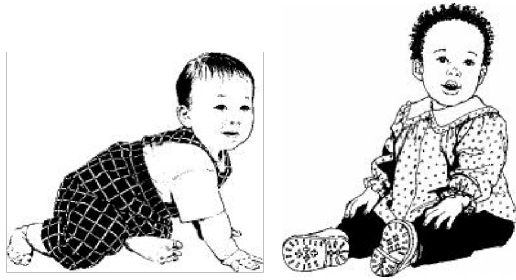


Unit 8: Puberty: Maturing into Adulthood

Introduction



In the first year of our lives, we go through an incredible growth period.

Our bodies grow in different ways during different periods of our lives. In the first year of our lives, we go through an incredible growth period. Our weight will triple in our first year. Our height will increase from about 21 inches at birth to about 31 inches by the end of our first year. While our bodies are growing, our personalities are

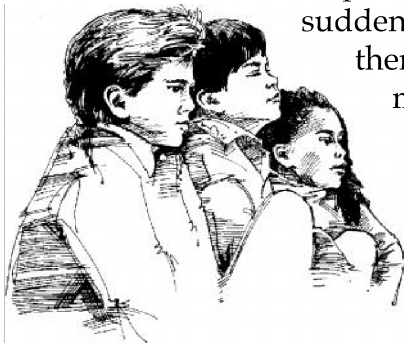
also developing. Erik Erikson, whose writings on human development are accepted by many social scientists, has described our first year, or infancy, as one in which we begin to either trust or mistrust the world around us. Those of us fortunate to find security and love in our small worlds will see those around us as trustworthy. Less fortunate infants may not feel secure or be untrusting of their surroundings.



While our bodies are growing, our personalities are also developing.

After infancy we begin childhood, and our bodies and minds continue to grow. During our early childhood, our bodies increase at an even rate. Our emotions and mental skills also

develop without any sudden leaps. But



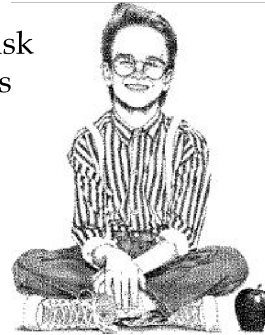
Adolescence describes the period of our life when we make the transition from children to adults.

then we begin **adolescence**, and our bodies, minds, emotions, and personalities may suddenly begin to change. We may not understand why.

Adolescence describes the period of our life when we make the transition from children to adults. This shift to adulthood is a period of extreme physical and social changes. Adolescence is a period of becoming—becoming an adult. As

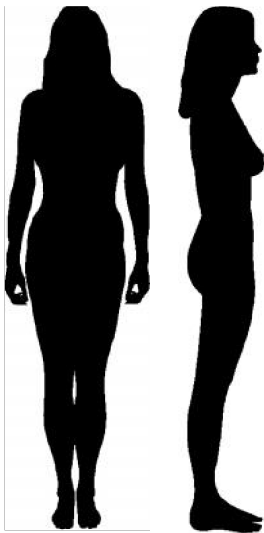
adolescents, most of us watch changes in ourselves and begin to wonder: “What am I becoming?” We begin to focus on our identities. Such questions as “Who am I?” and “Am I normal?” and “What will I be?” begin to puzzle us. We might not ask these questions out loud; nonetheless, nearly all of us spend time during our adolescence wondering and worrying about our bodies and our identities.

As part of adolescence, we go through a stage called **puberty**. During puberty both males and females become sexually developed and able to produce offspring, or babies. Puberty affects not only our physical growth but our social, emotional, and mental growth.



Puberty affects not only our physical growth but our social, emotional, and mental growth.

Physical Changes in Females during Puberty



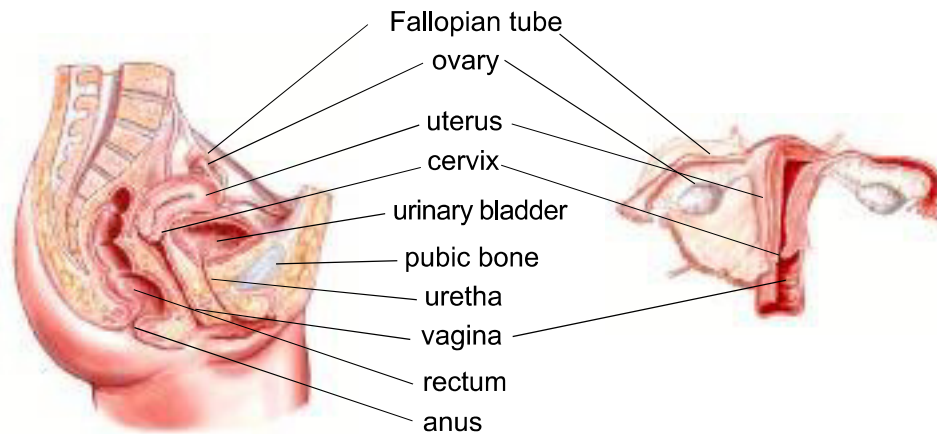
A girl's body will grow hair and begin taking on the more curved shape of a woman.

