

# Low-cal vs. fasting diets: How does each affect the microbiome?

August 22 2023, by Alan Mozes

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When it comes to the array of different microorganisms found in the

human gut, more is better: A more diverse microbiome is a healthier microbiome.

Now, initial results of a small, [ongoing study](#) suggests that weight loss through either intermittent fasting or a calorie-restricted diet can improve that diversity.

After tracking calorie-control dieters and intermittent fasters for three months, both had significantly improved [microbiome](#) diversity, said study author [Maggie Stanislowski](#), an assistant professor of biomedical informatics at the University of Colorado.

"The increase wasn't greater in one group or the other," she said.

Each individual has a unique population of microorganisms including bacteria, fungi and viruses, in his or her gut.

"These microorganisms are important to our health because they help to digest our food," Stanislowski said.

In fact, "many foods that you eat you cannot digest without the help of those microorganisms," she stressed.

Such organisms also help turn food into critical substances such as metabolites, which play important roles in many processes, from controlling inflammation to ensuring "how full you feel after a meal," Stanislowski said.

And the greater the variety of microorganisms colonizing the gut, the more effectively such functions are carried out.

To see what impact different dietary approaches might have on the microbiome, researchers studied 47 healthy adults ranging in age from

18 to 55 who were either overweight or obese. Three-quarters were women.

Participants were randomly assigned to one of two [weight-loss](#) strategies: daily calorie restriction or intermittent fasting.

One group was asked to reduced daily caloric intake to roughly 30% of the amount they would normally eat to maintain their current weight.

The others were instructed to fast three non-consecutive days per week, consuming no more than 25% of their normal dietary intake. On non-fasting days, they could eat anything they wanted.

Both groups were offered "behavioral support" designed to improve diet quality and encourage increased physical activity.

The study—which will run for a full year—is ongoing.

But researchers decided to calculate the early impact of both diets, based on an analysis of microbiome composition just three months out.

The takeaway: All measures of microbiome diversity increased in both groups, and by equal measure.

"In terms of the microbiome, both methods of caloric restriction have beneficial effects," Stanislawski said.

When it comes to microbiome health, she added, that suggests either regimen is probably OK.

"If someone feels like one [dietary] method or the other is a better fit for their lifestyle, either is probably a good option," Stanislawski said.

[Connie Diekman](#) is a registered dietitian and food and nutrition consultant in St. Louis and a former president of the Academy of Nutrition and Dietetics.

After reviewing the findings, she cautioned that the "short-term study" can only point to a link between [diet](#) and microbiome diversity. It does not prove cause and effect, said Diekman, who was not involved with the research.

She said much of the beneficial impact both diets had on biome [diversity](#) appeared to stem from reduced fat intake.

"We have much still to learn about the microbiome and how to maintain its health," Diekman said. "But in the meantime, adhering to the [[federal government](#)'s] 'Dietary Guidelines for Americans'—which do focus on moderate, more healthful fats—may be a long-term benefit to our gut."

The findings were published Aug. 16 in the journal [Nutrients](#).

**More information:** There's more about the microbiome at [Harvard School of Public Health](#).

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