

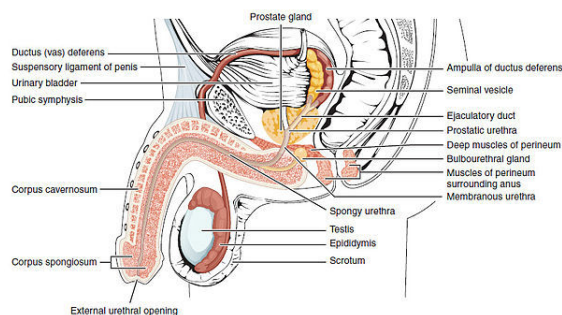
Human penis

The **human penis** is an external male sexual organ. It is a reproductive, intromittent organ that additionally serves as the urinal duct. The main parts are the root (radix); the body (corpus); and the epithelium of the penis including the shaft skin and the foreskin covering the glans penis. The body of the penis is made up of three columns of tissue: two corpora cavernosa on the dorsal side and corpus spongiosum between them on the ventral side. The human male urethra passes through the prostate gland, where it is joined by the ejaculatory duct, and then through the penis. The urethra traverses the corpus spongiosum, and its opening, the meatus /mi:'eɪtəs/, lies on the tip of the glans penis. It is a passage both for urine and for the ejaculation of semen.

The penis is homologous to the clitoris. An erection is the stiffening and rising of the penis, which occurs during sexual arousal, though it can also happen in non-sexual situations. The most common form of genital alteration is circumcision, removal of part or all of the foreskin for various cultural, religious and, more rarely, medical reasons. There is controversy surrounding circumcision.

While results vary across studies, the consensus is that the average erect human penis is approximately 12.9–15 cm (5.1–5.9 in) in length with 95% of adult males falling within the interval 10.7–19.1 cm (4.2–7.5 in). Neither age nor size of the flaccid penis accurately predicts erectile length.

1 Anatomy



Lateral cross section of the penis.

1.1 Parts

- Root of the penis (radix): It is the attached part, consisting of the bulb of penis in the middle and the crus

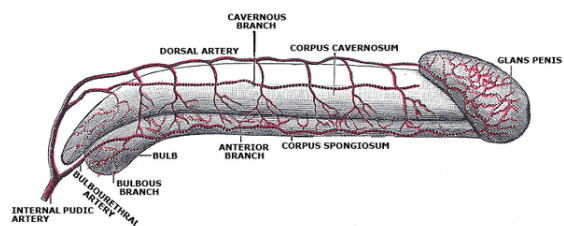
of penis, one on either side of the bulb. It lies within the superficial perineal pouch.

- Body of the penis (corpus): It has two surfaces: dorsal (posterosuperior in the erect penis), and ventral or urethral (facing downwards and backwards in the flaccid penis). The ventral surface is marked by a groove in a lateral direction.
- Epithelium of the penis consists of the shaft skin, the foreskin, and the preputial mucosa on the inside of the foreskin and covering the glans penis. The epithelium is not attached to the underlying shaft so it is free to glide to and fro.^[1]

1.2 Structure

The human penis is made up of three columns of tissue: two corpora cavernosa lie next to each other on the dorsal side and one corpus spongiosum lies between them on the ventral side.

The enlarged and bulbous-shaped end of the corpus spongiosum forms the glans penis, which supports the foreskin, or prepuce, a loose fold of skin that in adults can retract to expose the glans. The area on the underside of the penis, where the foreskin is attached, is called the frenum, or frenulum. The rounded base of the glans is called the corona. The perineal raphe is the noticeable line along the underside of the penis.