During puberty the girl's body begins to grow in ways that will permit her to become pregnant, give birth, and breast-feed a baby. Puberty in females can begin as early as eight years of age and may not reach completion until age 19. Researchers have used statistics to suggest the average age at which many girls experience particular changes. However, each of us will experience changes when our bodies are ready. Few of us happen to match the statistical averages or charts in textbooks. During puberty the **ovaries** and breasts of a girl will begin to grow and develop. A girl's body will grow hair and begin taking on the more curved shape of a woman, and her voice will deepen slightly. A girl will also begin **menstruation**—a monthly cycle she will experience until she reaches middle age.

The Ovaries: Releasing Hormones and Egg Cells

The first change a girl goes through in puberty cannot be seen. Inside her body, reproductive glands called *ovaries* grow larger and begin producing the **hormones estrogen** and **progesterone**. These hormones will travel through her bloodstream and trigger the other changes in her body that are part of puberty.

When a girl is born, her ovaries contain all of the egg cells she will ever have. On average, between the ages of 10 and 16, a girl will begin to *ovulate*, or release egg cells. It is these egg cells which the male **sperm** may join with, or **fertilize**. If fertilized, an egg cell may begin growing into an **embryo**—the very first stages of a baby.

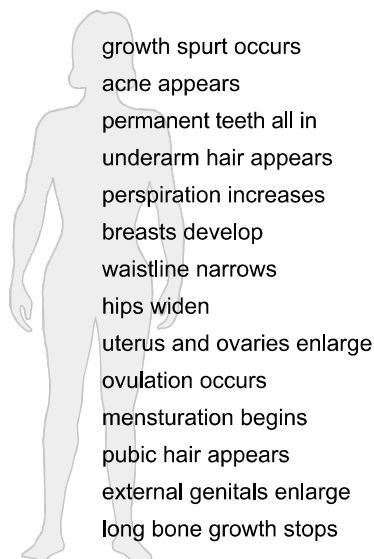


The Female Reproductive System

The Breasts: Producing Milk to Feed Babies

The female body not only bears babies but also can feed babies for many months after their birth. Female breasts produce milk that will supply a baby with all the nourishment it needs until the baby is about six months old. The first signs of a girl's breasts growing will be the appearance of breast buds. The nipple and surrounding ring of color, called the **areola**,

will begin to rise slightly from the skin and take on a definite shape. The color of the nipple and areola may darken.



During the next couple of years the girl's breasts will become fleshy and begin to grow outward. Many girls will notice that one breast grows more quickly than the other. In most cases the smaller breast will catch up and eventually match the size of the larger breast. A girl's breasts will usually finish growing between the ages of 12 and 19. The size of a female's breasts has nothing to do with how much milk they produce.

Unfortunately, many cultures throughout the world place much attention on breast size: girls and young women are often concerned about whether their breast development and size is normal. Each young woman's body develops at a different rate. Breast size is also different for each person and is determined by heredity. There is no "normal" size for breasts.

Body Hair: A Part of the Process

When a girl begins puberty, she will develop body hair around her genitals. This is called *pubic hair* and at first is straight, fine, and sparse. During the years that follow, her pubic hair will grow more coarse.

Young women will also develop underarm hair, which will follow the same fine-to-coarse pattern of growth. The rate of growth of body and pubic hair may mirror the growth of a girl's breasts. About the time her breasts finish developing, so will her body hair and pubic hair.

In our culture, many girls and women remove their underarm hair. Where or why this began is unknown. There is nothing medically beneficial about this practice, and it is strictly a personal decision.

Body Shape: Developing the Look of an Adult

Before puberty girls tend to have little fat on them. They are often bony, and straight lines define their body shape. Shortly after a girl begins puberty, she may go through a growth period. She may suddenly grow inches in a year or less. Her weight will increase with her height, and a layer of fat will pad her body, particularly on her hips and breasts.

