

Is breakfast the most important meal of the day for your fat cells?

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Regularly eating breakfast affects our body fat cells by decreasing the activity of genes involved in fat metabolism and increasing how much sugar they take up, according to new research from the *Journal of Physiology*. This may lower diabetes and cardiovascular risk.

The team in Bath and Nottingham also found that fat in [obese people](#) responds less to insulin, which regulates [blood sugar](#), than lean people do. Importantly, this decrease is proportional to the person's total amount of body fat.

For six weeks, the researchers asked 49 adults (29 lean and 20 obese) to either eat [breakfast](#) every day before 11 am or fast until mid-day. Participants in the breakfast were asked to consume 350 kilocalories within 2 hours of waking and at least 700 calories by 11.00 every day; whereas the fasting group consumed no energy until midday.

Before and after the six weeks, the researchers measured metabolism, body composition, appetite responses and markers of metabolic and cardiovascular health. They also measured

participants' fat for the activity of 44 different genes and key proteins, and studied the ability of the fat cells to take up glucose in response to insulin.

Javier Gonzalez, lead author of the study said, 'by better understanding how fat responds to what and when we eat, we can more precisely target those mechanisms. We may be able to uncover new ways to prevent the negative consequences of having a large amount of body fat, even if we cannot get rid of it.'

"Since participants ate high-carb breakfasts, we cannot necessarily extrapolate our findings to other types of breakfasts, particularly those with high protein content. Our future studies will also explore how breakfast interacts with other lifestyle factors such as exercise."

More information: Molecular Adaptations of Adipose Tissue to 6 weeks of Morning Fasting vs Daily Breakfast Consumption in Lean and Obese Adults, *Journal of Physiology* (2017). [DOI: 10.1113/JP275113](https://doi.org/10.1113/JP275113)

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