Anatomical diagram of a human penis

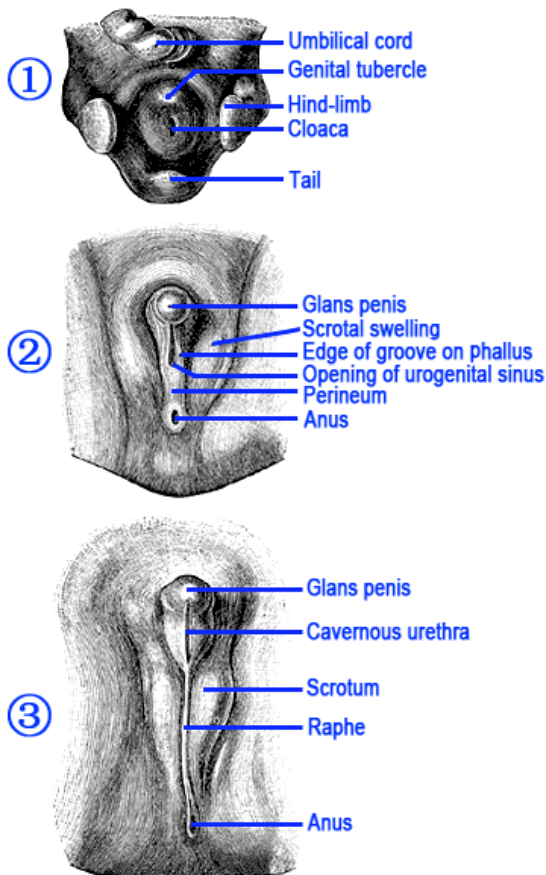
The urethra, which is the last part of the urinary tract, traverses the corpus spongiosum, and its opening, known as the meatus /mi:'eɪtəs/, lies on the tip of the glans penis. It is a passage both for urine and for the ejaculation of semen. Sperm are produced in the testes and stored in the attached epididymis. During ejaculation, sperm are propelled up the vas deferens, two ducts that pass over and behind the bladder. Fluids are added by the seminal vesicles and the vas deferens turns into the ejaculatory ducts, which join the urethra inside the prostate gland.

The prostate as well as the **bulbourethral glands** add further secretions, and the semen is expelled through the penis.

The **raphe** is the visible ridge between the lateral halves of the penis, found on the ventral or underside of the penis, running from the meatus (opening of the urethra) across the scrotum to the perineum (area between scrotum and anus).

The human penis differs from those of most other mammals, as it has no **baculum**, or **erectile bone**, and instead relies entirely on engorgement with blood to reach its **erect state**. It cannot be withdrawn into the groin, and it is larger than average in the animal kingdom in proportion to body mass.

2 Development



Stages in the development of the male external genitalia.

Main article: [Development of the reproductive system](#)

2.1 Genital homology between sexes

Main article: [Sexual homology](#)

In short, this is a known list of sex organs that evolve from the same tissue in females and males.

The **glans** of the penis is homologous to the **clitoral glans**; the **corpora cavernosa** are homologous to the body of the clitoris; the **corpus spongiosum** is homologous to the **vestibular bulbs** beneath the **labia minora**; the **scrotum**, homologous to the **labia minora** and **labia majora**; and the **foreskin**, homologous to the **clitoral hood**. The **raphe** does not exist in females, because there, the two halves are not connected.

2.2 Penile growth and puberty

On entering **puberty**, the penis, scrotum and testicles will enlarge toward maturity. During the process, **pubic hair** grows above and around the penis. A large-scale study assessing penis size in thousands of 17–19 year old males found no difference in average penis size between 17 year olds and 19 year olds. From this, it can be concluded that penile growth is typically complete not later than age 17, and possibly earlier.^[2]

3 Physiological functions

3.1 Urination

Main article: [Urination](#)

In males, the expulsion of urine from the body is done through the penis. The urethra drains the bladder through the **prostate gland** where it is joined by the **ejaculatory duct**, and then onward to the penis. At the root of the penis (the proximal end of the **corpus spongiosum**) lies the **external sphincter muscle**. This is a small sphincter of **striated muscle tissue** and is in healthy males under voluntary control. Relaxing the urethra sphincter allows the urine in the upper urethra to enter the penis properly and thus empty the urinary bladder.

