

Yo-yo dieting and food insecurity may raise heart disease risk

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Could fluctuations in body weight resulting from drastically cutting and increasing calories lead to physiological changes that raise the risk of heart disease or diabetes later in life?

A new study conducted in rats and presented at the American Physiological Society annual meeting during the Experimental Biology (EB) 2022 meeting, held in Philadelphia April 2–5, offers potential insights into the long-term impacts of weight-loss diets, as well as involuntary reductions in [food intake](#) caused by [food insecurity](#).

Most previous studies in humans and animals have focused on the short-term impacts of weight loss, but researchers say less is known about how cycles of weight loss and gain may affect long-term health.

For the study, researchers divided 16 rats into two groups. One group received a normal amount of food throughout the study, while the other group experienced three cycles of a restricted diet (60% of their normal daily food intake) followed by three weeks of a normal diet. At the end of the study, researchers used ultrasound to assess the rats' cardiac and renal functioning and blood tests to assess [insulin sensitivity](#), a measure of how the body processes sugar.

"We found that animals going through several cycles of weight loss and [body weight](#) recovery had reduced heart and kidney function at the end. They also had more insulin resistance, which can be a cause for diabetes," said Aline M. A. de Souza, Ph.D., a postdoctoral fellow at Georgetown University in Washington, DC, first author of the study. "Even though the animals look to be healthy after 'recovery' from the diet, their heart and metabolism are not healthy."

The findings also bring up questions about [public health](#) in light of the COVID-19 pandemic, such as whether people who had trouble accessing food as a result of pandemic lockdowns and economic impacts face increased incidence of cardiovascular problems in the years ahead.

"Our data supports the need for additional research in people to find out if individuals who do cycles of very restrictive diets to lose weight are at

higher risk of developing heart problems later in life," said de Souza. "We still need to do more studies in this field but the findings suggest the more restrictive the diet is, the worse the health outcomes may be. Weight loss diets need careful consideration of long-term health, especially if rapid weight loss is being contemplated as an option."

While more research is needed to determine the biological mechanisms behind the findings and determine whether the patterns observed in rats translate to people, researchers speculate that changes in [gene expression](#) in response to [caloric restriction](#) could alter biological pathways that regulate blood pressure and insulin metabolism.

More information: Conference abstract:

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Provided by Experimental Biology

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