

Female mice respond differently to fasting, showing the importance of studying both sexes

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In response to short, six-hour fasts in mice, female mice put on more liver fat than males, but also seemed to be better at using it up, according

to research published in *The Journal of Physiology*. This may be beneficial for health, potentially reducing susceptibility to diseases including diabetes and high blood pressure.

Fasting is touted as a health intervention, but we don't yet know which type is best and for whom. Fasts can vary in length, and time of day, and this can also determine how easily people can stick to them.

Researchers at the University of Sydney fasted mice for six hours each night over four weeks. They chose the night because this is the active phase of the mice, mimicking daytime fasting in humans.

In some aspects, males and females responded similarly to the short daily fasting, with both showing changes in [food intake](#), lean mass, and glucose metabolism. However, these parameters changed to different extents with males eating more, growing bigger, and having larger livers.

Ph.D. candidate Therese Freire at the University of Sydney said, "The key difference between the sexes were found in the liver with fat storage and usage in the liver differing in males and females."

After four weeks of short daily fasting, [female mice](#) had accumulated more [liver fat](#) compared to males, but also showed increased potential for using those stores—better at storing lipids, but also better at using them. This suggests fasting is may be more beneficial to women specifically in terms of liver health, which impacts the likelihood of developing diabetes, [high blood pressure](#), and kidney disease. However, more research is needed to find out whether this applies in humans.

Samantha Solon-Biet, senior author on the [research paper](#), said, "By highlighting the different responses to fasting in male and female mice, we are showing the importance of including both sexes in preclinical studies."

More information: Therese Freire et al. Sex-specific metabolic responses to 6 hours fasting during the active phase in young mice, *The Journal of Physiology* (2020). [DOI: 10.1113/JP278806](https://doi.org/10.1113/JP278806)

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