Physiologically, urination involves coordination between the central, autonomic, and somatic nervous systems. In infants, some elderly individuals, and those with neurological injury, urination may occur as an involuntary reflex. Brain centers that regulate urination include the **pontine micturition center**, **periaqueductal gray**, and the **cerebral cortex**.^[3] During erection, these centers block the relaxation of the sphincter muscles, so as to act as a physiological separation of the excretory and reproductive function of the penis, and preventing urine from entering the upper portion of the urethra during ejaculation.^[4]

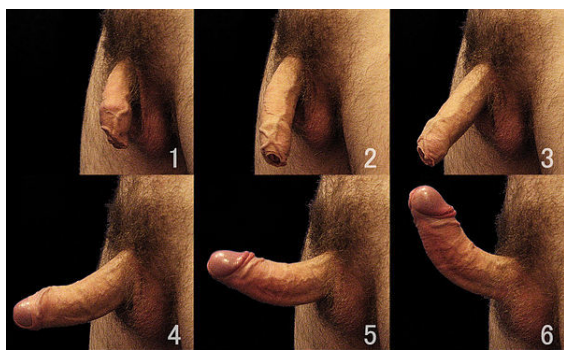
3.2 Voiding position

The distal section of the urethra allows a human male to direct the stream of urine by holding the penis. This flexibility allows the male to choose the posture in which to urinate. In cultures where more than a minimum of clothing is worn, the penis allows the male to urinate while standing without removing much of the clothing. It is customary for some men to urinate in seated or crouched positions. The preferred position may be influenced by cultural or religious beliefs.^[5] Research on the medical superiority of either position exists, but the data are heterogenic. A meta-analysis^[6] summarizing the evidence found no superior position for young, healthy males. For elderly males with LUTS however, in the sitting position compared to the standing:

- the post void residual volume (PVR, ml) was significantly decreased
- the maximum urinary flow (Qmax, ml/s) was increased
- the voiding time (VT, s) was decreased

This urodynamic profile is related to a lower risk of urologic complications, such as cystitis and bladder stones.

3.3 Erection



The development of a penile erection, also showing the foreskin gradually retracting over the glans.

See also: Commons image gallery

Main article: Erection

An erection is the stiffening and rising of the penis, which occurs during sexual arousal, though it can also happen in non-sexual situations. The primary physiological mechanism that brings about erection is the autonomic dilation of arteries supplying blood to the penis, which allows more blood to fill the three spongy erectile tissue chambers in the penis, causing it to lengthen and stiffen. The now-engorged erectile tissue presses against and constricts the veins that carry blood away from the penis.



A ventral view of a penis flaccid (left) and erect (middle); a dorsal view of a penis erect (right).

More blood enters than leaves the penis until an equilibrium is reached where an equal volume of blood flows into the dilated arteries and out of the constricted veins; a constant erectile size is achieved at this equilibrium.

Erection facilitates sexual intercourse though it is not essential for various other sexual activities.

3.3.1 Erection angle

Although many erect penises point upwards (see illustration), it is common and normal for the erect penis to point nearly vertically upwards or nearly vertically downwards or even horizontally straight forward, all depending on the tension of the suspensory ligament that holds it in position.

The following table shows how common various erection angles are for a standing male, out of a sample of 1,564 males aged 20 through 69. In the table, zero degrees is pointing straight up against the abdomen, 90 degrees is horizontal and pointing straight forward, while 180 degrees would be pointing straight down to the feet. An upward pointing angle is most common.^[7]

3.4 Ejaculation

Main article: Ejaculation

Ejaculation is the ejecting of semen from the penis, and is usually accompanied by orgasm. A series of muscular contractions delivers semen, containing male gametes known as sperm cells or spermatozoa, from the penis. It is usually the result of sexual stimulation, which may include prostate stimulation. Rarely, it is due to prostatic disease. Ejaculation may occur spontaneously during sleep (known as a nocturnal emission or **wet dream**). **Anejaculation** is the condition of being unable to ejaculate.

Ejaculation has two phases: *emission* and *ejaculation proper*. The emission phase of the ejaculatory reflex is under control of the sympathetic nervous system, while the ejaculatory phase is under control of a spinal reflex at

the level of the spinal nerves S2–4 via the pudendal nerve. A refractory period succeeds the ejaculation, and sexual stimulation precedes it.^[8]

3.5 Normal variations



Pearly penile papules, a common anatomical variation, may be the vestigial remnants of penis spines.

