

# **How does this grab you? Grip strength may tell whether you have diabetes, high blood pressure**

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Whether you grasp it right away or not, your grip strength may indicate whether or not you have undetected diabetes and high blood pressure, University of Florida researchers say.

The findings appear online ahead of print in the *American Journal of Preventive Medicine*.

Grip strength measures could be especially useful for identifying diabetes and [high blood pressure](#) in adults who have [healthy weight](#) obesity, also known as normal weight obesity or "skinny fat." The condition is characterized as having a [body mass index](#) within the normal range, but a high proportion of fat to lean muscle, typically more than 25 percent body fat in males and 35 percent in females. These individuals may be less likely to get regular screenings for diabetes and hypertension because they aren't considered overweight or obese by BMI measures alone, said Arch G. Mainous III, Ph.D., the study's lead investigator and chairman of the department of health services research, management and policy in the UF College of Public Health and Health Professions, part of UF Health.

"We've had a significant amount of interest and focus on obesity, and rightfully so," said Mainous, the Florida Blue endowed chair of health administration. "But there is a concern that health problems in people who have decreased muscle mass, but don't fit the criteria of being overweight, are being missed because these people aren't targeted by screening programs."

People with healthy weight obesity are four times more likely than people with lower body fat to develop metabolic syndrome, which includes increased blood pressure, [high blood sugar](#) and abnormal cholesterol levels, according to a study by Mayo Clinic researchers. As many as 30 million Americans have healthy weight obesity and many don't know it.

For the UF study, researchers analyzed data from the 2011-2012 National Health and Nutrition Examination Survey, a nationally representative study that uses a combination of interviews and physical examinations. The team assessed grip strength measurements, [blood pressure readings](#) and blood sugar levels for nearly 1,500 adults age 20 and older who had a BMI within the healthy weight range—18.5 to 24.9. People with undiagnosed and diagnosed high blood pressure and diabetes had weaker grip strength than other healthy weight individuals who did not have those conditions.

"In our study, grip strength was able to identify people with undiagnosed hypertension and diabetes relatively easily, even after we adjusted the analyses for age, sex and whether or not they had a family history of disease," Mainous said.

The reason for decreased muscle strength in healthy weight individuals with high blood pressure and diabetes isn't well understood, but it could be caused by lower muscle quality or a condition called "diabetic hand syndrome," which limits finger movement.

Because most patients visiting the doctor have their [blood pressure](#) tested, grip strength may be most valuable as a non-invasive, low-cost tool for identifying people who could possibly have diabetes. But more research is needed before it can be put into practice as a screening tool, including investigating how variables such as gender, age and height might affect grip strength levels, Mainous said.

"We still have a ways to go before we can actually implement [grip strength](#) testing and make it clinically useful to a primary care physician, but I think this a good first step toward determining who might need further testing, particularly among this group of people who would otherwise not be recommended for screening," he said.

Provided by University of Florida

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