

eTRF improves blood sugar control and blood pressure, pilot study says

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A new pilot study conducted by UAB Department of Nutrition Sciences Assistant Professor Courtney Peterson, Ph.D., shows that eating early in the daytime and fasting for the rest of the day improves blood sugar

control, blood pressure and oxidative stress, even when people don't change what they eat.

"We know intermittent [fasting](#) improves metabolism and health," Peterson said. "However, we didn't know whether these effects are simply because people ate less and lost weight."

Peterson and her colleagues decided to conduct the first highly controlled study to determine whether the benefits of intermittent fasting are due solely to eating less. The study was also the first to test a form of intermittent fasting called early time-restricted feeding (eTRF) in humans. eTRF involves combining time-restricted feeding—a form of intermittent fasting wherein people eat in a 10-hour or shorter period each day—with eating early in the day to be in alignment with the body's circadian rhythms in metabolism; it is tantamount to eating dinner in the mid-afternoon and then fasting for the rest of the day.

In the study, eight men with prediabetes tried following eTRF and eating at typical American meal times for five weeks each. On the eTRF schedule, the men each started breakfast between 6:30-8:30 each morning, finished eating six hours later, and then fasted for the rest of the day—about 18 hours. Everyone finished dinner no later than 3 p.m. By contrast, on the typical American schedule, they ate their meals spread across a 12-hour period. The men ate the exact same foods on each schedule, and the researchers carefully monitored the men to make sure they ate at the correct times and ate only the food that the researchers gave them.

Peterson and colleagues found that eTRF improved insulin sensitivity, which reflects how quickly cells can take up blood sugar, and it also improved their pancreases' ability to respond to rising [blood sugar levels](#). The researchers also found that eTRF dramatically lowered the men's [blood pressure](#), as well as their [oxidative stress](#) levels and their appetite

levels in the evening.

Peterson and colleagues' research is important because it shows for the first time in humans that the benefits of intermittent fasting are not due solely to eating less; practicing intermittent fasting has intrinsic benefits regardless of what you eat. Also, it shows that eating early in the day may be a particularly beneficial form of intermittent fasting. Peterson hopes the research will also raise awareness of the role of the body's internal biological clock—called the circadian system—in health.

"Our data also indicate that our feeding regimen has to be synchronized with the circadian rhythm and our biological clock," said Eric Ravussin, Ph.D., director of the Nutrition Obesity Research Center at the Pennington Biomedical Research Center.

Ravussin served as a collaborator with Peterson on the study.

"If you eat late at night, it's bad for your metabolism," Peterson said.

"Our bodies are optimized to do certain things at certain times of the day, and eating in sync with our [circadian rhythms](#) seem to improve our health in multiple ways. For instance, our body's ability to keep our [blood sugar](#) under control is better in the morning than it is in the afternoon and evening, so it makes sense to eat most of our food in the morning and early afternoon."

Peterson notes that her research sheds light on why intermittent fasting approaches that limit eating to the late afternoon and evening may have failed to find any benefits.

These findings could lead to better ways to help prevent Type 2 diabetes and hypertension. In light of these promising results, Peterson says more research is needed on intermittent fasting and meal timing to find out how they affect health and to figure out what types of approaches are

achievable for most people.

More information: Elizabeth F. Sutton et al. Early Time-Restricted Feeding Improves Insulin Sensitivity, Blood Pressure, and Oxidative Stress Even without Weight Loss in Men with Prediabetes, *Cell Metabolism* (2018). [DOI: 10.1016/j.cmet.2018.04.010](https://doi.org/10.1016/j.cmet.2018.04.010)

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