

The Growth and Maturity of the Human Body: From Conception to Birth

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Introduction

The human body is a very complex display of greatness. God created man that evolved many processes in which made our bodies unique and marvelous. There are thousands of bodily organs that allow us to live everyday. The human muscle has been our major strong hold, for most of our time on earth (Vogel 2001:2). Our muscle structure can increase with the activities that we engage in, but they also can decrease because of the lack of exercise of physical movements that we take for granted. Muscle makes up fully forty percent of your body, not blood , brain, or liver can make up this much (Vogel 2001:5). All of these parts of our body makes only make up the mass of the muscle that is added up. Muscles work constantly even when you're not using them. For all it's billion years of experience and perfection, the muscle hasn't came up with an answer to how to lock up at the same shortened length, so as to hold that length without further work (Vogel 2001:9). A muscle may pull its ends together, but in doing so, it gets thicker enough that its volume remains the same (Nuland 1997:179). An adult has over 206 bones in our body, which decreases, as we get older. Bones, like muscles also serve as an important stronghold for our daily life. They support our body, forming its shape, form and ability to move (Price1992:2). Bones protect vital organs and serve as levers to make movement possible (Oatis 2004:43). The bones in your body go through a lot every day to carry of certain tasks. Since your bone structure always changes, exercise and better living are required to maintain health and strength. Minerals

and vitamins, which strengthens bones, are stored by the complexity (Ellison 2001:206).

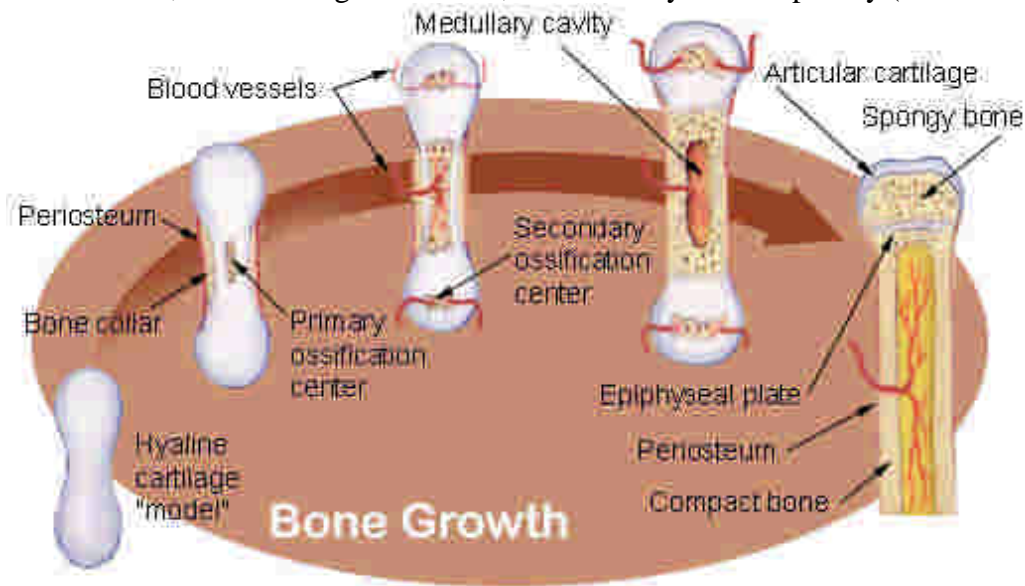


Figure 1 shows an illustration of bone growth over time.

