

New technique 80% effective in selecting a baby's gender

March 22 2023, by Denise Mann



It's a controversial notion, but couples undergoing fertility treatments

may soon be able to select the sex of their baby—with an 80% chance of success, doctors say.

Sperm-sorting techniques have been tried and offered before, but the new procedure—which separates [sperm cells](#) based on weight—appears much more accurate and safe, according to a new study published in *PLOS ONE*.

In the study, more than 1,300 [couples](#) underwent a sperm-sorting technique that uses a specific multilayer density gradient, or medium, to allow particles of different sizes to separate themselves based on weight.

Sperm that contain an X chromosome (female) are slightly heavier than sperm containing a Y chromosome (male), explained study author Dr. Gianpiero Palermo. He is a professor of embryology in obstetrics and gynecology at Weill Cornell Medicine in New York City.

"We let sperm swim into the dense medium," he said. "It's a very simple concept; the lighter sperm rise to the top while the heavier sperm go toward the bottom."

Next, researchers select a sperm and inject it into the center of the egg. This is a procedure known as [intracytoplasmic sperm injection](#) (ICSI). The embryo undergoes preimplantation [genetic testing](#) to screen for chromosomal abnormalities or sex.

In the [study group](#), "the sperm moved well, and the sorting technique didn't impair sperm in any shape or form," said Palermo. "The health of the children is fine so far, and that is all reassuring." No developmental delays were seen at 3 years of age.

Any couple treated in Palermo's practice is offered this service as part of a research protocol, he said.

In the future, this procedure could also help couples who do not need fertility treatments, he noted. Already, couples undergoing fertility treatments often know the sex of an embryo before it is implanted, according to Palermo.

There are many legitimate and non-controversial reasons a family may consider sex selection, including family balance or avoidance of an inherited disease that is associated with a specific gender. For example, hemophilia is an inherited bleeding disorder that primarily affects males.

The findings were published online March 22 in *PLOS ONE*.

Most of the couples in the study had no preference regarding the sex of their child. But among 105 couples, 59 wanted a girl and 46 wanted a boy. Of the couples who wanted [female offspring](#), 79% of the tested embryos were female. Of the couples desiring a male, almost 80% of their embryos were male.

Prior sex-selection techniques have been inconsistent and have carried safety concerns, said Dr. Alex Robles, a reproductive endocrinologist at Columbia University Fertility Center in New York City.

"Overall, using this technique to sort sperm is very feasible," said Robles, who has no ties to the new study. "Density gradients are the standard technique used to sort motile (or moving) heavier sperm from non-motile sperm in the first place," he said.

"This study takes it a step further by using a specific multilayer density gradient to further stratify the [sperm](#) based on their possession of an X or Y chromosome," Robles explained.

There are ethical considerations when it comes to sex selection, added

Dr. Arthur Caplan. He is a bioethicist and founder of the division of medical ethics at NYU Grossman School of Medicine in New York City.

"Surveys and studies show that in general, the public approves of the notion of family balance," said Caplan, who also has no ties to the study. This might mean opting for a boy if a family already has three girls.

There are other legitimate reasons to pursue sex selection, including avoiding sex-linked diseases, he said.

But it's a slippery slope, Caplan warned.

"As technology gets better and better, the choice to offer and sell [[sex selection](#)] gets stronger," he added. Couples could pick their kid's traits, including height, eye color, strength or sexual orientation.

"Sex selection also could create an imbalance in society, and a shift in population ratio could become a real issue," Caplan said.

More information: Stephanie Cheung et al, A non-randomized clinical trial to determine the safety and efficacy of a novel sperm sex selection technique, *PLOS ONE* (2023). [DOI: 10.1371/journal.pone.0282216](#)

The American Society for Reproductive Medicine offers [more on ICSI](#).

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