

Fat matters more than muscle for heart health

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New research has found that changes in body fat impact early markers of heart health more than changes in body muscle, suggesting there are greater benefits to be expected from losing fat than from gaining muscle.

The [observational study](#), led by researchers from the University of Bristol, was published today [9 September] in *PLoS Medicine*.

More than 3,200 [young people](#) in Bristol's Children of the 90s birth cohort study were measured repeatedly for levels of body fat and lean mass using a body scanning device. These scans were performed four times across participants' lives, when they were children, adolescents, and young adults (at ages 10, 13, 18 and 25 years). Handgrip strength was also tested when they were aged 12 and 25 years.

When the participants were 25 years old, [blood samples](#) were collected and a technique called "metabolomics" was used to measure over 200 detailed markers of metabolism including different types of harmful cholesterol, glucose, and inflammation, which together indicate one's susceptibility to developing heart disease and other [health conditions](#).

Dr. Joshua Bell, senior research associate in epidemiology and lead author of the report, said: "We knew that fat gain is harmful for health, but we didn't know whether gaining [muscle](#) could really improve health and help prevent heart disease. We wanted to put those benefits in context."

The findings showed that gaining fat mass was strongly and consistently related to poorer metabolic health in young adulthood, as indicated, for example, by higher levels of harmful cholesterol. These effects were much larger (often about 5-times larger) than any beneficial effect of gaining muscle. Where there were benefits of gaining muscle, these were specific to gains that had occurred in adolescence—suggesting that this early stage of life is a key window for promoting muscle gain and

reaping its benefits.

Dr. Bell added: "Fat loss is difficult, but that does seem to be where the greatest health benefits lie. We need to double down on preventing fat gain and supporting people in losing fat and keeping it off.

"We absolutely still encourage exercise—there are many other health benefits and strength is a prize in itself. We may just need to temper expectations for what gaining muscle can really do for avoiding [heart disease](#)—[fat gain](#) is the real driver."

The study also found that improving strength (based on handgrip) has slightly greater benefits for markers of heart health than gaining muscle itself, suggesting that the frequent use of muscle, rather than the bulking up of muscle, may matter more.

Professor Nic Timpson, the principal investigator of the Children of the 90s and one of the study's authors, said: "This research provides greater clarity in the relative roles of fat and lean mass in the basis of cardio-metabolic disease. This is an important finding and clearly part of a complex picture of [health](#) that involves weight gain, but also the other indirect costs and benefits of different types of lifestyle. It is only through detailed, longitudinal, studies like Children of the 90s that these relationships can be uncovered. We extend our thanks to the participants of the Children of the 90s who make all of this work possible."

"Body muscle gain and markers of cardiovascular disease susceptibility in young adulthood: A cohort study," by Joshua A. Bell, Kaitlin H. Wade, Linda M. O'Keeffe, David Carslake, Emma E. Vincent, Michael V. Holmes, Nicholas J. Timpson and George Davey Smith, is published in *PLoS Medicine*

More information: Joshua A. Bell et al, Body muscle gain and

markers of cardiovascular disease susceptibility in young adulthood: A cohort study, *PLOS Medicine* (2021). [DOI: 10.1371/journal.pmed.1003751](#)

Provided by University of Bristol

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