

# The impact of exercise and sleep on depression varies by gender

May 1 2019

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Credit: University of Michigan

For some people, getting enough exercise and quality sleep can alleviate depressive symptoms almost as effectively as antidepressants alone, research has shown.

But a new University of Michigan study suggests that [exercise](#) and sleep impact depression differently in men and women.

Principal investigator Weiyun Chen, an associate professor of kinesiology, and first author Ana Cahuas looked at exercise and sleep patterns in more than 1,100 college students at Beijing University.

Participants completed three questionnaires assessing [depressive symptoms](#), physical activity habits and sleep patterns.

For men, vigorous and moderate physical activity helped protect against depression, Chen said. However, for women, no level of physical activity significantly impacted depression. Although there's a dearth of female-focused research, this contradicts general conclusions that regular physical activity helps reduce depression.

This finding may have happened because so few women compared to men exercised at [high intensity](#), Chen said. As a result, any protective effect of high-intensity exercise was not detectable in women when researchers analyzed the data by [gender](#).

The researchers also examined seven sleep variables, and found sleep was significantly associated with depression levels in both genders. On average, students reported [quality sleep](#), but 16 percent of males and 22 percent of females reported poor sleep quality.



Persistent depressive disorder, or dysthymia, is depression for at least two years, fluctuating in severity.

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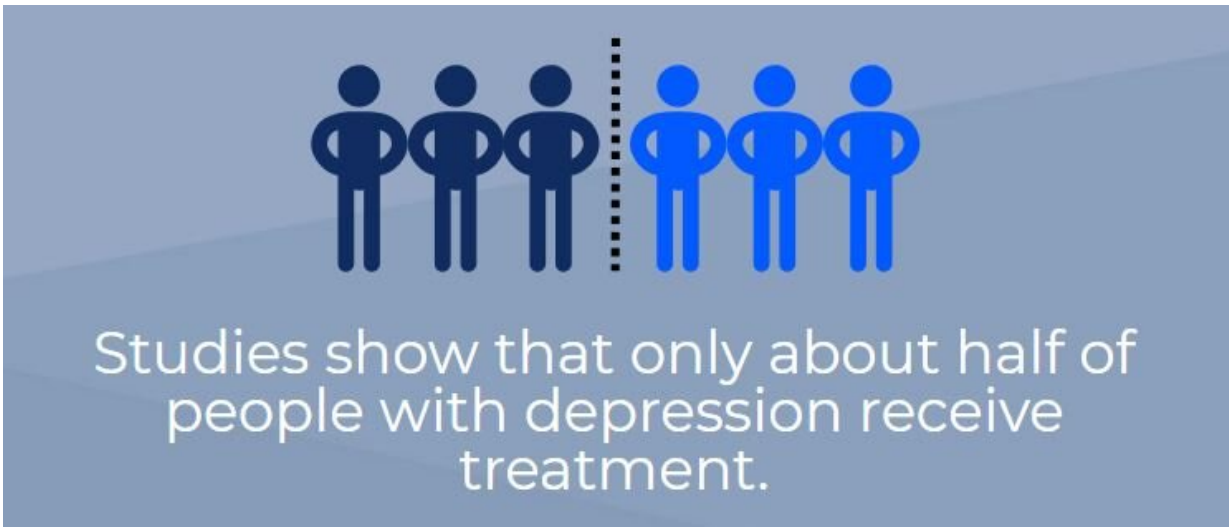
Overall, students in the study did not report feelings of depression, which surprised Chen, as Beijing University is a pressure-cooker environment similar to Ivy League schools in the U.S. However, more females (43 percent) than males (37 percent) reported depression.

"This is consistent with existing research that higher rates of depression are found among women, with approximately a 2:1 ratio of diagnosis, although [suicide rates](#) are 3 to 5 times higher among men," Chen said.

The connection between sleep, exercise, and mood might also help explain females' higher rate of depression, Chen said.

Males in the study exercised more and at higher intensity than females, whose higher levels of depression may have decreased likelihood to exercise and negatively impacted sleep quality.

Depression and [mood disorders](#) are a serious problem in adolescents, with up to 20 percent of teens diagnosed with a mental, emotional or behavioral disorder, said Cahuas, who was a student in U-M's Undergraduate Research Opportunity Program when she wrote the paper under Chen's guidance.



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Roughly 1 in 7 college students is diagnosed with depression—with suicide the second-leading cause of death among them. College students are at particular risk for depression because of heavy workloads, stress and sleep deprivation.

Major depression involves symptoms persisting for at least two weeks, and can occur multiple times throughout life. Persistent depressive disorder, or dysthymia, is depression that lasts at least two years, and fluctuates in severity. Studies show that only about half of people with [depression](#) receive treatment.

Participants were recruited from one university in China, so results cannot be generalized to all [college students](#).

The study appeared online in the *Journal of American College Health*.

**More information:** Ana Cahuas et al. Relationship of physical activity

and sleep with depression in college students, *Journal of American College Health* (2019). [DOI: 10.1080/07448481.2019.1583653](https://doi.org/10.1080/07448481.2019.1583653)

Provided by University of Michigan

Citation: The impact of exercise and sleep on depression varies by gender (2019, May 1)  
retrieved 25 April 2024 from  
<https://medicalxpress.com/news/2019-05-impact-depression-varies-gender.html>

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