

In the seminiferous epithelium, this is a long stage, so many primary spermatocytes can be seen. Primary spermatocytes go through the first meiotic division and become secondary spermatocytes. The cells quickly proceed through this stage and complete the second mitotic division. Because this stage is short, there are few secondary spermatocytes to be seen. Mitosis is the process by which the diploid number of chromosomes present in spermatogonia (the stem cells) is reduced to the haploid number present in the nuclei of spermatogonia.

The products of the second cell division are called spermatids. They are spermatid cells with intact nuclei, positioned high in the epithelium. Since spermatids go through a metamorphosis into spermatozoa, they occur in early through late stages.

3. Spermiogenesis: This is the metamorphosis of spermatid spermatids into elongated spermatozoa. No further mitosis or meiosis occurs. During spermiogenesis, the acrosome forms, the flagella, spermogon, apparatus forms and most excess cytoplasm (the residual body) is separated and left in the scrotal cell. Spermatozoa are released into the lumen of the seminiferous tubule. A small amount of excess cytoplasm (the cytoplasmic droplet) is shed later in the epididymus. Spermiogenesis is a process of metamorphosis from a round cell with typical organelles to a highly specialized

ANAT. EXAMINER
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Physiology Assignment
BIOMEDICAL ENGINEERING

1. Spermatogenesis: Spermatogenesis is a dynamic process and a fundamental function of the testes. In which a cohort of undifferentiated diploid cells (spermatogonial stem cells) proceeds through a sequence of mitotic and meiotic cell division and differentiation to generate spermatozoa.

There are 3 stages of spermatogenesis:

- 1) Spermatogogenesis (Mitosis)
 - 2) Meiosis
 - 3) Spermiogenesis
- 1) Spermatogogenesis: Also called mitosis, stem divide mitotically to replace themselves and to produce cells that begin differentiation. Spermatozoa have most cytoplasm in oval nuclei and rest on the basement membrane.
- 2) Meiosis: Occurs in the phase of the first meiotic division are primary spermatocytes. They are characterized by highly condensed chromosomes giving the nuclei a coarse chromatin pattern and intermediate position

in the blood. When testosterone levels rise too high, the brain sends signals to the pituitary to reduce production. If you thought testosterone was only important to men, you'd be mistaken. Testosterone is produced in the ovaries and adrenal glands. It's one of several androgens (male sex hormones) in female. These hormones are thought to have important effects on:

- Ovarian function
- Bone strength
- Sexual behaviors including normal libido (although evidence is not conclusive).

The proper balance between testosterone (along with estradiol and estrogen) is important for our ovaries to work normally. While the specifics are uncertain, it's possible that androgens also play an important role in normal brain function. (Including mood, sex drive and cognitive function).

The perils of too much Testosterone:

Having too much testosterone naturally - occurring testosterone is not a common problem among men. That may surprise you given that people might consider obvious evidence of testosterone excess: road rage, fighting among fraternal little league gamers and sexual promiscuity.

Part of this may be due to the difficulty defining "normal" testosterone levels and "normal" behavior.

Blood levels of testosterone vary dramatically over time and even during the course of a day. In addition, what may seem like a symptom of testosterone excess (sex below normal) actually be unrelated to this

elevated sex hormone levels in the male and female reproductive system and achieving fertilization of an egg.

D) Testosterone! Testosterone is the major sex hormone in males and plays a number of important roles, such as:

- The development of penis and testes
- The deepening of the voice during puberty
- The appearance of facial and pubic hair starting at puberty; later in life, it may play a role in balding.
- Muscle size and strength
- Bone growth and strength
- Sex drive (libido)
- Sperm production

Adults with too little testosterone may not experience normal masculinization. For example, the glands may not enlarge, facial and body hair may be scant and the voice may not deepen normally. Testosterone may also help maintain normal mood. There may be other, important functions of this hormone that have not yet been discovered.