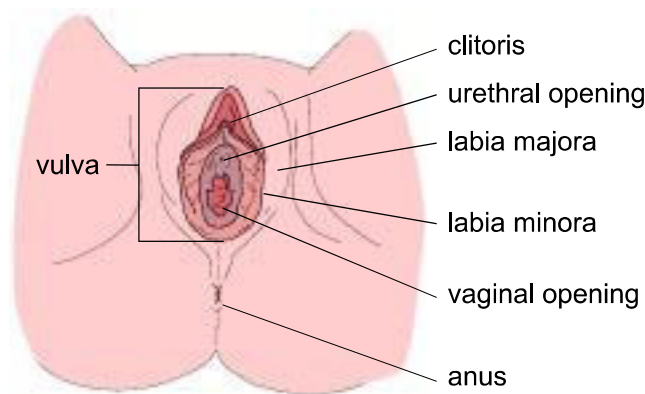
The girl's hips will widen, creating a larger passageway for a baby to travel through during birth. As her hips widen, her waist will seem narrower. These changes, along with the additional fat deposits, will begin developing the more curved body shape found in full-grown females.

The additional body fat that develops during puberty is not a sign of being overweight. This body fat is a natural part of healthy growth and is a necessary part of becoming a sexually mature female.

Female Genitals: The Vulva and Its Parts

As a group, the female genitals are called the **vulva**. They include the **labia majora**, the **labia minora**, the *vaginal opening*, and the **clitoris**.

The labia majora are the outer folds of the skin of the vulva. The labia majora surrounds the rest of the female genitalia and during puberty may grow slightly larger. The labia minora are the inner folds of the skin of the vulva and surround the **urethra**, through which females urinate. The



Female External Genitalia

opening of the **vagina** is also located inside the labia minora. The vagina is a muscular, very elastic tube. The opening of the vagina goes from this opening in the labia minora to the **uterus** inside the body. The clitoris is a small bit of flesh within the labia minora that is extremely sensitive. Stimulation of the clitoris usually causes feelings associated with sexual arousal.

Menstruation: Passing the Uterine Lining

Within a few years after the onset of puberty, a girl will reach *menarche*, which means that she will have her first menstrual period. Menstruation is one part of the **menstrual cycle**. This cycle prepares the uterus to nourish a fetus if the female's egg is fertilized by (joined with) a male's sperm. This preparation includes building up a lush, nutrient-rich lining in the uterus. If the female's egg is not fertilized, the uterus will begin to shed the lining through the vagina. This shedding of the lining of the uterus through the vagina is called *menstruation*, or a menstrual period.

Sometimes the single egg the ovaries release each month is not fertilized. The female body then begins to shed the blood and tissue that has lined the wall of the uterus. The uterus will also rid itself of the unfertilized egg cell. The uterus will contract until the blood and tissue is free. This waste then passes through a tube leading from the uterus, called the *cervix*. After passing through the cervix, the blood and tissue empties into the vagina. From the vagina, the blood and tissue passes from the body. Most females will pass about one to eight or more tablespoons of blood and tissue. Bleeding will last anywhere from three to seven days.

This passing off of the blood and tissue is called *menstruation*, or the *menstrual period*. The word *menstruation* comes from the Latin word *menses*, which means *month*. Menstruation usually takes place about every 28 days or once a month. However, each female will have her own pattern.

Menstruation is only one part of the menstrual cycle. A menstrual cycle begins with one menstrual period. The cycle lasts until the beginning of the next menstrual period. During the menstrual cycle, a number of things happen. Each thing that happens prepares the uterus to carry an embryo and fetus. After the uterus sheds its lining, it begins to form another lining. This stage takes about a week. When the uterus is ready, the ovaries will *ovulate*, or send an egg to the Fallopian tubes. This is the time when a female is most likely to become pregnant. For the next two weeks the lining will remain intact. If no fertilized egg attaches to the lining, the uterus will begin menstruation to shed its lining. And then the cycle will begin again.

