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**COURSE TITLE: PHYSIOLOGY**

1**) Spermatogenesis** is the process by which haploid spermatozoa develop from [germ cells](https://en.m.wikipedia.org/wiki/Germ_cell%22%20%5Co%20%22Germ%20cell) in the [seminiferous tubules](https://en.m.wikipedia.org/wiki/Seminiferous_tubules%22%20%5Co%20%22Seminiferous%20tubules) of the [testis](https://en.m.wikipedia.org/wiki/Testis%22%20%5Co%20%22Testis). Spermatogenesis is also the origin and development of the [sperm cells](https://www.britannica.com/science/sperm) within the male [reproductive](https://www.britannica.com/science/human-reproductive-system) organs, the [testes](https://www.britannica.com/science/testis). The testes are composed of numerous thin, tightly coiled tubules known as the [seminiferous tubules;](https://www.britannica.com/science/seminiferous-tubule) the sperm cells are produced within the walls of the tubules. This process starts with the [mitotic division](https://en.m.wikipedia.org/wiki/Mitosis%22%20%5Co%20%22Mitosis) of the [stem cells](https://en.m.wikipedia.org/wiki/Stem_cell%22%20%5Co%20%22Stem%20cell) located close to the basement membrane of the tubules. These cells are called [spermatogonial stem cells](https://en.m.wikipedia.org/wiki/Spermatogonial_Stem_Cells%22%20%5Co%20%22Spermatogonial%20Stem%20Cells). The mitotic division of these produces two types of cells. Type A cells replenish the stem cells, and type B cells differentiate into primary [spermatocytes](https://en.m.wikipedia.org/wiki/Spermatocyte%22%20%5Co%20%22Spermatocyte). The primary spermatocyte divides meiotically ([Meiosis](https://en.m.wikipedia.org/wiki/Meiosis%22%20%5Co%20%22Meiosis) I) into two secondary spermatocytes; each secondary spermatocyte divides into two equal haploid [spermatids](https://en.m.wikipedia.org/wiki/Spermatids%22%20%5Co%20%22Spermatids) by Meiosis II. The spermatids are transformed into spermatozoa (sperm) by the process of [spermatogenesis](https://en.m.wikipedia.org/wiki/Spermiogenesis%22%20%5Co%20%22Spermiogenesis). These develop into mature spermatozoa, also known as [sperm cells](https://en.m.wikipedia.org/wiki/Sperm%22%20%5Co%20%22Sperm).  Spermatozoa are the mature male [gametes](https://en.m.wikipedia.org/wiki/Gamete%22%20%5Co%20%22Gamete) in many sexually reproducing organisms. It starts at [puberty](https://en.m.wikipedia.org/wiki/Puberty%22%20%5Co%20%22Puberty) and usually continues uninterrupted until death, although a slight decrease can be discerned in the quantity of produced sperm with increase in age. **Thus, spermatogenesis is the male version of gametogenesis, of which the female equivalent is oogenesis.**

2) **Male infertility** is any health issue in a man that lowers the chances of his female partner getting pregnant. It also refers to a male's inability to cause [pregnancy](https://en.m.wikipedia.org/wiki/Pregnancy%22%20%5Co%20%22Pregnancy) in a fertile female. Male infertility is commonly due to deficiencies in the [semen](https://en.m.wikipedia.org/wiki/Semen%22%20%5Co%20%22Semen), and [semen quality](https://en.m.wikipedia.org/wiki/Semen_quality%22%20%5Co%20%22Semen%20quality) is used as a surrogate measure of male fecundity. Male infertility is due to low sperm production, abnormal sperm function or blockages that prevent the delivery of sperm. Illnesses, injuries, chronic health problems, lifestyle choices and other factors can play a role in causing male infertility.

Making mature, healthy sperm that can travel depends on many things. Problems can stop cells from growing into sperm. Problems can keep the sperm from reaching the egg. Even the temperature of the scrotum may affect fertility. These are the main causes of male infertility:

* **Sperm Disorders**

The most common problems are with making and growing sperm. Sperm may:

Not grow fully

Be oddly shaped

Not move the right way

Be made in very low numbers (oligospermia)

Not be made at all (azoospermia)

* **Varicoceles**

Varicoceles are swollen veins in the scrotum. They harm sperm growth by blocking proper blood drainage. It may be that varicoceles cause blood to flow back into your scrotum from your belly. The testicles are then too warm for making sperm. This can cause low sperm numbers.

* **Retrograde Ejaculation**

Retrograde ejaculation is when semen goes backwards in the body. They go into your bladder instead of out the penis. This happens when nerves and muscles in your bladder don't close during orgasm (climax). Semen may have normal sperm, but the semen cannot reach the vagina.

* **Immunologic Infertility**

Sometimes a man's body makes antibodies that attack his own sperm. Antibodies are most often made because of injury, surgery or infection. They keep sperm from moving and working normally.

* **Obstruction**

Sometimes sperm can be blocked. Repeated infections, surgery (such as vasectomy), swelling or developmental defects can cause blockage. Any part of the male reproductive tract can be blocked. With a blockage, sperm from the testicles can't leave the body during ejaculation.