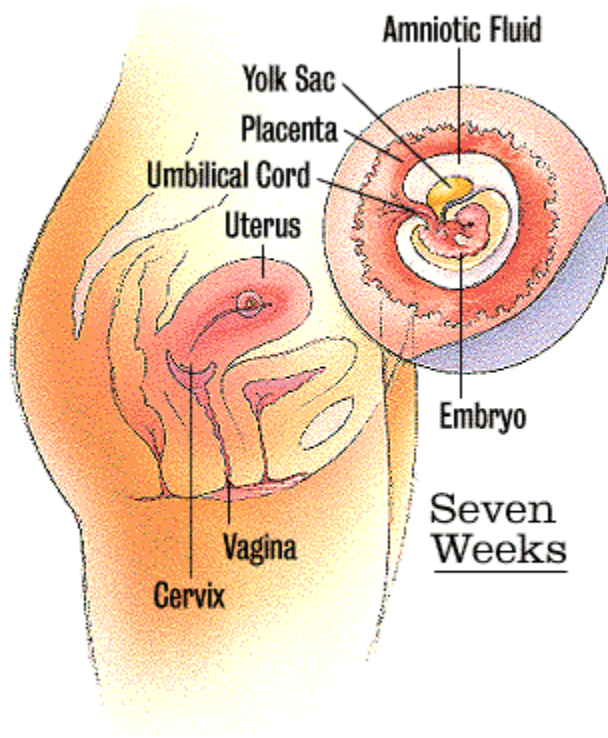
Under a microscope, bone provides a strong outline of fibers criss-crossed in indicate patterns, embedded in mineral salts (Urist 1965:151). They held 99% of the bodies calcium, 86% of its phosphate, and 54% of our magnesium (Price 1992:4). The body can't function without calcium, because it keeps membranes in tact, plus muscles couldn't contract without them (Price 1992:10). Before birth and after birth, the skeleton of the baby have little bone and many bones start out as cartilage and as children grows, cartilage transforms into bone (Nilsson 2001:5). In this paper I'm going to go into detail about the growth of humans from conception to birth.

The First Trimester

The growth of the baby within the uterus takes nine calendar months, and the organization of the new life, pregnancy is divided into three-month periods called trimesters (Demarest 1969:2). When a baby grows rapidly inside of a women's womb, its

combined with steroids and other hormones that promote growth (Vaughn 1996:55). This surplus of steroid hormones could also stop the inflammatory responses in the (Vaughn 1996:65). During the first week of a women's pregnancy, the fertilized egg cell is divided into two cells and so on (Nuland 1997:130). The following couple of weeks are like this also, but the embryo is recognizable during the first couple of weeks. At the end of the week, it becomes a hollow ball of a few hundred cells, with a swollen mass on one side, a mass that will become the embryo and fetus Demarest (1969:58). The yolk sac makes blood cells during this time, even though the unborn child is rapidly growing at one-sixth of an inch long (Ellison 2001:16). The embryo's sex cells start to migrate to a given place, yet these cells that is ready to become sperm or egg and produce future generations start out in the yolk sac (Vaughn 1996:34). The backbone, spinal column, and nervous system are forming while the kidneys, liver, and intestines start to take shape also (Vaughn 1996:13). The image of the head and face become recognizable and the eyes and ears are beginning to show. Tiny bumps where the legs and arms start to emerge, while the beginnings of the thyroid gland, lungs, liver, pancreas, all become recognizable (Ellison 2001:45). By the very end of the month the embryo is four

millimeters across (Jones 2004:88).



During the second month, the embryo is considered a little human baby and in the 5th and 7th week (*figure 2*) the embryo grows from four millimeters to eight millimeters (Vaughn 1996:36). The elbows of the arms, and the increases of the legs begin to develop, along with the hands and the feet. Facial features began to sprout out, but it's still at it's lowest stage to be fully recognized. You can see a tail growing out of the end of the embryo, which it will soon disappear when the body grows over the next couple of months. In the sixth week after conception, the skeleton begins to emerge out of muscle tissue (Ellison 2001:17). Like the first internal skeletons on earth, it is made of cartilage instead of bone and at the end of the week bone start laying it down around these models (Vaughn 1996:44). The hands start to get tiny bits of cartilage that will later develop into fingers and toe, but there are no joints present at this point. The liver is growing faster

