

Study challenges idea that lower BMI shields smokers from fat-associated health risks

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Some smokers might rationalize continuing to smoke because of lower body weight often associated with the habit. However, Vanderbilt University Medical Center investigators have determined that even with a lower body mass index (BMI), smokers have a higher risk of depositing fat in and around organs and tissues compared to those who never smoked.

This is concerning because [excess fat](#), also known as [adipose tissue](#), deposited in the abdomen and around organs such as the liver and non-adipose tissues including muscles, may disrupt their normal functions and cause health problems. This disruption is associated with a higher risk for health complications such as [cardiovascular disease](#) and type 2 diabetes.

Investigators used computed tomography (CT) body scans to measure [abdominal fat](#) deposited just below the skin's surface (subcutaneous fat), around organs including the intestines (visceral fat) and abdominal muscles (intermuscular fat), and

inside the muscles (intramuscular fat) in 3,020 middle-aged participants in the federally funded Coronary Artery Risk Development in Young Adults (CARDIA) study.

"We found that current smokers had [abdominal muscles](#) that were significantly higher in fat," said lead author James "Greg" Terry, research programs manager in Radiology and member of Vanderbilt Translational and Clinical Cardiovascular Research Center (VTRACC). "Smokers also had a higher proportion of visceral fat, the fat around their internal organs, compared to never smokers, whereas those who had quit smoking had intermediate levels of visceral and intramuscular fat. This might contribute to the higher prevalence of cardiovascular disease and age-related physical deconditioning and disability that is well-documented among those who smoke."

Co-author David Jacobs, Ph.D., professor of Public Health at the University of Minnesota and one of the founding CARDIA investigators, said he considers "cigarette smoking as a weight-loss tool to be a risky strategy. Our data show that the fat deposition pattern apparent in smokers is associated with metabolic damage."

The longitudinal CARDIA study was begun in 1985 with the recruitment of young adult participants (aged 18-30), equally balanced by male and female sex and black and white race, at four locations in the United States. The CT measurements were taken at the 25-year mark. The investigation is published in the online, open access journal *PLOS Medicine*.

More information: James G. Terry et al, Association of smoking with abdominal adipose deposition and muscle composition in Coronary Artery Risk Development in Young Adults

(CARDIA) participants at mid-life: A population-based cohort study, *PLOS Medicine* (2020). DOI: [10.1371/journal.pmed.1003223](https://doi.org/10.1371/journal.pmed.1003223)

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