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Increased BMI in the normal range has a negative effect on cardiometabolic risk markers

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Increases in excess fat adversely affect multiple cardiometabolic risk markers even in lean young adults according to a new study published this week in *PLOS Medicine*. The study by Peter Würtz from the University of Oulu, Finland, and colleagues suggests that, even within the range of body-mass index (BMI) considered to be healthy, there is no threshold below which a BMI increase does not adversely affect the metabolic profile of an individual.

Adiposity, or having excess body fat, is a growing global threat to public health. Compared to people with a lean body weight, individuals with higher BMI have an elevated risk of developing life-shortening cardiometabolic diseases, such as diabetes, heart attack, and stroke. In their study Dr. Würtz and colleagues used a technique called Mendelian randomization to assess whether increases in BMI in 12,664 mostly non-obese adolescents and young adults causally affects multiple cardiometabolic risk markers (82 molecules measured in their blood at a single time point). The authors found that adiposity adversely influences not only cholesterol and blood sugar levels, but also causes many other metabolic abnormalities across different metabolic pathways.

In a further analysis in which the authors studied the change in BMI and cardiometabolic risk markers of 1,488 young adults over 6 years, the authors found that the cardiometabolic risk profile of an individual was highly responsive to weight change over time.

The authors conclude, "[t]he ideal body weight that healthy adults should strive to attain remains controversial... The present study suggests widespread adverse metabolic effects with any increase in BMI among young adults within the non-obese weight range. However, modest weight loss was accompanied by multiple favorable changes in the systemic metabolite profile. The causative effect of adiposity on multiple cardiometabolic risk markers across the metabolite profile highlights the importance of population-level weight reduction as a key target for comprehensive risk factor control among young adults."

More information: Würtz P, Wang Q, Kangas AJ, Richmond RC, Skarp J, et al. (2014) Metabolic Signatures of Adiposity in Young Adults: Mendelian Randomization Analysis and Effects of Weight Change. *PLoS Med* 11(12): e1001765. DOI: 10.1371/journal.pmed.1001765