and it creates a bulge in the embryos belly next to the heart and replaces blood reproduction from the yolk sac (Demarest 1969:59). This moves circulation along the little fetus's body faster. During the seventh and eight weeks, the development of an upper lip and nostrils start to appear. The babies neck now starts to stretch, which enables the lower jaw stand out (Nielsson 2001:32). The ears that are behind the neck during week six, have now moved to the side of the head and a coverage of skin surrounds it. A little smile can now be seen, because of the closed circle of the mouth, but the eyes haven't yet closed in (Jones 2004:88). Internal organs become sharply toned, the sex organs form around the germ cells, and the tail is close to being gone (Tsiaras 2003:22). Muscles in the neck and body begin to contract at one time, and the embryo will arch back and push away from the edge of the amniotic sac(Vaughn 1996:45). These little movements that are being made by the fetus can't be felt in mother at this time. Most birth defects end at this time of the embryonic period and the fetus's is thirty millimeters in length now (Vaughn1996:45). The heart can be heard, but not often. The baby's body can't produce a strong enough heartbeat to be heard by the ear. Hormones and chemical signals cross back and forth between the two, affecting Embryonic growth and maternal behavior (Demarest 1969:74). For the embryo to successful connect in the womb, her inheritance system has to overpower forces the body usually raises against invaders (Vaughn 1996:47). In the third month, the baby flows, around in a salty fluid, and the umbilical chord start to circle around the belly and placenta (Nielsson 2001:55). Eyelids surface around about the eyes, but the baby doesn't open until the sixth month.

The babies hands and feet are well developed, and in the ninth week, fingernails and toenails can be seen on the baby (Vaughn 1996:75). The embryo will no longer be an embryo, but it will be called a fetus. The fetus looks are more human-like now and the sex of the child can be determined.

The Second Trimester

The fetus is now three inches long and the muscles and sex organs began to form. During the fourth month the fetus's starts to grow hair, extending from the eyebrows to the upper lip (Demarest 1969:62). Most of this hair sheds after the babies are born. The baby grows very rapidly during this month, but it's weight comes along slowly after birth. The main reason why the baby haven't been putting on weight is, because it hasn't started to add the fat that would make the baby bigger. One type of fat that a baby requires is called brown fat, which keeps the baby warm because of the energy it obtains. At this moment, the nerve cells in the brain have finished dividing and have reached there maximum number, but the number of cells will decline as the brain begins the nerve priming that shapes brain functions (Vaughn 1996:106). The baby starts to receive signals faster from the brain to perform certain functions. From the 12th to the 16th week, his diaphragm goes up and down as if it's breathing, but it's not and this disappears until the third trimester (Nielson 2001:68). The baby is twenty-five centimeters and weighs a pound by the end of the month. In the fifth month of the babies existence, facial changes occur. The oily, producing sebaceous glands, begins to operate. These organs cause a lot of trouble as the baby grows (Ellison 2001:41). A protective

skin is formed around the baby called vernix caseosa, to shield the baby from the skin problems (Demarest1969:102). A good feeling for the mother to feel, is the movement and kicks of her baby. These occurrences require a schedule to keep track of these joyous miracles. Now the baby start to get protection from it's own immune system, which shields away any infection that came it's way (Jones 2004:134). The weight of the baby is about one pound now and the process of weight gaining will continue very rapidly. Genes provide a framework for the development of the brain activity and the genetically programmed preferences provides limits on their multiplication and movement (Vaughn 1996:153). The genes orchestrates a field of color on the canvas of the brain and the electrochemical pointillism of brain activity will supply the details in the total picture of brain wiring (Nielson 2001:125). With the arrival of the sixth month, the fetus can survive out of the mother's body with the assistance of medical health, but it's going to be premature. A lot of premature babies don't survive because of the lack of development in their little lungs. By the twentieth-fourth week, the fetus's lungs have just begun to expand and take air in (Vaughn1996:189). If a baby is born in the next couple of weeks, though premature, it will have a great chance of surviving. The nervous system starts to mature, and the baby can remember sounds, and recognize sounds of his mothers voice (Demarest 1969:66). The baby's eyes have completely formed and taste buds in the tongue have surfaced (Jones 2004:91). The weight gaining starts to increase by the end of the month.