- *Pearly penile papules* are raised bumps of somewhat paler color around the base (sulcus) of the glans which typically develop in men aged 20 to 40. As of 1999, different studies had produced estimates of incidence ranging from 8 to 48 percent of all men.^[9] They may be mistaken for warts, but are not harmful or infectious and do not require treatment.^[10]
- *Fordyce's spots* are small, raised, yellowish-white spots 1–2 mm in diameter that may appear on the penis, which again are common and not infectious.
- *Sebaceous prominences* are raised bumps similar to Fordyce's spots on the shaft of the penis, located at the sebaceous glands and are normal.
- *Phimosis* is an inability to retract the foreskin fully, is harmless in infancy and pre-pubescence, occurring in about 8% of boys at age 10. According to the British Medical Association, treatment (topical steroid cream and/or manual stretching) does not need to be considered until age 19.
- *Curvature*: few penises are completely straight, with curves commonly seen in all directions (up, down, left, right). Sometimes the curve is very prominent but it rarely inhibits sexual intercourse. Curvature as great as 30° is considered normal and medical treatment is rarely considered unless the angle exceeds

45°. Changes to the curvature of a penis may be caused by *Peyronie's disease*.

3.6 Disorders

- *Paraphimosis* is an inability to move the foreskin forward, over the glans. It can result from fluid trapped in a foreskin left retracted, perhaps following a medical procedure, or accumulation of fluid in the foreskin because of friction during vigorous sexual activity.
- In *Peyronie's disease*, anomalous scar tissue grows in the soft tissue of the penis, causing curvature. Severe cases can benefit from surgical correction.
- A *thrombosis* can occur during periods of frequent and prolonged sexual activity, especially *fellatio*. It is usually harmless and self-corrects within a few weeks.
- Infection with the *herpes virus* can occur after sexual contact with an infected carrier; this may lead to the development of herpes sores.
- *Pudendal nerve entrapment* is a condition characterized by pain on sitting and loss of penile (or clitoral) sensation and orgasm. Occasionally there is a total loss of sensation and orgasm. The pudendal nerve can be damaged by narrow, hard bicycle seats and accidents.
- *Penile fracture* can occur if the erect penis is bent excessively. A popping or cracking sound and pain is normally associated with this event. Emergency medical assistance should be obtained. Prompt medical attention lowers likelihood of permanent penile curvature.
- In *diabetes*, *peripheral neuropathy* can cause tingling in the penile skin and possibly reduced or completely absent sensation. The reduced sensations can lead to injuries for either partner and their absence can make it impossible to have sexual pleasure through stimulation of the penis. Since the problems are caused by permanent nerve damage, preventive treatment through good control of the diabetes is the primary treatment. Some limited recovery may be possible through improved diabetes control.
- *Erectile dysfunction* is the inability to develop and maintain an erection sufficiently firm for satisfactory sexual performance. Diabetes is a leading cause, as is natural aging. A variety of treatments exist, most notably including the phosphodiesterase type 5 inhibitor drugs (such as *sildenafil citrate*, marketed as *Viagra*), which work by vasodilation.
- *Priapism* is a painful and potentially harmful medical condition in which the erect penis does not return to its flaccid state. The causative mechanisms

are poorly understood but involve complex neurological and vascular factors. Potential complications include ischaemia, thrombosis, and impotence. In serious cases the condition may result in gangrene, which may need amputation only if the organ is broken out and injured because of its loss of functions permanently or disabled completely. The condition has been associated with a variety of drugs including prostaglandin but not sildenafil (Viagra).^[11]

- Lymphangiosclerosis is a hardened lymph vessel, although it can feel like a hardened, almost calcified or fibrous, vein. It tends not to share the common blue tint with a vein however. It can be felt as a hardened lump or “vein” even when the penis is flaccid, and is even more prominent during an erection. It is considered a benign physical condition. It is fairly common and can follow a particularly vigorous sexual activity for men, and tends to go away if given rest and more gentle care, for example by use of lubricants.
- Carcinoma of the penis is rare with a reported rate of 1 person in 100,000 in developed countries. Circumcision is said to protect against this disease but this notion remains controversial.^[12]

3.6.1 Developmental disorders



Hypospadias

- Hypospadias is a developmental disorder where the meatus is positioned wrongly at birth. Hypospadias can also occur iatrogenically by the downward pressure of an indwelling urethral catheter.^[13] It is usually corrected by surgery.
- A micropenis is a very small penis caused by developmental or congenital problems.
- Diphallia, or penile duplication (PD), is the condition of having two penises. However, this disorder is extremely rare.