Signals sent from the brain to the pituitary gland at the base of the brain control the production of testosterone in men. The pituitary gland then relays signals to the testes to produce testosterone. A "feedback loop" closely regulates the amount of hormone

Testes, Testosterone

In recent times, testosterone and other androgens have focused on the effects of testosterone deficiency, especially among men. In fact, as men age testosterone levels drop gradually about 1% to 2% each year. Low testosterone produces less testosterone, and a problem called low testosterone binding globulin (SHBG) increases testosterone in the body. men with a level of men average 450 and have reduced levels of testosterone may might be considered normal (though, as mentioned depending optimal level of testosterone is tricky and somewhat controversial).

Signs of testosterone deficiency in adult men

Include:

- Reduced body and facial hair
- Loss of muscle mass
- Low libido, impotence, small testicles, reduced sperm count and fertility
- Irritability, poor concentration and depression
- Loss of body hair
- Birth hair and an increased risk of fracture

Some men who have a testosterone deficiency have symptoms a condition related to low testosterone and will improve with testicular testosterone replacement for example, a man with osteoporosis and low testosterone can increase bone strength and reduce his fracture risk with testosterone replacement

Problems:

Problems associated with abnormally high testosterone level in men include:

- Low sperm counts, shrinking of testicles and impotence
- Heart muscle damage and increased risk of heart attack.

Problems associated with difficulty urinating

- Prostate enlargement
- Acne
- Fluid retention with swelling of legs and feet
- Weight gain, perhaps related in part to increased appetite
- High blood pressure and dyslipidemia
- Insomnia
- Headaches
- Increased muscle mass
- Increased risk of blood clots
- Slowed growth in adolescents
- Uncharacteristic early aggressive behavior
- Mood swings, euphoria, irritability, impaired judgment, delusions

Problems associated with testosterone replacement

should be treated with supplemental testosterone.

3) Semen

Semen, also called seminal fluid, fluid that is released from the male reproductive tract and that contains sperm cells, which are capable of fertilizing the female egg. Semen also contains other liquids, known as seminal plasma, which help to keep the sperm cells viable.

In the sexually mature human male, sperm cells are produced by the testes (organs, testes) at a rate of approximately 200 million per day. The total semen volume is approximately 2-6 ml. The male reproductive tract, which are located in the pelvic region and surrounded by various tubules and glands of the reproductive system. After emerging from the testes, sperm are stored in the epididymis. Epididymis, in which secretion of potassium sodium and glycerol phospholipids. For energy source of sperm are contributed to the sperm cells. Sperm mature in the epididymis and then pass through the vas deferens, to the urethra, the ductus deferens, or vas deferens, to the urethra, where they meet the ampulla. The ampulla secretes a thick fluid, containing a substance called testosterone. Oxygen from the blood enters the ampulla and is carried into the sperm. During the process of ejaculation, liquids from the prostate gland and seminal vesicles are added, which help dilute the concentration of sperm and provide a suitable environment for them. Fluids contributed by the seminal vesicles are approximately 60 percent of the total semen.

Disease and conditions that affect the testes

Men can experience a drop in testosterone due to conditions or disease affecting the

Testes: Direct injury, radiation, infection, radiation, and

indirectly, through the

pituitary and hypothalamic glands. Tumor, medications

(especially steroids, medicine or related drugs and major tranquilizers, such as barbiturates) HIV/AIDS, certain infections and autoimmune conditions.

Genetic disease, such as Klinefelter Syndrome (in which a man has an extra X-chromosome) and Klinefelter-mosaic (in which an abnormal gene cause excessive

gonadotropin-releasing hormone in the body, including the pituitary gland) can also affect testosterone.

However, it is quite possible and testosterone-treated hormone symptoms in men with significantly low levels of active (free) testosterone, such as:

- Generalized weakness
- Low energy
- Disabling fatigue
- Depression
- Problems with sexual function
- Problems with cognition

However, many men with normal testosterone levels have similar symptoms to a clinical condition with low testosterone levels and symptoms, and always clear.

As a result, there is some controversy about what men

from the network of tubules and ducts through which the sperm passed.