The Third Trimester

The child if born, stands a better chance of surviving at this stage. By the end of this period, the baby's lungs have the strength to expand and they have good surface area for letting oxygen pass into the (Vaughn 1996:189). With continued growth of the central nervous system, the brain expands to fit a certain portion of the head. During this time, fat is filling in wrinkles in the skin and by the end of the month, fat is about four percent and the baby's total weight is about 4.4 pounds (Nielson 2001:200). Now that the baby has grown up a lot, it can no longer move around in the mother's belly. The baby spends 70 to 80 percent of the time in something called R.E.M. (rapid eye movement) which is equivalent to our dream sleep (Ellision 2001:47). The baby learns many great things when it's in the womb. It is this learning that makes these senses possible and prepares the child for interacting emotionally and physically with his family how life begins (Vaughn 1996:200). By the time of the eighth month the schedule of development is almost complete on all of the major body systems and the babies nervous system has come a long way that it's directing breathing motions and performing reflexes (Vaughn 1996: 190). With almost total control of it's eye movement, the body can focus and blink now. By the end of the month, the baby's muscles spend most of their time contracting and relaxing (Tsiaras 2000:210). About 80% of the babies time is spent doing this. The rapid weight growth continues and the babies weight doubles by the end of the month. The dreadful ninth month is near and the mother has just about reached her pain and suffering. The baby has also stored away a great deal of the heat producing brown fat in certain spots around vital organs (Vaughn 1996:239). The nerves in the

Baby's brain, looks after its development and the growth of the rest of the body. A child is usually born in this month or weeks after.

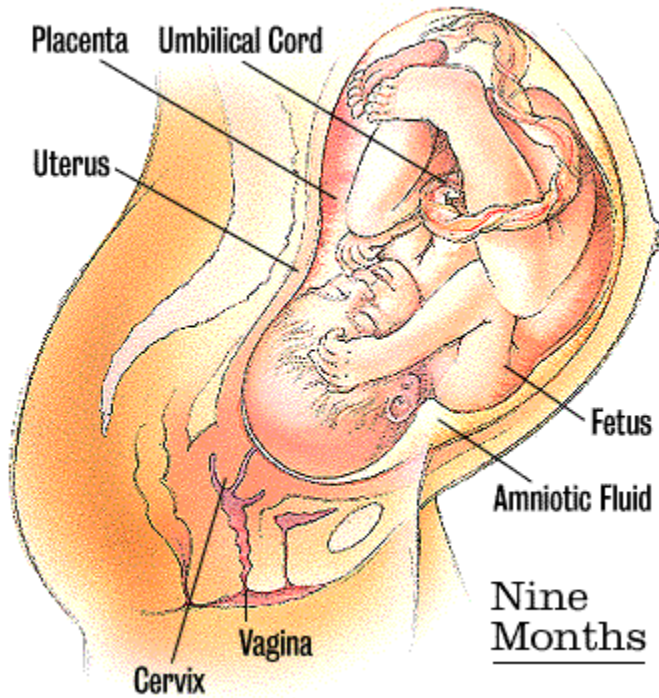


Figure 3 shows the final month of a women's pregnancy.

During the nine months of pregnancy, women go through a lot of changes that she may or may not be ready for. Estrogen will slowly start to increase and the production of contractile proteins tend to spread out (Jones 2004:92). The hormone also promotes the formation of gap junctions, tunnels between connecting muscle cells that will carry contraction signals rapidly from one cell to another (Nielson 1998:213). Something that is crucial to the high level of estrogen that is being produced is to make the women's blood come together easier. This is necessary because a lot of capillaries will be broken,

as the baby pushes through the birth canal and the placenta pushes away from the uterine wall during labor (Demarest 1969:79). To the women from bleeding excessively, the blood clots quickly. During labor, the most important part, is the increase in estrogen triggers the creation of the two final levers of labor: prostaglandin and the receptors oxytocin (Vaughn 1996:244).

