

Insulin status is important determinant of weight reduction on vascular function

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Researchers from Boston University School of Medicine (BUSM) and Boston Medical Center (BMC) have found that among obese people who had lost considerable weight, those with high insulin levels—a marker of insulin resistance in the body—were the most likely to experience better blood vessel function following the weight loss. These findings appear online in the *Journal of the American College of Cardiology*.

Obesity has emerged as one of the most critical health care problems in the U.S. and worldwide with nearly 70 percent of the U.S. population currently overweight or obese. Of major concern are the disproportionate cases of severe obesity ([body mass index](#) [BMI] ≥ 40 kg/m²), which tripled during the 1990s. Nearly a third of adults and 17 percent of children in the U.S. are now obese with 65 million additional cases estimated by 2030. While obesity confers serious health concerns and increased all-cause mortality, the vast majority of deaths are due to cardiovascular causes such as ischemic heart disease and stroke.

Researcher prospectively followed 208 overweight or [obese patients](#) (BMI ≥ 25 kg/m²) receiving medical/dietary (48 percent) or bariatric surgical (52 percent) weight loss treatment during a period of approximately one year. They measured plasma metabolic parameters and vascular endothelial function using ultrasound at baseline and following weight loss intervention, and stratified analyses by median plasma [insulin](#) levels.

They found that individuals with higher baseline plasma insulin levels

(above median >12 uIU/ml), who had greater than 10 percent weight loss had significantly improved brachial artery macro-vascular flow-mediated [vasodilation](#) and micro-vascular reactive hyperemia. In contrast, [vascular function](#) did not change significantly in the lower insulin group (<12 uIU/mL) despite similar degree of weight loss. In analyses using a five percent weight loss cut-point, only micro-vascular responses improved in the higher insulin group.

"Our study has shown that insulin status is an important determinant of the positive effect of weight reduction on vascular function with hyperinsulinemic patients deriving the greatest benefit," explained corresponding author Noyan Gokce, MD, FACC, associate professor of medicine at BUSM and Director of Echocardiography at BMC.

"Reversal of [insulin resistance](#) and endothelial dysfunction may represent key therapeutic targets for cardiovascular risk reduction in obesity," he added. Their data also suggest that at least 10% [weight loss](#) is needed for comprehensive vascular benefit, which may in part explain the negative findings of the recently published Look Ahead study findings (*NEJM* 2013).

Provided by Boston University Medical Center

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