A) Male organism:

The male organism is a complex organism. The major function of the male organism is to ejaculate sperm, although not all men will ejaculate during an orgasm. Beyond delivering pleasure, the role of the female organism is to receive sperm, although it may help move the sperm closer toward the ovum (egg).

In the 1950's, Alfred Kinsey, the first scientist to study human sexuality in detail, described the organism as an explosive discharge or neuromuscular tension. The male organism is a complex system involving multiple hormones, organs, and nerve pathways. The male male testosterone, produced in the testes, plays a central role by enhancing the sexual desire (libido) that leads to arousal, erection, and ultimately orgasm. By contrast, low testosterone not only decreases a man's energy and mood, it makes him less responsive to sexual stimuli, both physically and mentally.

The male ejaculate, semen, is comprised of sperm cells and seminal fluid, the latter of which contains phospho-tyrosine (an enzyme that aids fertility) and fructose (which provides fuel for sperm). The average volume of semen expelled by a healthy man is

Volume: these fluids contain proteins, amino acids, phosphorus, potassium, and various enzymes as prostaglandins. The prostatic gland contributes about 30 percent of the seminal fluid; the constituents of the secretions are mainly citric acid, acid phosphatase, calcium, sodium, zinc, potassium, protein-splitting enzymes and fibrinolytic enzyme that reduces blood and tissue fibres. A small amount of fluid is secreted by the bulbourethral and urethral glands. This is a thick, clear, lubricating protein commonly known as mucus. Essential to sperm mobility (cell-movement) are small quantities of potassium and magnesium. The presence of adequate amounts of oxygen in the plasma, proper temperature, and a slightly alkaline pH of 7 to 7.5. Sulfate compounds in semen help prevent the sperm cells from swelling, and fructose is the main nutrient to sperm cells. The total volume of semen for each ejaculation of a human male averages between 2 and 5 ml (0.12 to 0.31 cubic inch). In statistics the average ejaculate is about 1.5 ml (0.63 cubic inches). In human beings each ejaculation contains normally 200 to 300 million sperm. Semen frequently contains degenerated cells sloughed off from

Disease and conditions that may cause a drop in testosterone due to conditions or disease affecting the

1) Testes: Direct injury, radiation, infection, radiation treatment, chemotherapy, tumors.

2) Pituitary and hypothalamic glands: Tumor, medications (especially steroids, megestrol or related drugs and major tranquilizers, such as haloperidol), HIV/AIDS, certain infections and autoimmune conditions.

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low to abnormal - increased in body, including the pituitary gland) can also affect testosterone.

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can also be a cause in causing male infertility.

Signs and symptoms

- problems with sexual function e.g. difficulty with ejaculation or small volumes of fluid ejaculated, reduced sexual desire, or difficulty maintaining erection.
- pain, swelling or a lump in the testicle area
- recurrent respiratory infections
- inability to smell
- Abnormal breast growth (gynecomastia)
- Decreased facial or body hair or other signs of chromosome or hormonal abnormality
- A lower than normal sperm count (fewer than 15 million sperm per millilitre of semen or a total sperm count of less than 39 million per gram of semen).

in which strong contractions of its penile muscles, and penile muscles help propel the semen from the body. During orgasm, the reward center of the brain (especially the nucleus accumbens, nucleus amygdala, and ventral tegmental area) is flooded with neurochemicals, including intense emotional responses associated with an orgasm. At the same time, the lateral hypothalamic center located behind the left testis slows entirely. This is the part of the brain that plays a central role in judgement and self-control. The text explains why people often describe an orgasm as a state where "nothing else matters."

4) Resolution and Refraction: Resolution is the phase following orgasm where the penis starts to lose its erection. This is often accompanied by feeling of extreme relaxation or even drowsiness.

Refraction, also known as the refractory period, is the stage following climax when a man is unable to achieve another erection even with stimulation. In younger men, the refractory period may be as short as 15 minutes. In older men, it may last as long as an entire day.

5) Male Infertility

Male infertility is due to low sperm production, abnormal sperm function or blockages that prevent the delivery of sperm. Illness, injuries, chronic health problems, lifestyle choices and other factors