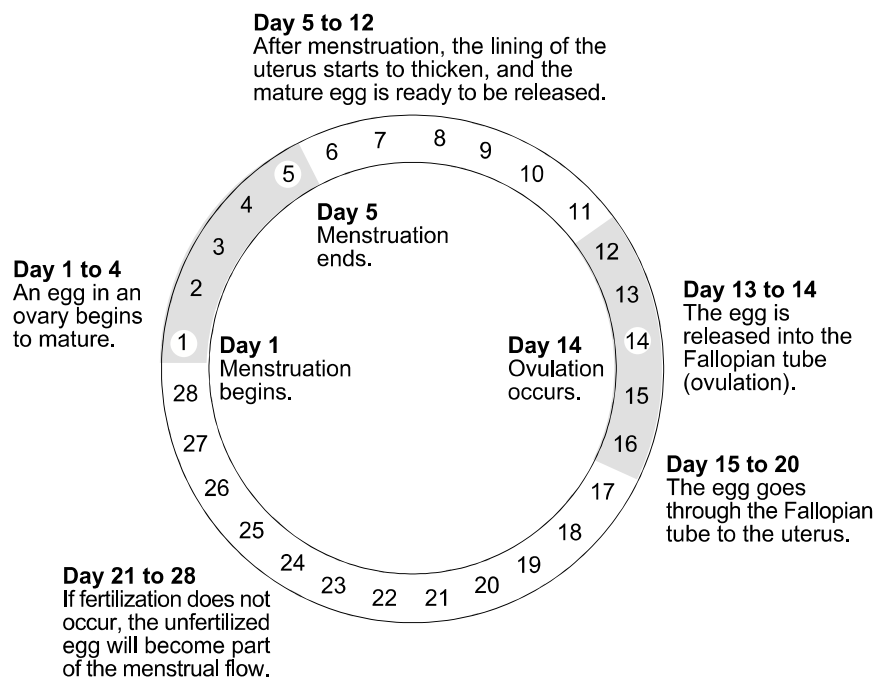
If a female suddenly stops experiencing menstruation, she should see a doctor. This can be a sign that she is pregnant. It can also be a sign of a disorder or disease. Or it may be just a temporary stopping of the cycle that means nothing.

The menstrual period often causes females some discomfort. To shed its lining, the uterus flexes and contracts its muscles. It is these contractions that some females feel as cramps and pain. Sometimes discomfort will also include a feeling of nausea. These cramps and nausea are usually mild. Exercise and warm baths to relax the muscles can ease the discomfort.

Over-the-counter medicines such as aspirin and ibuprofen may also help lessen the pain. A heating pad placed on the lower back or stomach may also help.

Females who eat nutritious food and exercise often feel less discomfort than those who eat poorly and do not exercise.

Most girls begin to menstruate between the ages of 10 and 16. In the early years, their menstrual cycles may be irregular. One cycle may be 21 days, while the next may be 35 days. Girls may skip an occasional period, particularly if they exercise a lot or are extremely undernourished. In time, however, the cycles will usually develop a pattern.



The Menstrual Cycle

Hygiene: Staying Safe during Menstruation

During menstrual periods, females may use various products designed to absorb the flow of blood. One popular and effective product is the tampon, which is placed *inside* the vagina. Sanitary napkins are another method of absorbing blood flow during menstruation. They are placed *outside* the vagina. These products should be changed often to reduce the risk of infection.

A word of caution is needed on the use of tampons. They have been linked to toxic shock syndrome (TSS)—a potentially dangerous disorder. TSS causes a high fever, a skin rash, and in rare cases death. To avoid TSS, change tampons frequently and alternate the use of tampons with sanitary napkins.

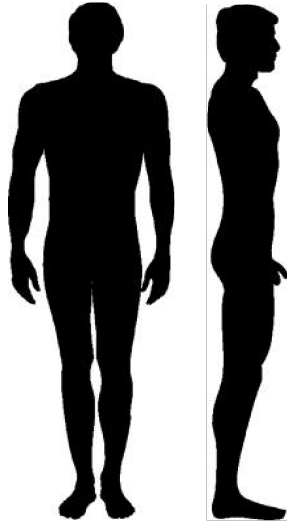
Feminine hygiene sprays and deodorants can also pose health risks. They may hide an odor. An odor may be a sign of an infection or disease, which should be checked by a doctor. Spraying deodorants or other products inside the vagina can cause irritation or even infection.

Females may be quite regular and have a period every month, or they may miss a month or more. The physical stress that female athletes put on their bodies can limit the flow of estrogen into their system and cause them to miss menstrual cycles. Poor nutrition or other physical and emotional stresses can also influence menstruation. Pregnancy also causes menstruation to stop during the term of the pregnancy.

Some doctors recommend that girls keep a record of their menstrual cycle. If a girl becomes concerned about the irregularity of her cycle, a written record can help a doctor recognize whether there is a problem.

Once young women have entered puberty, they may notice that from time to time there is a mild whitish discharge from the vagina. This discharge is part of the body's normal cleansing process and is nothing to worry about. Any time that a young woman notices a discharge that is not whitish in color, she should talk with her health-care provider.