3.6.2 Alleged and observed psychological disorders

- Penis panic (*koro* in Malaysian/Indonesian)—delusion of shrinkage of the penis and retraction into the body. This appears to be culturally conditioned and largely limited to Ghana, Sudan, China, Japan, Southeast Asia, and West Africa.
- In April 2008, Kinshasa, Democratic Republic of Congo, West Africa’s Police arrested 14 suspected victims (of penis snatching) and sorcerers accused of using black magic or witchcraft to steal (make disappear) or shrink men’s penises to extort cash for cure, amid a wave of panic. Arrests were made in an effort to avoid bloodshed seen in Ghana a decade before, when 12 penis snatchers were beaten to death by mobs.^[14]
- Penis envy – the contested Freudian belief of all women inherently envying men for having penises.

3.7 Altering the genitalia

Main article: [Genital modification and mutilation](#)

The penis is sometimes pierced or decorated by other body art. Other than circumcision, genital alterations are almost universally elective and usually for the purpose of aesthetics or increased sensitivity. Piercings of the penis include the Prince Albert, the apadravya, the ampallang, the dydoe, and the frenum piercing. Foreskin restoration or stretching is a further form of body modification, as well as implants under the shaft of the penis.

Male to female transsexuals who undergo sex reassignment surgery, have their penis surgically modified into a neovagina. Female to male transsexuals may have a phalloplasty.

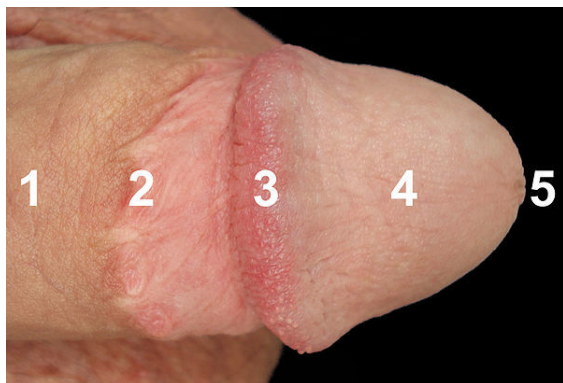
Other practices that alter the penis are also performed, although they are rare in Western societies without a diagnosed medical condition. Apart from a penectomy, perhaps the most radical of these is subincision, in which the urethra is split along the underside of the penis. Subincision originated among Australian Aborigines, although it is now done by some in the U.S. and Europe.

Penis removal is another form of alteration done to the penis.

3.7.1 Circumcision

Main article: [Circumcision](#)

The most common form of genital alteration is circumcision: removal of part or all of the foreskin for various cultural, religious, and more rarely medical reasons. For infant circumcision, modern devices such as the Gomco clamp, Plastibell, and Mogen clamp are available.^[15]



A labelled dorsal view of a circumcised penis: (1)Shaft, (2)Circumcision scar, (3)Corona, (4)Glans, (5)Meatus.

With all modern devices the same basic procedure is followed. First, the amount of foreskin to be removed is estimated. The foreskin is then opened via the preputial orifice to reveal the glans underneath and ensured that it is normal. The inner lining of the foreskin (preputial epithelium) is then separated from its attachment to the glans. The device is then placed (this sometimes requires a dorsal slit) and remains there until blood flow has stopped. Finally, part, or all, of the foreskin is then removed.

Adult circumcisions are often performed without clamps and require 4 to 6 weeks of abstinence from masturbation or intercourse after the operation to allow the wound to heal.^[16] In some African countries, male circumcision is often performed by non-medical personnel under unsterile conditions.^[17] After hospital circumcision, the foreskin may be used in biomedical research,^[18] consumer skin-care products,^[19] skin grafts,^{[20][21][22]} or β -interferon-based drugs.^[23] In parts of Africa, the foreskin may be dipped in brandy and eaten by the patient, eaten by the circumciser, or fed to animals.^[24] According to Jewish law, after a *Brit milah*, the foreskin should be buried.^[25]

There is controversy surrounding circumcision. Advocates of circumcision argue, for example, that it provides important health advantages that outweigh the risks, has no substantial effects on sexual function, has a low complication rate when carried out by an experienced physician, and is best performed during the neonatal period.^[26] Opponents of circumcision argue, for example, that the practice has been and is still defended through the use of various myths; that it interferes with normal sexual function; that it is extremely painful; and that when performed on infants and children, it violates the individual's human rights.^[27]

