

Exercise during pregnancy protects offspring from obesity

7 April 2019

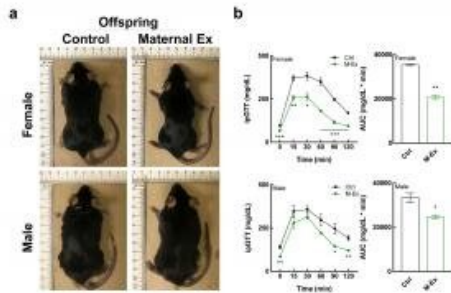


Figure 1. Offspring mice challenged with high-fat diet from Ctrl or maternal exercise (M-Ex) mice. Representative images (a) and glucose tolerance test (b) in the offspring challenged with high-fat diet. All groups were normalized with n=6. *P < 0.05, **P < 0.01, and ***P < 0.001 in Ctrl vs. M-Ex by two-tailed Student's t-test.

After weaning, the offspring followed a high-fat diet for eight weeks. The mice in the exercise group not only gained less weight on the high-fat diet but also showed fewer symptoms of metabolic diseases such as diabetes and fatty liver disease. Credit: Jun Seok Son, Washington State University

A new study found that offspring born to mice that exercised during pregnancy were less likely to gain weight after consuming a high-fat diet later in life. Although previous studies have shown that exercise by obese females benefits their offspring, this is the first research to demonstrate that the same is true when non-obese females exercise.

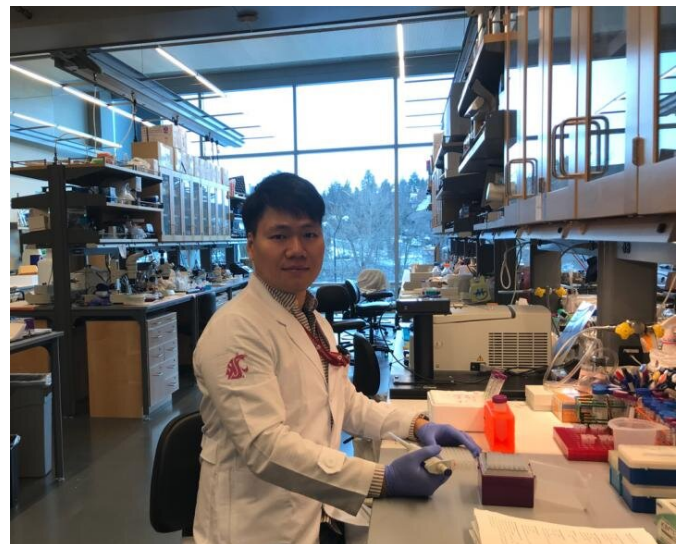
"Based on our findings, we recommend that women—whether or not they are obese or have diabetes—exercise regularly during pregnancy because it benefits their children's [metabolic health](#)," said Jun Seok Son, a [doctoral student](#) at the Washington State University who conducted the study.

Son will present the new findings at the [American Physiological Society's annual meeting](#) during the [2019 Experimental Biology meeting](#) to be held April

6-9 in Orlando, Fla.

The researchers examined the offspring of mice that performed 60 minutes of moderate intensity exercise every morning during pregnancy. Offspring born to mice that didn't exercise were used as a [control group](#).

At weaning, the offspring of the exercising mice showed increased levels of proteins associated with brown adipose tissue compared to the control group. This type of tissue converts fat and sugar into heat. The researchers also observed higher body temperatures in the exercise group, indicating that their [brown adipose tissue](#) was more efficient—or had a higher thermogenic function—which has been shown to prevent obesity and metabolic problems.



Jun Seok Son performed a study that found that offspring born to mice that exercised during pregnancy were less likely to gain weight after consuming a high-fat diet later in life. Credit: Jun Seok Son, Washington State University

After weaning, the offspring followed a [high-fat diet](#) for eight weeks. The mice in the exercise group not only gained less weight on the high-fat diet but also showed fewer symptoms of metabolic diseases such as diabetes and [fatty liver disease](#).

"Our data suggest that the lack of exercise in healthy women during pregnancy can predispose their children to obesity and associated metabolic diseases partially through impairing thermogenic function," said Son.

The researchers plan to perform additional studies to better understand the biological mechanisms responsible for the improved metabolic health in offspring of mothers who exercised.

More information: Jun Seok Son will present this research on Sunday, April 7, from 10:15 a.m.-12:15 p.m. in Exhibit Hall-West Hall B, Orange County Convention Center and on Monday, April 8 at 4:30 p.m. in room W311B ([abstract](#)).

Provided by Experimental Biology

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