Physical Changes in Males during Puberty



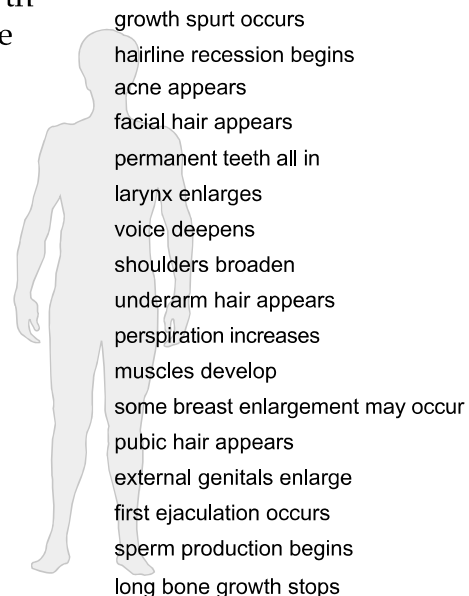
Males tend to begin puberty a few years older than females.

Males tend to begin puberty a few years later than females. Their development through puberty is both slower and longer than that of females. Some boys will not begin puberty until they are 15, or even older. Most, however, begin around 10 years of age and complete puberty by 18. The genitals in males grow and develop during puberty, just as they do in females. This growth makes it possible for males to produce sperm to fertilize the female egg cells. And like females, males grow pubic and underarm hair. But during puberty, males tend to grow more muscle tissue than females do. And the changes in the male's voice are more pronounced than in the female's voice.

Body Growth: Bones, Hair, and Muscle

Like girls, boys will also go through growth spurts during puberty. For many boys, the bones in their hands and feet will grow sooner than the rest of their skeleton. When this occurs, boys may go through an awkward period until the rest of their body catches up. Eventually, most boys will regain their agility and coordination. By the time most males complete puberty, they will have reached their full height.

Also like girls, boys will begin growing pubic and underarm hair during puberty. At first their pubic hair will be straight, fine, and sparse. Later it will grow in a triangle of curly and coarse



hair. During their mid- or late-teens many boys will grow fine hair above their lips and sometimes along the jawline and on the face. Eventually this hair will turn to whiskers or a beard. Many boys will also grow hair on their chests. Most of their body hair will darken over time.



Testosterone has the long-term effect of causing hair to grow below the crown of males' heads and causing hair not to grow along the scalp.

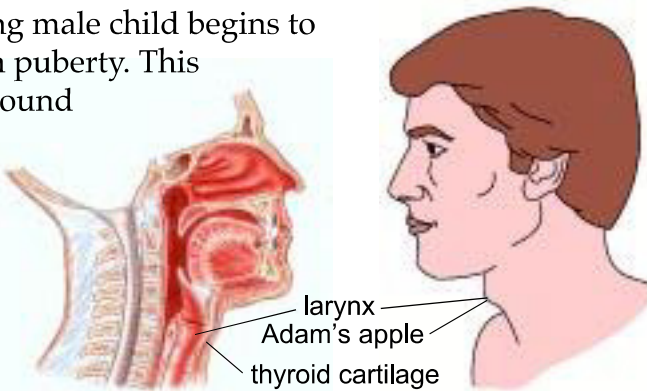
During late puberty, some males will notice their hairline receding, or moving back towards the crown of their head. The male hormone **testosterone** has the long-term effect of causing hair to grow below the crown of males' heads and causing hair *not* to grow along the scalp.

The young man will also begin to develop more muscles during puberty. His shoulders will widen and his arms, legs, and torso take on shape as muscle tissue develops.

The Voice: From High to Low

The high voice of the young male child begins to deepen as he goes through puberty. This happens, on average, at around 14 years of age.

Testosterone causes the larynx, or voice box, to grow. The larynx extends from the back of the tongue to the *trachea*, or windpipe. The larger voice box creates a deeper voice. While the larynx is growing, however, it sometimes quivers. When



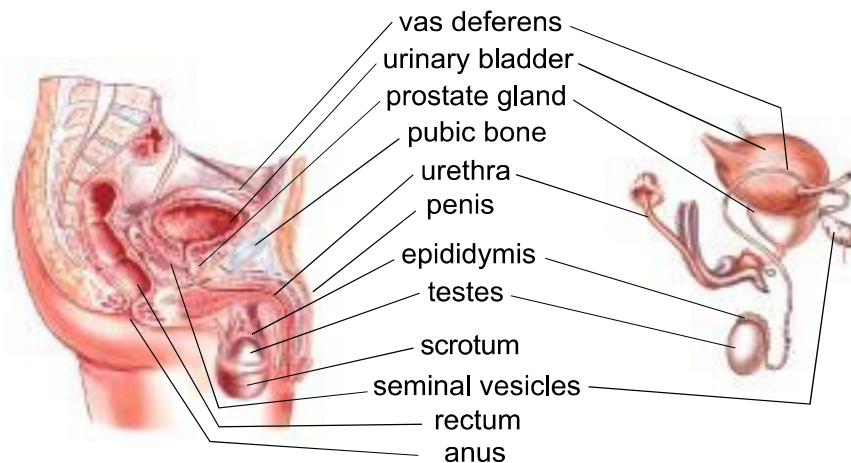
In males, part of the larynx may protrude at the front of the neck, forming the so-called Adam's apple.

this happens, a boy's voice will break, or suddenly hit a high note. In time, the larynx stops growing, and the male's voice will stop breaking.

