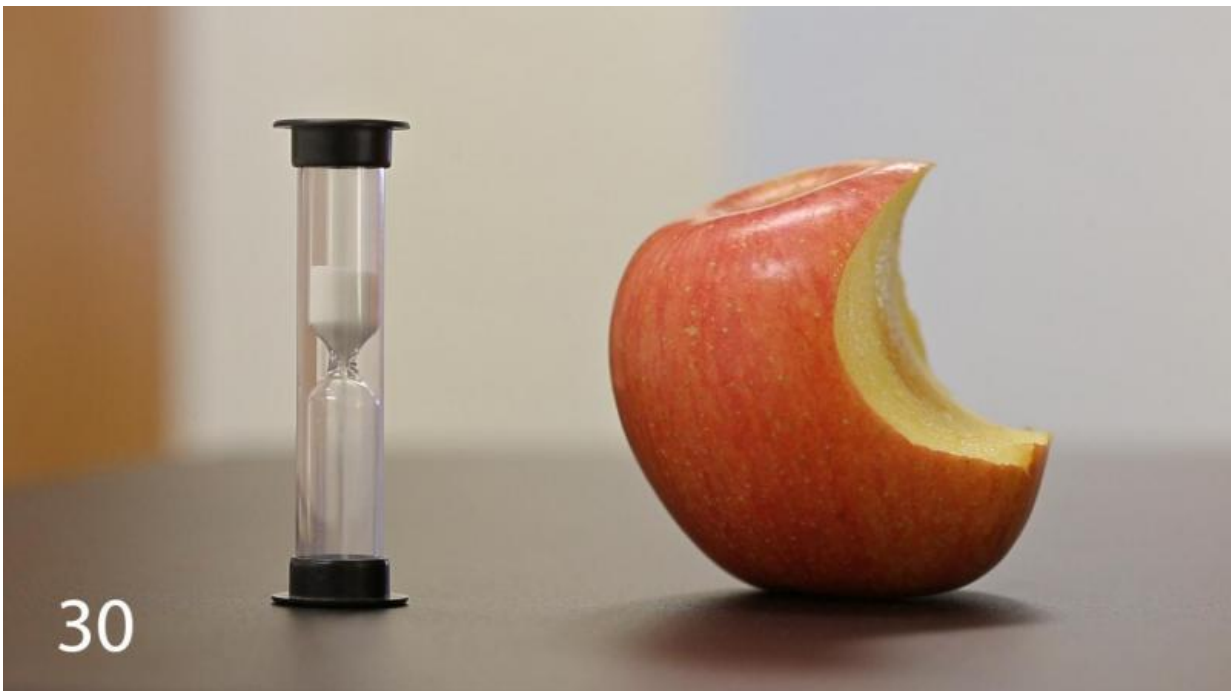


Chewing slowly helps prevent excessive weight gain in children

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An apple with timer. Credit: Jacobs School of Engineering/UC San Diego

Waiting 30 seconds in between bites of food allows children to realize they're no longer hungry before they overeat—preventing excessive weight gain. That's the conclusion of a study published in the Dec. 15 issue of the journal *Pediatric Obesity* by an international team of researchers, including bioengineers at the University of California, San Diego.

"To lose weight, you need to stop eating. But it's not that simple for most people," said study co-author Marcos Intaglietta, from the Department of Bioengineering at UC San Diego. "So we decided to investigate how effective eating slowly would be."

Bioengineers worked in collaboration with physicians from the National University of Mexico.

"Our method focuses on preventing weight gain," said Dr. Ruy Perez-Tamayo, from the Laboratory of Research in Experimental Medicine in the School of Medicine at the National University of Mexico. "It is simple, inexpensive and easy to follow." It also doesn't require taking any medications.

The study's goal was to minimize the amount of food that children ate before their stomachs finally told their brains that they're no longer hungry—the so-called "satiety reflex." That signal usually takes about 15 minutes to kick in. But in modern society, whole meals can be consumed in much less time, the researchers said.

The study is the first clinically controlled trial to test how effective eating slowly is for detecting that feeling of satiety and losing weight, researchers said. The study monitored the eating habits of 54 children ages 6 to 17 in the city of Durango, Mexico for a year. The students were compared to a control group with similar demographics.

The students were divided into two groups: those who ate slowly as instructed by researchers, called the compliant group, and those who didn't, called the non-compliant group. These two groups were compared to a control group.

The results were striking. The weight of the students in the compliant group decreased anywhere from 2 to 5.7 percent after six months and

3.4 to 4.8 percent after one year. By contrast, the weight of the students in the non-compliant group increased by 4.4 to 5.8 percent after six months and 8.3 to 12.6 percent after a year. The weight of the [control group](#) increased by 6.5 to 8.2 percent after one year.

The slow eating approach has the advantage of being sustainable over the long term, unlike most diets, said Geert Schmid-Schonbein, a study co-author and bioengineering professor at the Jacobs School of Engineering at UC San Diego, because it doesn't require you to change what you eat on a daily basis. It doesn't deprive you of your favorite foods and it can be applied in any cultural and ethnic context.

"You can adopt this slow eating approach for yourself and keep it up for the rest of your life," Schmid-Schonbein said. "You can teach this approach to your children and they can teach it to their children in turn."

To avoid overeating, students were instructed to chew each bite for 30 seconds before taking the next bite. This gave them time to realize that they were no longer hungry and stop eating. To make sure they waited the right amount of time, they all received small hourglasses that emptied in 30 seconds. Researchers instructed them to take a bite, flip the hourglass and not take another bite until the hourglass ran empty.

Researchers also instructed the students to drink a glass of water before each meal and avoid snacks in between meals. The approach was dubbed "Good Manners for a Healthy Future."

"The hourglass made it more like a game," said Pedro Cabrales, a bioengineering professor at the University of California, San Diego and a study coauthor. "We also noticed that the children kept each other accountable. If some forgot the hourglasses, the others would remind them."

The results were so promising that the Mexican states of Michoacan, Yucatán and Veracruz have invited researchers to bring the study's methods into their schools.

Researchers would like to conduct further studies with a larger sample size both in Mexico and in Southern California, targeting the region's large Hispanic population. They also caution that this approach is untested in adults.

Provided by University of California - San Diego

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