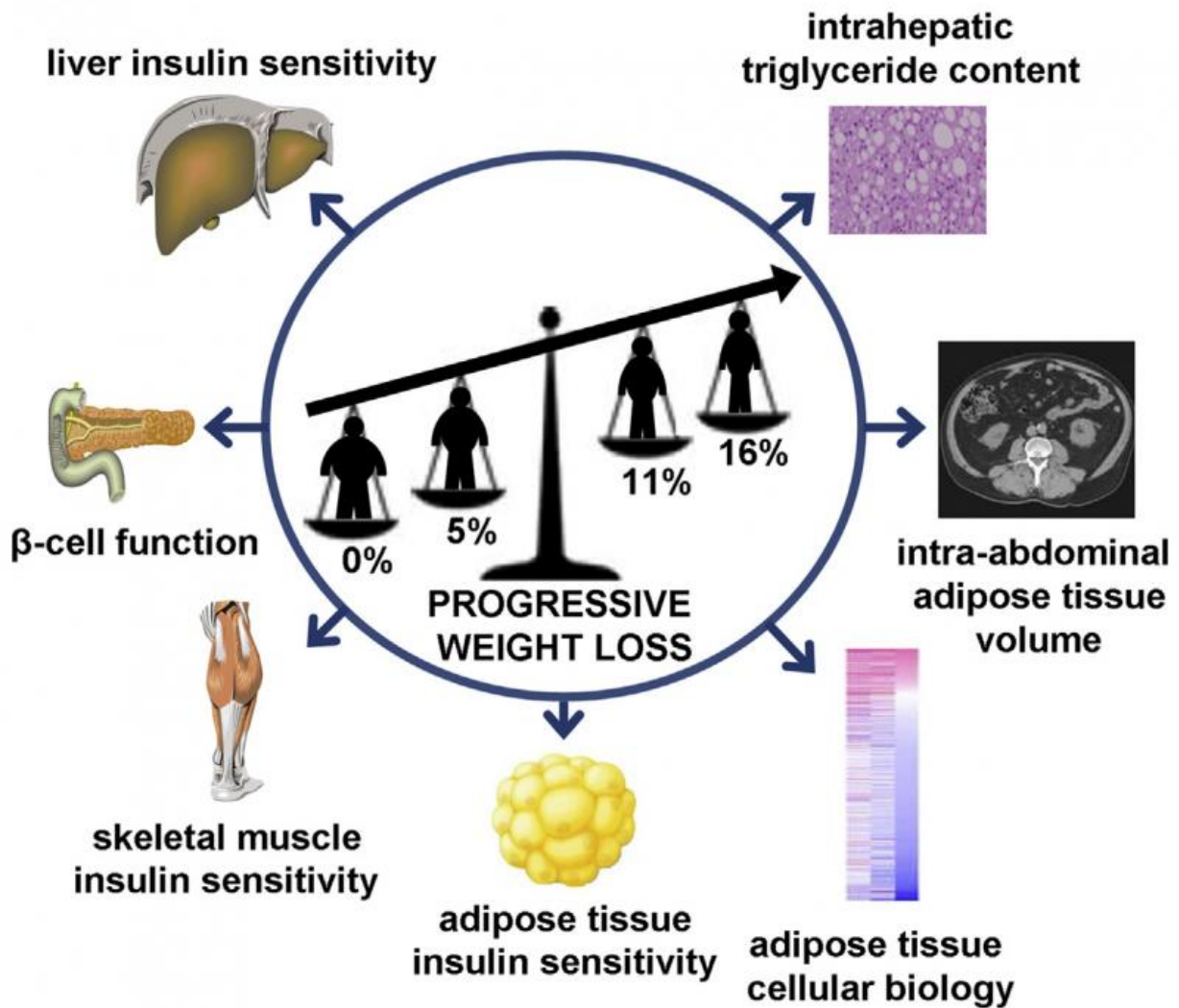


In obese patients, five percent weight loss has significant health benefits

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Magkos et al. demonstrate the profound therapeutic effects of weight loss on metabolic function in subjects with obesity. This visual abstract shows how even a moderate 5% weight loss has considerable health benefits, including decreased intra-abdominal and intra-hepatic fat and increased multiorgan insulin sensitivity and b cell function. Additional weight loss further improves many cardiometabolic outcomes. Credit: Magkos et al./*Cell Metabolism* 2016

For patients with obesity trying to lose weight, the greatest health benefits come from losing just 5 percent of their body weight, according to a new study at Washington University School of Medicine in St. Louis.

Researchers found that the relatively small [weight loss](#) markedly lowered patients' risk for diabetes and cardiovascular disease and improved metabolic function in liver, fat and muscle tissue.

The study is published online Feb. 22 in the journal *Cell Metabolism*.

"Our findings demonstrate that you get the biggest bang for your buck with 5 percent weight loss," said principal investigator Samuel Klein, MD, director of Washington University's Center for Human Nutrition. "The current guidelines for treating obesity recommend a 5 to 10 percent weight loss, but losing 5 percent of your body weight is much easier than losing 10 percent. So it may make sense for patients to aim at the easier target."