Genitals of the Male: The Testicles, Scrotum, and Penis

Puberty begins in the male when his **testicles** or *testes* release the hormone testosterone into his bloodstream. Testosterone triggers all of the other physical changes the male will experience during puberty. The testicles are

two small reproductive glands that hang between his legs in a sac called the **scrotum**. As a boy goes through puberty, his testicles and scrotum will grow and develop. In most cases, one of the testicles hangs lower than the other testicle. This helps eliminate friction that would occur if the testicles hung side-by-side.



The Male Reproductive System

During puberty, a young man's testicles will start producing the male reproductive cells known as *sperm*, and his **penis** will grow larger. Some males have had their penises **circumcised**. Circumcision is a medical procedure in which the small piece of skin that covers the head of the penis is cut away. Circumcision was once performed only in certain religious rituals but is now common among people of many faiths in our society. Circumcision has not been found to provide any specific health benefits or health risks.

Sperm are produced in the testicles. Sperm travel to a large coiled tube on the outer surface of the testicles called the **epididymis**. After about two to 10 days, sperm leave the epididymis and travel through a long tube called the **vas deferens**.

The vas deferens tubes lead to the urethra. The urethra is a tube that runs through the center of the penis. Sperm leave the body through the urethra. The urethra is also the tube through which urine leaves the body during urination. However, a muscle near the bladder contracts and makes it impossible for semen and urine to pass through the urethra at the same time.

As sperm travel through the vas deferens and the urethra, they pass by glands. The glands add fluids that nourish and protect the sperm, enabling the sperm to move on their own. The addition of these fluids to the sperm creates the fluid called **semen**.

An **erection** occurs when a male's penis fills with blood and stiffens. Erections occur for a variety of physical reasons including sexual arousal and the need to urinate, or during the dream state in sleep. An erection allows a male to participate in **sexual intercourse**. *Sexual intercourse* is genital contact between individuals. **Ejaculation** occurs when sperm, mixed with *semen*, is released from a man's penis. Ejaculation can happen during sexual intercourse, during **masturbation**, or during the dream state of sleep. When a male ejaculates, he is said to have an **orgasm**.

Daily cleaning will help keep the genitals—the penis and scrotum—free of rashes and infections. While playing sports, males should support and protect the genitals with athletic supporters, or “cups.” If a male is hit in the testicles and pain or swelling develops, he should see a doctor.

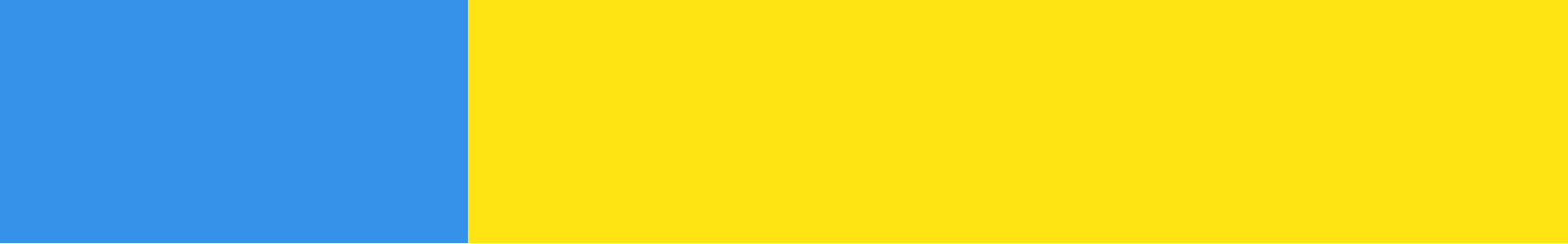
Nocturnal Emissions: “Wet Dreams”

Nocturnal emissions describe *orgasms* that both males and females have while sleeping. The release of fluid during the night is also called a *wet dream* because it usually occurs during a dream. Wet dreams cannot be controlled by either males or females. About two out of five women and four out of five men have experienced nocturnal emissions at some time in their life.

