal ages. Human trials not as constant
Cultures that include fasting are healthier	Cultures that include fasting have far less obesity. Can't distinguish between body composition and fasting per se
Adaptation to hunger, irritability, fatigue and confusion within 1 -2 months	Hunger, irritability, fatigue and confusion during periods of fasting for up to 2 months
Overfeeding leads to obesity and both lead to poor health outcomes. For people who find it difficult to stick with a balanced diet rich in unprocessed fruits, vegetables and whole grains and low in sugar fasting can be a way to improve health	Doesn't teach normalization of eating.
Periods of energy deficit produce positive cellular adaptations that improve health and slow aging	Exercise is another way to create an energy deficit.

In addition, the different populations of bacteria in the gut also appear to change towards a healthier profile with TRF. Some of the good bacterial species can only flourish in the empty gut and TRF allows sufficient time for them to grow. Not only does this diverse population of bacteria keep the gut healthy, but it seems that they are necessary for gut production of small proteins that have positive signaling effects all over the body. These small molecules act like hormones, improving the health of the heart and lungs, the liver and even in the brain.

Taken overall, there really hasn't been enough good research to say for sure whether fasting lives up to the hype as a dietary strategy for good health. However, what we can say for sure is that running a slight deficit in caloric intake relative to output has many strong health benefits. Fasting is just one way to help balance that equation. What is important though, is that the extreme restrictive nature of fasting makes you more aware of what you eat. If used to improve the nutrient quality of your diet, that's a good thing. If used to become obsessed with food, or to binge on high calorie junk food (high fat and sugar), it's a bad thing. If your body fat levels are high, you have high blood pressure or diabetes, start by giving TRF a try. You might like the results. 🍌