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NURSING SCIENCE

SPERMATOGENESIS

This refers to the entire sequence of events by which primitive germ cells known as spermatogonia are transformed into sperms or spermatozoon. The maturation period begins at puberty (13-16yrs) and continues till old age. Spermatogenesis is classically divided into 3 phases; spermatocytogenesis, meiosis and spermiogenesis. Takes about two months or 64 days to complete. At about the 4th week of development, the primordium of the germ cells arrives the testis area and are dormant until puberty. During puberty, these spermatogonia which have been dormant during fetal period begins to increase in number. After series of mitotic cell divisions, they grow and undergo gradual changes which transform them into **primary spermatocytes**. Each primary spermatocytes undergo the first meiotic cell division-reduction division to form two haploid secondary spermatocytes. The secondary spermatocyte subsequently undergo the second meiotic division to form haploid spermatids. The spermatids are then transformed into mature sperm in a differentiation process called spermiogenesis. When spermiogenesis is complete the sperm enters the lumen of the seminiferous tubules of the testis. They are then transferred from there to the epididymis, where they are stored and becomes functionally matured.

TESTOSTERONE

Testosterone is the primary male sex hormone and anabolic steroid. In male humans, testosterone plays a key role in the development of male reproductive tissues such as testes and prostate, as well as promoting secondary sexual characteristics such as increased muscle and bone mass, and the growth of body hair. In addition, testosterone is involved in health and well-being, and the prevention of osteoporosis.

Insufficient levels of testosterone in men may lead to abnormalities including frailty and bone loss.

Testosterone is a steroid from the androstane class containing a keto and hydroxyl groups at positions three and seventeen respectively. It is biosynthesized in several steps from cholesterol and is converted in the liver to inactive metabolites. It exerts its action through binding to and activation of the androgen receptor. In humans and most other vertebrates, testosterone is secreted primarily by the testicles of males and, to a lesser extent, the ovaries of females. On average, in adult males, levels of testosterone are about 7 to 8 times as great as in adult females. As the metabolism of testosterone in males is more pronounced, the daily production is about 20 times greater in men. Females are also more sensitive to the hormone.