Why we have wet dreams is not clear. Some researchers believe that the male's wet dreams are the body's way of releasing stored sperm. Some researchers believe that these dreams are an outlet for sexual desires in both males and females. The only thing nearly all sensitive parents and adults agree on is this: We should not be embarrassed or alarmed by wet dreams. They are natural and do not indicate a moral weakness or an unnatural sexual desire.

Masturbation: Self-Stimulation

Masturbation refers to the stimulation of one's genitals to reach orgasm. An orgasm is a physical and emotional sensation that is felt at the peak or end of a sexual act. In most instances, people masturbate by rubbing or touching their genitals.



There are many myths about the effects of masturbation that are still common. Rumors have scared people into thinking that physical harm, such as blindness or insanity, can result from masturbation. These rumors are untrue. Masturbation does not cause physical harm. However, different cultures, religions, and families have different opinions about whether or not masturbation is an acceptable behavior. Young people should talk with their parents about family and religious values regarding masturbation.

Puberty and Changing Emotions

The same chemicals, or hormones, in our bodies that cause physical changes also cause changes in our emotions. During puberty we may feel “on top of the world” one moment. The next moment we may feel as if we are carrying the weight of the world on our shoulders. Each day may bring wide swings of emotion. Many adolescents report feeling a deep, almost overwhelming love and appreciation for their parents on one day. The next day, they may feel disgust and even hate for those parents.

One expert on the effects of puberty could suggest only one possible way to manage these extremes of emotion: humor! Learn to laugh at some of our emotions. Develop a sense of humor about the sudden shifts of emotion that can confuse our daily life. Try not to take all of our feelings

so seriously. Recognize these feelings as sometimes just a momentary rush of emotion that will pass.



During puberty most adolescents start to take a new kind of interest in others.

During puberty most adolescents start to take a new kind of interest in others. This interest can take different forms. We may, for the first time in our lives, develop friendships that include romantic feelings. For many people, puberty will also excite sexual desire.

Remember: Puberty is the period when adolescents are becoming sexually mature people who are capable of reproducing. A common part of this process is developing an interest in and a sexual desire for those we find attractive.

Puberty and Social Growth

The new interest we find in others during puberty is a natural part of our social growth. *Social growth* refers to the ways we grow in our interactions with others. During puberty we begin to develop social roles or different identities we will use in our interactions with others.

Most of us will feel satisfaction in developing more responsible and adult-like relationships with others. We may find great satisfaction in doing volunteer work or in going out of our way to do something for a friend or stranger. We will begin seeing ourselves as individuals who can add to the world in good ways. And we may begin to see that we can be an important and valuable part of other people's worlds.

As young children, most of us accepted what we were taught. Our values and beliefs usually mirrored those of our parents and teachers. During puberty we begin to work out our own identities. We begin to see our families in a new way. One day we will probably be on our own, supporting ourselves and making our own decisions. We see that we are both a part of our families as well as individuals separate from them. We may question things we were or are being taught. We begin to develop our own sense of right and wrong behavior.

When we develop our own values, we often find ourselves pulled by two opposite forces. What do we do when our own values conflict with those of our peers? Puberty is a time when we find out which is more important to us—following our own paths or following those of others.



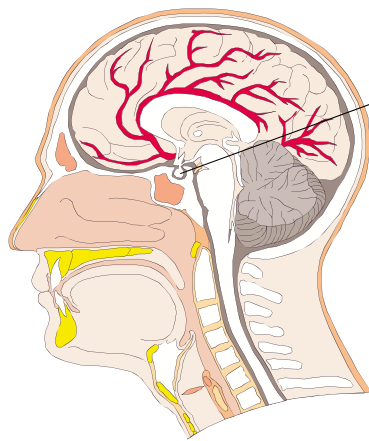
What do we do when our own values conflict with those of our peers?

From birth we respond to our gender, or our classification as males or females. If we are males, we hear, "Oh, what a handsome boy!" If we are females, we hear, "Oh, what a pretty girl!" The list goes on and on. Males are told: "Big boys don't cry" and "Don't act like a girl!" Girls hear: "Act like a lady!" and "Don't be a tomboy." Other people try to shape us into masculine (for boys) or feminine (for girls) social roles.

These pressures are even greater during puberty. Suddenly our bodies are growing in masculine and feminine ways. We may begin to feel that since we look like a man or a woman, we should act like one! But we may find that although we are a male, we don't want to take on all of the characteristics usually associated with men. The same can be true for females. This difference between what is expected of us and what we want can confuse us. Each of us must find a satisfying social and sexual role. Unfortunately, this is far easier to say than it is to do.

What Causes Puberty?

