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YOUR HEALTH

How Many Bites Do You Take a Day? Try for 100

Researchers are developing tools that count how much or how fast we eat **BY SUMATHI REDDY**

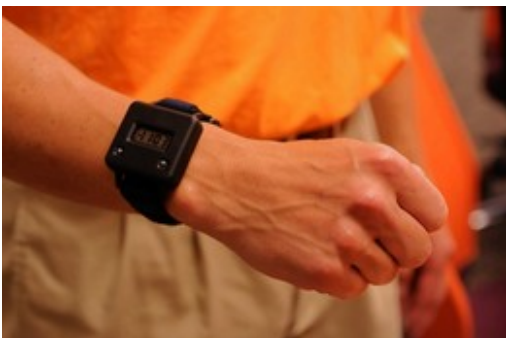


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Researchers find that the optimal number of bites a day for weight loss and health is 100 bites a day, and new products will soon help people chew more. WSJ's Sumathi Reddy and Clemson University psychology professor Eric Muth join Lunch Break with Sara Murray. Photo: Getty

In the never-ending pursuit of weight loss, a number of researchers are developing tools that count how much or how fast we eat.

The Bite Monitor, worn on the wrist like a watch, tallies the number of bites you take. The going assumption is that 100 bites a day is ideal for men and women to lose weight, according to researchers at South Carolina's Clemson University who developed the device. The concept will soon be tested in a study funded by the National Institutes of Health. A commercial product could be ready in about a year and is expected to cost about \$195.



Mando Group AB, a Stockholm health-care company, has developed a "talking" plate that measures how fast you eat and assesses your satiety, or fullness. It is expected to be on the market for about \$250 this fall.

Already for sale is the [HAPifork, which vibrates and flashes a red signal](#) if a person's bites are spaced apart by less than 10 seconds. The fork, launched last year by Hapilabs Ltd. of Hong Kong, is sold online and in some retail outlets for \$99.

The Bite Monitor counts bites you take by measuring wrist motion. Its designers say 100 bites a day adds up to 1,700 calories for men and 1,100 calories for women. *Clemson University*

"If you're eating too fast, you're probably not chewing and enjoying your food very well and you're probably going to be more likely" to eat too much, said Michael Jensen, an endocrinologist and obesity expert at the Mayo Clinic in

Rochester, Minn.

Encouraging people to eat more slowly, take smaller bites and chew each bite more is an important component of weight control and management, experts say. They also believe slowing down while eating benefits digestion, lessens problems like acid reflux and allows for more nutrient absorption.

"There's very strong evidence pointing to the importance of chewing," said Kathleen Melanson, director of the University of Rhode Island's Energy Balance Lab, which researches satiety and other eating issues. "The nerves that feed into the muscles in the jaw connect to satiety areas in the brain," she said.

In a study by Chinese researchers published in the *American Journal of Clinical Nutrition* in 2011, people who chewed their food 40 times a mouthful—an unusually high number—rather than 15 times ate fewer calories and had lower levels of the hormone ghrelin, which stimulates appetite, and higher levels of a hormone that reduces appetite.



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Experts say there isn't a magic number for [how many times people should chew their food](#). Common recommendations range from roughly 10 to 20 chews per mouthful to help lose weight and improve digestion.

Dr. Melanson's research also suggests part of the reason why solid foods seem to fill us up more. "The higher amount of chewing that's required with more solid foods might contribute to the satiety effect," she said.

Mando Group's talking-plate system consists of a plate, a slender scale and a small computerized screen. You place your plate on the scale and the computer tracks how long it takes to eat the food. If you're eating too fast, a voice reminds you to eat slower. The device also asks at regular intervals how satisfied or full you are to judge satiety. The company's research has found the average eating rate is 300 to 350 grams, or about 10 to 12 ounces, in 12 to 15 minutes. Users who exceed that by about 20 grams a minute are asked to slow down.

"We have found that the eating speed is much, much more important than what you actually put on the plate," said Cecilia Bergh, chief executive and co-founder of Mando Group.

A subsidiary of the company runs weight-loss clinics, including one in New York City, that use the diet-monitoring system in their treatment programs. A new version of the talking plate, expected to be on the market this fall for about \$250, will wirelessly connect the scale to a smartphone app.

A randomized controlled study by Dr. Bergh and others found that among 106 obese children, those who used the talking-plate system lost about three times as much weight as others who received only advice on diet and exercise. The study, published in the British Medical Journal in 2010, was funded by the BUPA Foundation, an international health-care insurer and provider.

The Bite Monitor takes a simpler approach to monitoring diet—counting only how many bites a person takes. To arrive at a supposed optimum of 100 bites a day, the Clemson University researchers tracked the number of bites of 77 people over two weeks, according to a study published in March in the Journal of the Academy of Nutrition and Dietetics.

The researchers calculated the average number of calories per bite was 17 for men and 11 for women. If people take 100 bites a day, it makes the daily caloric target roughly 1,700 calories for men and 1,100 calories for women. These targets represent a low-calorie diet according to National Institutes of Health standards. Consumption of calories per bite was the same regardless of whether participants were overweight or not.

"It's a little bit like a pedometer for your mouth," said Eric Muth, a psychology professor at Clemson who created the device with Adam Hoover, a computer-engineering professor. The Bite Monitor, which looks like an ugly watch, measures subtle wrist motions to detect bites with what the researchers say is 90% accuracy.

A pilot study at Clemson University and presented at the Obesity Society annual meeting last year seemed to confirm that counting bites helped people lose more weight than others who weren't aware of how many bites they took. Although the difference in weight loss between the two groups wasn't that great, Dr. Muth said the results warranted further research.

Dr. Muth said the research team is now designing a study with National Institutes of Health funding to test the effectiveness of the 100-bite diet. One early finding: Getting people to limit themselves to 100 bites a day doesn't seem to work if they start counting from zero. The researchers instead plan to ask study participants to count down from 100.

"One-hundred bites is really an average starting point," said Dr. Muth. "It's not going to work for everybody."

WSJ Radio

Sumathi Reddy discusses a "Fitbit for the mouth" with WSJ This Morning's Gordon Deal.

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Dr. Jensen, of the Mayo Clinic, questioned the usefulness of counting bites. A bite of pizza is very different from a bite of salad, he noted. Bites also come in different sizes, and restricting people to 100 bites a day might just encourage them to take bigger mouthfuls, he said.

Dr. Muth said counting bites is a technique that is easy to use. "Our premise with the bite-count diet is we're trying to get you to push the plate away a little bit," he said. "You can do a lot with bites. It's very simple and people understand it."

Still, a more sophisticated version of the Bite Monitor is in the works that would also calculate eating rates by monitoring intervals between bites. Dr. Muth said the research team, working with Dr. Melanson of University of Rhode Island, hopes to launch the new device in about a year. It will be marketed by Bite Technologies, a company co-founded by Drs. Muth and Hoover.

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