The American Medical Association stated in 1999: "Virtually all current policy statements from specialty societies and medical organizations do not recommend routine neonatal circumcision, and support the provision of accurate and unbiased information to parents to inform their choice."^[28]

The World Health Organization (WHO; 2007), the Joint United Nations Programme on HIV/AIDS (UNAIDS; 2007), and the Centers for Disease Control and Prevention (CDC; 2008) state that evidence indicates male circumcision significantly reduces the risk of HIV acquisition by men during penile-vaginal sex, but also state that circumcision only provides partial protection and should not replace other interventions to prevent transmission of HIV.^{[29][30]} In addition, some doctors have expressed concern over the policy and the data that supports it.^{[31][32]}

3.8 Surgical replacement

The first successful penis allotransplant surgery was done in September 2005 in a military hospital in Guangzhou, China.^[33] A man at 44 sustained an injury after an accident and his penis was severed; urination became difficult as his urethra was partly blocked. A recently brain-dead man, aged 23, was selected for the transplant. Despite atrophy of blood vessels and nerves, the arteries, veins, nerves and the corpora spongiosa were successfully matched. But, on 19 September (after two weeks), the surgery was reversed because of a severe psychological problem (rejection) by the recipient and his wife.^[34]

In 2009, researchers Chen, Eberli, Yoo and Atala have produced bioengineered penises and implanted them on rabbits.^[35] The animals were able to obtain erection and copulate, with 10 of 12 rabbits achieving ejaculation. This study shows that in the future it could be possible to produce artificial penises for replacement surgeries or phalloplasties.

In 2015 the world's first successful penis transplant took place in Cape Town, South Africa in a nine-hour operation performed by surgeons from Stellenbosch University and Tygerberg Hospital. The 21-year-old recipient, who had been sexually active, had lost his penis in a botched circumcision at 18.^[36]

An Italian nonprofit known as foregen is working on regrowing the foreskin, with the procedure potentially being partially surgical.

3.9 Size

Main article: [Human penis size](#)

While results vary across studies, the consensus is that the average erect human penis is approximately 12.9–15 cm (5.1–5.9 in) in length with 95% of adult males falling within the interval 10.7–19.1 cm (4.2–7.5 in). Neither age nor size of the flaccid penis accurately predicted erectile length. Stretched length most closely correlated with erect length.^{[37][38][39]} The average penis size is slightly larger than the median size (i.e., most penises are below average in size).

Length of the flaccid penis does not necessarily correspond to length of the erect penis; some smaller flaccid penises grow much longer, while some larger flaccid penises grow comparatively less.^[40] Among all primates, the human penis is the largest in girth, but comparable to chimpanzees and certain other species in length.^[41]

A research project, summarizing dozens of published studies conducted by physicians of different nationalities, shows that, worldwide, erect-penis size averages vary between 9.6 and 16 cm (3.8 and 6.3 in). It has been suggested that this difference is caused not only by genetics but also by environmental factors such as fertility medications,^[42] culture, diet, and chemical/pollution exposure.^{[43][44][45]} Endocrine disruption resulting from chemical exposure has been linked to genital deformation in both sexes (among many other problems).

The longest officially documented human penis was found by physician Robert Latou Dickinson. It was 34.3 cm (13.5 in) long and 15.9 cm (6.26 in) around.^[46]

4 Cultural aspects

In many cultures, referring to the penis is taboo or vulgar, and a variety of slang words and euphemisms are used to talk about it. In English, these include 'dick', 'cock', 'prick', 'dork', 'peter', 'pecker', 'putz', and 'schmuck'. Many of these (especially 'dick', 'prick', 'dork', 'putz', and 'schmuck') are used as insults—though sometimes playfully—, meaning an unpleasant or unworthy person.^{[47][48]}

- Aesthetic, e.g., Body modification
- In humor, considered indecent or completely taboo in various cultures
- Religious veneration, see St. Priapus Church^[49]
- In symbology, e.g., Phallus
- In architecture and sculpture, Phallic architecture

5 Additional images

- Dissection showing the fascia of the penis as well as several surrounding structures.
- Image showing innervation and blood-supply of the human male external genitalia.

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7 External links

- Kinsey Institute on the penis

8 Related information

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