

Exercising sows during gestation could affect future fertility

Pig study looked at ovarian weight, cell proliferation and types of developing cells to compare how exercise might affect ovarian development.

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Swine fetuses showed significant ovarian development after their mothers exercised and may improve future fertility, according to research presented by Samantha Kaminski, a graduate student at North Dakota State University.

Kaminski and fellow researchers already knew that uterine blood flow could affect blood flow to the ovaries of developing fetuses. To further study the relationship between uterine blood flow and ovary development, researchers designed an experiment to increase blood flow through exercise.

The team selected 15 female pigs and bred them to a boar. They then exercised the pregnant sows between days 40 and 105 of gestation. For exercise, the sows were walked for 30 minutes a day, three times a week. The researchers used this exercise regimen with two generations of pigs.

With the first generation, researchers studied ovaries from neonate piglets, adolescent piglets and gilts at six months of age. They looked at ovarian weight, cell proliferation and types of developing cells to compare how exercise might affect ovarian development.

They found that the effects of exercise seemed to decrease as the female pigs grew. In an analysis of heavier weight neonates, Kaminski saw more cell proliferation in the group from the exercised sows.

The adolescent pigs showed no differences in ovarian weight or overall cell proliferation. Kaminski did find a difference in the types of cells in the ovaries between treatment groups. The pigs from exercised sows had a greater proliferation of cells in the antral healthy follicles. The proliferation of antral healthy follicles has been used in previous studies as an indicator of healthy oocytes and follicles.

With the second generation, the researchers studied the ovaries from developing fetuses on day 94 of gestation. Though she found no difference in fetal ovarian weight, Kaminski did see more cell proliferation in the ovaries of fetuses from the exercised sows.

Kaminski acknowledged that it would be impractical to walk individual sows in a production setting. She said the exercise regimen of 30 minutes of exercise three times a week could be compared with any "moderate" amount of movement.

"This would be very similar to what a group house setting would be like for sows," said Kaminski.

Kaminski recommended future studies to determine if cell proliferation is a good indicator of future fertility. She would also like to know why there were not significant differences in ovarian weight or cell proliferation in neonatal and adolescent pigs.

Kaminski's abstract was titled "Impact of maternal exercise on ovarian development in the pig."

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