In both males and females, the onset of puberty is controlled by the **pituitary gland**. The pituitary gland is a kind of master gland that releases hormones into our bodies. One function of hormones is to set certain



pituitary gland

The pituitary gland is located almost at the center of the skull and hangs from the base of the brain.

processes in motion.

Hormones act as messengers or timekeepers that flow towards various parts of our body and trigger other activities. One of the hormones released by the pituitary gland travels to the female's ovaries to produce the hormones estrogen and progesterone. Estrogen and progesterone will then set off the physical and emotional changes that are part of puberty.

A similar process occurs in males. One of the hormones released by the pituitary gland travels to the testicles. The testicles will then release the hormone testosterone. Testosterone then flows through the bloodstream and triggers the changes males will experience during puberty.

The Biological Clock: The Body's Timetable

Each of us has a biological clock, a kind of body clock, that sets our development in motion. No person's clock is right or wrong. We have no control over our biological clocks, just as we do not choose whether our eyes are brown or blue, or whether our hair is straight or curly. Learning to appreciate this fact can help us make our way through puberty. No one is better or worse because he or she matures sexually at an earlier or later age.

So simply appreciate the differences among us. A hundred years ago people often began puberty at a much later age. Some males did not complete their growth until their mid-twenties, and females often did not begin puberty until well into their teens.

In our present culture, there are still great differences in our biological clocks. The start of puberty can vary as much as five years or more from one person to another. Once puberty begins, the rate of growth can also vary greatly. Some people will develop quickly, some slowly. Some people will go through rapid growth periods. They may develop at a fast rate for a time and then suddenly their development will slow. Whether you are a late bloomer or an early bloomer, try not to judge yourself and try not to judge others. We neither choose nor control when we begin puberty, or when we finish maturing.



The start of puberty can vary in each teen.

Summary

During *puberty* males and females become sexually developed and able to produce offspring. As they become sexually developed, they go through many physical and emotional changes.

Changes in the female's body include development of the breasts, growth of body hair, change in body shape, and growth of the genitals.

During puberty females become capable of releasing egg cells. If these egg cells are *fertilized* by a male's *sperm*, a pregnancy may begin. If fertilized, an egg cell may begin growing into an *embryo*—the first stages of a baby.

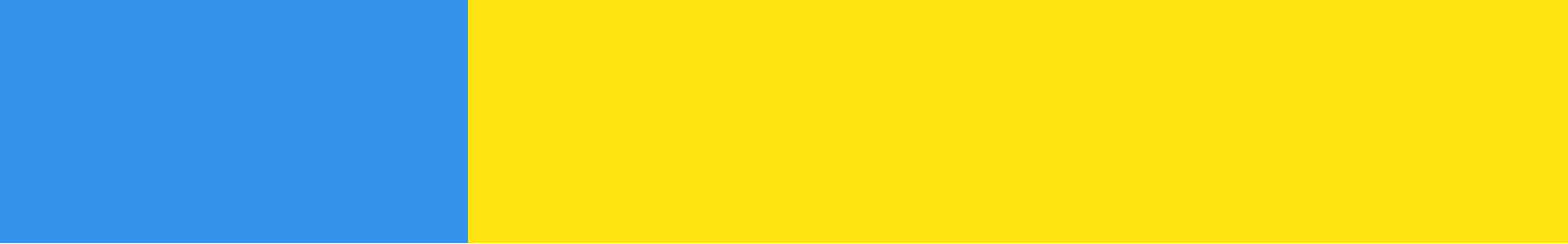
During puberty girls begin *menstruation*. Menstruation is a monthly cycle during which the lining of the *uterus* is passed. This lining helps the embryo, as it develops into a fetus, survive during pregnancy.



During puberty muscles grow in males and they begin to take on a masculine appearance.

Males also go through many body changes during puberty. Their genitals grow and develop the ability to produce and *ejaculate* sperm. Their bones, hair, and muscles grow as they take on a masculine appearance. And their voice will deepen.

Both males and females may begin experiencing *nocturnal emissions*, or orgasms while they sleep. These are natural occurrences. Males and females also may experiment with *masturbation*, or self-stimulation to reach orgasm.



Puberty can also affect the emotions of both males and females. They may experience wide swings of emotion—feeling happy one moment and sad the next. During puberty, they may also experience social growth. They may find a new interest in romantic relationships and begin to develop new social roles and identities. They may develop responsible adult-like relationships with others. And they may begin to think more for themselves and work out their own values.

Although everyone goes through puberty, each of us develops at different rates. One person may begin puberty at an early age, and another person may not reach puberty until the middle or late teens. There is no right or wrong age at which to begin or end puberty.