Artificial insemination involves impregnating female animals from previously collected sperm. Sperm collected for artificial insemination can be damaged during short-term storage. This research is about the stresses that boar sperm undergo during processing for storage. It also looks at some dietary changes that can decrease damage to the sperm.

What did the researchers find?
For fresh semen, the volume of semen, sperm concentration, and percentage of sperm that could move around did not change over the course of the study. The researchers found that after the boars ate the flaxseed, fewer sperm had abnormally shaped tails.

As expected, sperm stored for up to 7 days were less able to move around than fresh sperm. However, after eating the flaxseed, the viability and motility of stored sperm was improved significantly. After eating the flaxseed, both fresh and stored sperm had better motility and viability.

What you need to know:
Boar sperm collected for artificial insemination may be damaged by short-term storage.

However, dietary flaxseed appears to be a simple and effective way to improve the motility and viability of both fresh and stored boar sperm.

Dietary flaxseed is a plant-based source of omega-3 polyunsaturated fatty acids, which are essential nutrients for improving boar sperm health.

How can you use this research?
Boar breeders can use this research to increase the quality of sperm produced by their boars.

Artificial insemination companies can use this information to choose to store sperm from boars that are fed flaxseed.

Pig feed producers can use this research to tailor their feed mixes to improve fertility in boars.

Keywords:
Boar sperm, artificial insemination, movement, storage, survival, flaxseed, increased fertility
What did the researchers do?

The researchers fed three fertile boars (3-5 years old) a standard control diet for three weeks. For the next nine weeks, the researchers then fed the boars a diet with the same amount of calories and nitrogen, but made up of 15% flaxseed. Flaxseeds contain omega-3 polyunsaturated fatty acids (PUFAs), an essential nutrient in standard boar diets. They are essential to control blood clotting and build cell membranes in the brain, among other things. Since mammal bodies cannot make omega-3 fats, boars must get them through food.

The researchers collected samples of boar semen twice each week using the gloved-hand method. The researchers measured the volume of the semen, and the concentration of sperm within the semen, and calculated the total sperm count. Semen was examined at three periods: weeks 1-3, weeks 6-7 and weeks 10-11.

Using the collected samples, the researchers measured the ability of the sperm to move around (i.e., sperm motility) using a microscope and computer software. The researchers assessed the survival rate of sperm by using a dye that coloured live and dead sperm differently.

Researchers also examined the shape of the sperm, and classified them as either normal or abnormal. Finally, researchers looked at “capacitation status”, a change that happens to sperm before they can successfully fertilize an egg.

These tests were carried out both on fresh semen, and on semen stored in Beltsville Thawing Solution for up to 7 days at 17C.