

Fitness and staving off weight gain may be more important than weight loss to prevent kidney disease in obese adults

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As obesity is a contributing factor to chronic kidney disease, weight loss can help mitigate a patient's risk. But new research suggests that fitness

and preventing weight gain could actually play a more important role in reducing risk than weight loss. The findings were published today in the journal *Obesity* by researchers at Drexel University's College of Medicine and Dornsife School of Public Health.

The researchers followed 1,208 overweight and [obese adults](#) (BMI equal to or over 25 kg/m²) from six cities nationwide who were participants in the NIH-sponsored Multi-Ethnic Study of Atherosclerosis (MESA). The participants were recruited from July 2000 to August 2002 and followed over a median of 9 years, during follow-up exams at 18 months, 3 years, 5 years, and 10 years. In contrast with most previous research on [physical activity](#) and chronic kidney disease risk, adults in this study did not have diabetes, [heart disease](#), or reduced kidney function at baseline.

The Drexel team found that [weight gain](#) was associated with a higher risk of chronic kidney disease; specifically each 5 kg of weight gain from baseline was associated with a 1.34 times higher rate of developing chronic kidney disease. This increase was measured by blood tests of estimated glomerular filtration rate, or eGFR, using a formula that factors in both cystatin C—a protein produced by cells—and serum creatinine, which kidneys filter out of blood through production of urine. High levels of cystatin C and serum creatinine signal poor kidney function.

The group also looked at how [physical fitness](#), as indicated by walking pace, was linked to kidney function. They found that a slow walking pace (under 2 miles per hour)—as self-reported in surveys at each visit—was associated with more rapid [kidney function](#) decline and individuals with a slower pace are at higher risk for developing chronic kidney disease than faster-walking patients. Their findings were similar whether or not patients had high blood pressure at baseline.

"We found that for adults with obesity, low physical fitness, assessed by

usual walking pace, and weight gain increase risks of developing kidney disease, but we did not see an association between [weight loss](#) and lower CKD risk," said Harhay. "There are still likely to be kidney-related health benefits from weight loss in this population, such as improvements in glycemic and blood pressure control."

Harhay said the lack of an association between weight loss and chronic kidney disease risk speaks to the field's limited knowledge of the specific mechanisms that link weight loss and kidney health, explaining, "We already know that obesity raises risks of Type 2 diabetes, a condition that is the main driver of chronic kidney disease in our country. But when we focused on adults with obesity who did not have diabetes or kidney disease at baseline, we found that it was weight gain and low physical fitness that were risk factors for CKD, whereas weight loss was not necessarily protective. These findings certainly warrant more study.

"The improved glycemic and blood pressure control, that we typically see with weight loss, might be more consequential in a population that already has chronic kidney disease, or in adults with severe obesity—adults could not qualify for MESA if they weighed more than 300 pounds."

Previous studies have also found an association between weight gain and higher chronic kidney disease risk, but the current study is among the first to look at the role of physical fitness and chronic kidney disease risk in an obese population without diabetes.

More than 1 in seven U.S. adults—37 million—suffer from chronic kidney disease. Estimates suggest that nine out of 10 of these individuals do not know that they have the disease. Deaths from the disease are on the rise nationally, from 91.7 per 1,000 in 2019 to 100.6 per 1,000 in 2020—with higher increases among Black and Hispanic populations.

Treating patients is also taxing for the nation's health care system, with more than \$85 billion spent by Medicare alone in 2020. As of February 2023, 88,658 people were on the waiting list for a life-saving kidney transplant in the United States.

Although the researchers point out that slow walking speed may also result from other diseases and ailments that influence chronic [kidney disease](#) risk, such as arthritis, they also note that the association between walking pace and eGFR decline was significant using cystatin C, which is less affected by muscle mass, to determine eGFR.

"Our study shows that physical fitness may be as important as body weight when assessing [chronic kidney disease](#) risk among adults with obesity, but future studies are needed to determine whether these results are also produced while testing interventions to help patients in this population prevent weight gain and improve their overall fitness," said Harhay.

In addition to Harhay, authors on the study include Yuna Kim and Kari Moore from Drexel, Michael O Harhay from the University of Pennsylvania, Ronit Katz of the University of Washington, Michael G Shlipak from the University of California, and Kramer H from Loyola University Chicago.

More information: Modifiable kidney disease risk factors among nondiabetic adults with obesity from the Multi-Ethnic Study of Atherosclerosis, *Obesity* (2023). [DOI: 10.1002/oby.23883](https://doi.org/10.1002/oby.23883)

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