Klein, the William H. Danforth Professor of Medicine and Nutritional Science and chief of the Division of Geriatrics and Nutritional Science, randomly assigned 40 obese individuals—none of whom had diabetes—to either maintain their body weight or go on a diet to lose 5, 10 or 15 percent of body weight. The researchers looked at whole body,

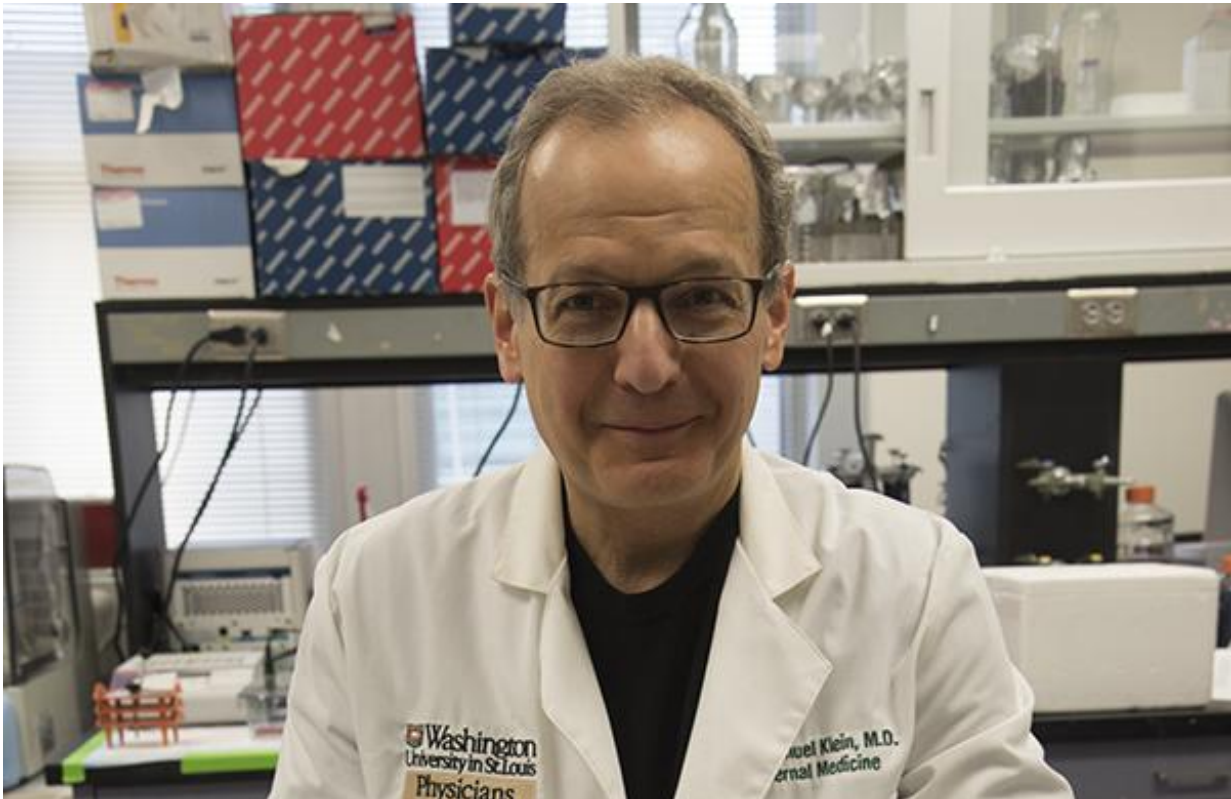
organ system and cellular responses before and after the weight loss.

While other randomized clinical trials have evaluated the effects of varying weight loss in people with obesity, this is thought to be the first time a trial has separated weight loss outcomes in people who achieved a 5 percent weight loss from those who achieved a 10 percent or greater weight loss.

Among the 19 study volunteers who lost 5 percent of their [body weight](#), the function of insulin-secreting beta cells improved, as did [insulin sensitivity](#) in [fat tissue](#), liver and [skeletal muscle tissue](#). A 5 percent weight loss also was associated with decreases in total body fat and with much less fat in the liver.

Meanwhile, nine of those study patients continued to lose weight, eventually reaching 15 percent weight loss. They experienced further improvements in beta cell function and insulin sensitivity in [muscle tissue](#), but neither insulin sensitivity in the liver nor adipose (fat) tissue continued to improve with the greater weight loss.

"Continued weight loss is good, but not all organ systems respond the same way," Klein said. "Muscle tissue responds much more to continued weight loss, but liver and adipose tissue have pretty much achieved their maximum benefit at 5 percent weight loss."



Samuel Klein, MD. Credit: Robert Boston

Interestingly, markers of inflammation, which are elevated in people with obesity, didn't change much when study subjects lost a moderate amount of weight. Although scientists hypothesize that increased inflammation in fat tissue contributes to metabolic problems such as insulin resistance, this study found that metabolic function could improve while markers of inflammation remain unchanged.

That element of the research will require further study. Klein also wants to expand the study to people who have diabetes.

"We don't know whether people with diabetes will have the same response to this type of progressive weight loss, so it will be important in

the future to repeat this type of study in people who have type 2 diabetes," he said.

In the meantime, Klein said people with obesity can benefit significantly from losing even a little bit of weight.

"If you weigh 200 pounds, you will be doing yourself a favor if you can lose 10 pounds and keep it off," he said. "You don't have to lose 50 pounds to get important [health benefits](#)."

More information: Magkos F, Fraterrigo G, Yoshino J, Luecking C, Kirbach K, Kelly SC, de las Fuentes L, He S, Okunade AL, Patterson BW Klein S. Effects of moderate and subsequent progressive weight loss on metabolic function and adipose tissue biology in humans with obesity. *Cell Metabolism*, published online Feb. 22, 2016. [dx.doi.org/10.1016/j.cmet.2016.02.005](https://doi.org/10.1016/j.cmet.2016.02.005)

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