

# June 2022 Newsletter



## Does Intermittent Fasting Help MS?

A nutritious, well-balanced diet combined with other healthy lifestyle choices is the foundation of good health not only for people with MS, but also for the general public. There is [evidence](#) that eating certain foods and nutrients, and avoiding others, may help a person's MS symptoms and disease activity. As we discussed in our [August 2019 newsletter](#), several dietary strategies are being promoted for people with MS, however there is currently insufficient evidence to recommend any of them. Intermittent fasting (IF) is one strategy that has shown promise in mouse models of MS. Researchers are taking a closer look at whether food deprivation may also benefit people living with the disease.



IF is an eating pattern during which an individual switches between periods of normal eating and extreme calorie cutting. It has been around for ages, either because food was scarce and humans had to hunt and gather, or due to religious practices. According to doctrine, Muslims fast from sunrise to sunset during Ramadan and Jewish people fast on Yom Kippur. [Hunger strikes](#) have also been used as a form of political protest. More recently, IF has become a popular way to lose weight. It has also been linked with other

improvements in health, such as [lowering blood pressure](#), [improving blood sugar](#) and [lipid levels](#), [repairing damaged cells](#) and [protecting brain health](#).

There are many different types of IF. Each involves not eating (or eating less) during specific hours of the day or specific days of the week.

### Types of IF:

5:2	Alternate days	Whole day	Time-restricted	Overnight
<ul style="list-style-type: none"><li>• Eat normally 5 days a week and 500 calories or less the other 2 days.</li></ul>	<ul style="list-style-type: none"><li>• Eat 500 calories or less every other day.</li></ul>	<ul style="list-style-type: none"><li>• Eat just one meal a day and fast for 24 hours between meals.</li></ul>	<ul style="list-style-type: none"><li>• Eat only during a set period of time each day and fast for the rest of the day.</li></ul>	<ul style="list-style-type: none"><li>• Don't eat for 12 hours overnight (fasting is mostly done while asleep).</li></ul>

How IF might help individuals living with MS is an emerging area of research. A number of studies have looked at the effect of Ramadan fasting in people with MS with mixed results. A [2009 study](#) followed 80 adults with relapsing remitting MS and mild disability for 6 months. Half of the participants fasted during Ramadan and the other half did not. Results showed fasting had no effect on MS disease course over the short term (there were no changes in EDSS as a result of fasting and no difference in the frequency of clinical relapses between the two groups). A [2016 study](#) looked at the effect of Ramadan fasting on 218 people with MS. Results showed there was no beneficial effect on fatigue, however there was a significant improvement in quality of life after fasting. In both studies, investigators state that more research is necessary to confirm their findings.



[Researchers](#) at the Washington University School of Medicine (WU) and the University of Connecticut Health Center (UConn) are also studying this eating pattern. Initially, the



team worked with a mouse model of MS, called [experimental autoimmune encephalomyelitis](#) (EAE). In this [study](#), some animals were on a fasting regimen, in which they were fed every other day for a period of four weeks. Another set of mice was allowed to eat freely over the same period. All of the mice then received a type of immunization meant to trigger symptoms consistent with MS. Following these steps, all of the rodents continued their respective diet regimens for an additional seven weeks. The researchers found that the mice that fasted every other day were less likely to develop symptoms of neurological damage such as difficulty walking, limb weakness and paralysis. Some of the fasting mice did develop MS-like symptoms, but they appeared later and were less severe than in the mice that ate their fill every day.

Further analysis showed that IF in EAE mice changed blood levels of molecules that relate to inflammation. They had lower levels of pro-inflammatory cells ([T helper 17 cells](#)), and higher levels of immune cells that help keep the immune response in check ([regulatory T cells](#)). Levels of the anti-inflammatory hormone [corticosterone](#) (cortisol) were nearly twice as high in the fasting mice. As discussed in our [September 2017 newsletter](#), the gut microbiome (the collection of microorganisms that live in the intestinal tract) doesn't just help digest food, it also helps regulate the immune system. A change in the type of microorganisms in the gut can alter whether the immune system has a pro- or anti-inflammatory response. Data showed that fasting mice appeared to have a more diverse gut microbiome and higher levels of [Lactobacillus](#), a probiotic bacteria whose abundance in the gut has been linked to [less severe](#) MS symptoms. When the researchers transferred gut bacteria collected from the fasting mice to the guts of the non-fasting ones, they noticed that the latter became more resilient to MS-like symptoms.



After these promising results in mice, investigators at WU and UConn conducted a pilot trial of 16 people with MS. Half of the participants followed an IF regimen, which limited their caloric intake every other day for a period of 2 weeks. The other half ate a normal (control) diet. Results showed similar changes in the fasting participants' gut microbiota and immune systems to the ones previously observed in mice. Fasting participants

experienced a mild improvement in their Extended Disability Status Scale (EDSS) scores. They also reported an improved quality of life compared to those eating their normal diet. As the trial involved relatively few people and only lasted a short time, it is difficult to draw conclusions about the long-term safety and effectiveness of this type of fasting for people with MS. In addition, it's difficult to determine if the effects seen were due to fasting or the type of food subjects were eating.



To address these issues, the study team conducted a larger clinical trial focusing on IF in 60 people with relapsing-remitting MS. Results are pending. Participants were followed over a 12-week period, half ate a [Western-style diet](#) without any alterations and the other half ate the same diet for 5 days and only consumed 500 calories of vegetables the other 2 days each week. All participants continued with their disease modifying therapy and any experiencing a relapse during the study received the necessary treatment. Each participant underwent a neurological assessment and provided blood and stool samples at the start, midpoint and end of the study. These samples are being analyzed to determine if fasting changed the makeup of their gut microbiomes. The researchers are hopeful this study will confirm that IF and the resulting changes to the microbiome are effective at improving MS symptoms in conjunction with other MS treatments. While the prospects for this research are promising, it's important to note that fasting studies have limitations and participant compliance is often an issue. These trials must be tightly controlled and conducted over a sufficient period of time to ensure any effects seen are due to the diet in question.

Sticking to an IF regimen can be a challenge. To stay on track and reap the most benefit, it's important to stay hydrated by drinking lots of water or calorie-free drinks. Eating fruits with high water content, such as grapes or melon, can also help in this regard. Seasoning meals generously may help reduce feelings of hunger. Plan plenty of distractions and avoid strenuous activities on fasting days. Just like with any eating regimen, diet quality while fasting is key. Make every calorie count during the eating window by choosing nutrient-dense foods that are high in fiber, protein and healthy fats (for example, beans, lentils, eggs,



nuts or avocado). This will help to keep blood sugar levels steady and prevent nutritional deficiencies.



IF is considered safe, but it's not right for everyone. It can have unpleasant side effects like hunger, headaches, constipation, bad breath, and fatigue. The combination of low blood sugar levels from fasting and the stress of adjusting to a new routine can also affect one's mood and mental health. Fasting should be done with caution in children and adolescents; athletes; people who are pregnant, trying to become pregnant or breastfeeding; diabetics; or those with a history of eating disorders. Before starting a fast or making any other drastic changes to their diet, people with MS should consult with their healthcare team to ensure that they know how to do so safely. They should also discuss fasting with their pharmacist, as some [medications](#) may need to be taken with food to prevent gastric distress or other problems.