

Selecting Male or Female Child? Here's How It Works | Dr. Andrew Huberman

There are now emerging methods that people are using in order to separate out the sperm that will indeed give rise to a male offspring versus a female offspring. Now this of course is done in the context of in vitro fertilization. We haven't talked too much about in vitro fertilization. But in vitro fertilization involves as the name suggests taking an egg and taking a sperm pairing them in a dish. This can be done a number of different ways. Um but just to briefly describe the IVF procedure. IVF involves administering supra meaning greater than normal supra physiological levels of follicle stimulating hormone and luteinizing hormone during the follicular phase of a woman's cycle. What that causes is the maturation of not just one egg that would be ovulated but multiple follicles and eggs. And then ovulation itself is suppressed also through the administration of exogenous hormones and then under ultrasound guidance and OBGYN goes in and collects the mature eggs and follicles puts them in a dish and then sperm are delivered to that dish. And those could either be sperm that were frozen previously or more typically. Or ideally it would be live sperm collected that day that are washed through a very uh straightforward procedure. And then those sperm either are allowed to compete for those eggs and fertilize those eggs and allow them to advance to um very early embryo stage before those embryos are frozen and eventually implanted into a woman in order to have them be carried to full term. Ideally or there's a procedure in which specific sperm are selected because they have the best morphology motility and so forth. And in a process called ICSI in which the sperm themselves are literally forced to fertilize that particular egg. Now under those conditions typically a couple or a woman if she's doing this on her own with a sperm donor will get multiple fertilized embryos. Ok. That are carried to a multi cellular stage. So that it's clear that they could grow into a child if they were implanted into a viable host. Uh sometimes the surrogate sometimes the woman who wants the child herself. And under those conditions it is possible to look at the genetic makeup including the karyotype of those early nascent embryos. In which case people really can select the sex of their offspring. That is they will have some embryos that are xx some embryos that are xy it's very likely also that they will have some embryos that have ko types or genotypes which are not ideal in that they would potentially lead to a

miscarriage or some other genetic defect And so typically people do not select to implant those embryos if they have the option to implant embryos that are of either xx or xy karyotype and the normal chromosomal um arrangements for obvious reasons So the the whole point here is that sex selection is possible but only using in vitro fertilization The other thing that is becoming clear to us in more recent years is that sex selection is actually possible at the level of the sperm even prior to fertilization This is an emerging data set and this is largely happening in clinics outside of the United States But there are some clinics that have figured out methods in which they can take a sperm sample and they can spin that sperm sample in a centrifuge at a rate that separates out the sperm into what are called different fractions So for those of you done a little bit of biology with centrifuges when you spin any kind of substance that includes multiple things in it of different weights when you spin them that things of different weights segregate out into different fractions along the depth of the tube And then you can take out one fraction or the next simply with a little pipette you take out the top fraction the middle fraction and so forth And what these clinics have figured out is that if they spin the sperm sample at the correct spin rate that the sperm that will give rise to male offspring and the sperm that will give rise to female offspring segregate out into different fractions allowing them to take each of those fractions separately and to apply them to eggs If it's in vitro fertilization and give rise very reliably certainly much more than chance to either male or female embryos They also of course can choose to do this outside the context of in vitro fertilization So some people are now opting to have their sperm samples spun out in this way separate out the sperm that give rise to male or female offspring and then to only use the fraction that they are interested in right So if they want a boy they'll use one fraction If they want a girl they'll use different fraction and then to use those fractions in the context of what's called IU I or intrauterine insemination which is as the name suggests rather than having the man deliver the ejaculate with his penis and the sperm with his penis They have uh a device you know the devices are now commercially sold believe it or not they're sold over the counter and on the internet So people will even do this at home And so what they're doing is they'll take the the sperm and they'll do IU I in order to bias the probability that they're gonna get a male or a female offspring Again this is something that's now emerging Um It's not commonplace most of the time people uh simply roll the dice as it as it were um by having either um intercourse and just hoping for or not caring if they

get a male or female offspring Um or in the instance of IVF selecting male or female offspring sometimes largely on the basis of the chromosomal arrangements So of course um some people might prefer to have one or the other biological sex as their offspring But of course the healthy chromosomal arrangements are going to be paramount for getting a healthy child And um as I mentioned before unhealthy chromosomal arrangements or abnormal chromosomal arrangements often lead to miscarriage or and or birth defects So selecting for healthy chromosomal arrangements is always paramount but some people are selecting for biological sex And indeed some couples who can conceive naturally are opting for IU I in order to be able to select biological sex because of this ability to spin out the sperm samples to um different fractions and select the male or female sperm That is the the sperm that would give rise to a male or female offspring So this is a uh rapidly emerging theme believe it or not Um who knew Um And of course it has nothing to do with Aristotle's assertions about what people are thinking about at the point of ejaculation Nor does it have anything to do with body position at the point of ejaculation But I do find it rather interesting that um even in this day and age people uh seem to be continually pursuing new and different ways to understand why one sperm or another sperm happens to fertilize the egg And when that information is not available because frankly it's not available yet we don't know why a sperm containing a Y chromosome or sperm contain an X chromosome is more likely to fertilize an egg I mean there's some ideas for instance that older fathers tend to have more daughters as opposed to sons But when you really look at the data it's pretty mixed So if you've heard that um before um has a particular nickname that I'm I'm not gonna describe on the podcast you can look it up online But um if any of you are aware of any other uh kind of ideals or lore no matter how ridiculous or crazy um Please put them in the comments section on youtube I'd be very curious to learn about uh those