From childhood to adulthood

For young children, mental development is grouped together by the regular appearance of a set of abilities that is put into stages (Balazs 1974:210). These stages consist of memory toward the end of the first month, speech sounds by the first birthday, connected speech by the second birthday, the ability to relate concepts and categories by the sixth birthday, and the ability to comprehend right or wrong arguments by teenage years (Smart 2000:73). As a boy or girls grows up and matures into what they want to be in life, mental experiences start to become more frequent. If problems start to occur when a child is in one of their early developmental stages; it could damage them for life, if not tended to. Our long developmental period of growth is like that of no other species, because of our complex brain structure. We can do things and perform certain tasks that can't be accomplished by any other species. Reading and writing is just a couple of tasks, other species can't do. But one thing I have come across is, that we are the weakness when born, because we are so vulnerable. Plus, while other animals grow up faster, we tend to mature much slower. The ability to learn occurs throughout our lifetime, but we can either embarrass our knowledge or let it fall by the way side.

Conclusion

The muscle's basic response to changes in activity level is well known: increased activity results in hypertrophy and increased force production, and decreased activity leads to atrophy and decreased force production (Oatis 2004:61).

Structure of a Skeletal Muscle

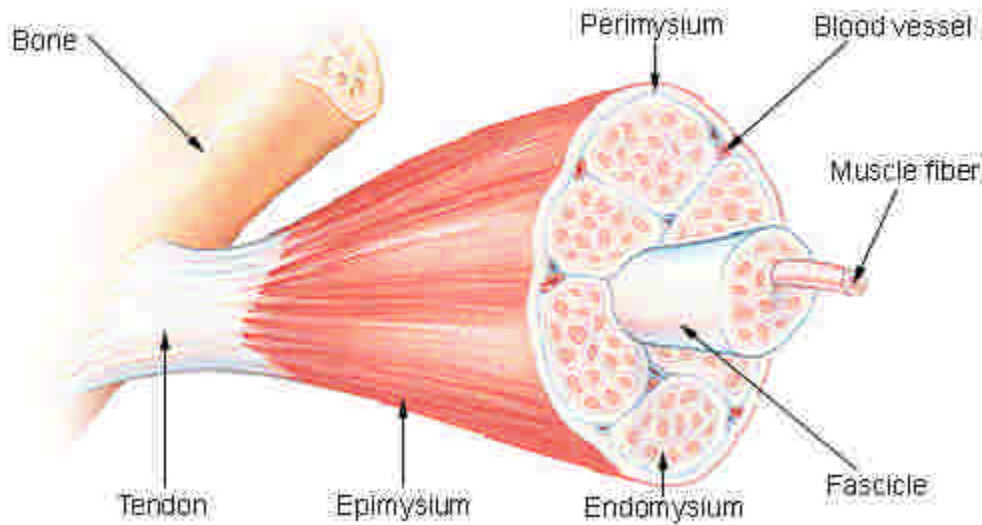


Figure 4 shows the complexity of the skeletal muscle.

The end result is decided on how hard you work and how hard you push yourself. If you participate in resistance exercise your body will get stronger and healthier. Decreased activity produces less muscle mass, because of lack of exercise and one study reports a 13% decrease in some lower extremity strength in 10 days of non-weight-bearing activity (Oatis 2004:62). As we get older, our muscles are going to decrease if we like it or not. Some muscle groups change or decrease more than others. Someone who is aging, such

as myself, I have to pay close attention to the muscles that I have hurt in the past and protect them from harm in the future. When the body takes on a lot of exercising, the bone tends to get stronger and expand, but when activity stops, the bone loses mass. The bone helps the body move and is the protector of bodily organs in your body. It's usually hard for a child or teenager to go from one stage in their life to another. Hardships of the next age period takes time to usually get adjusted to. Bad experiences are ideal to experience, because while they might be embarrassing at the time, it's good to find out early on that you have failed at something but you've learned to overcome bad occurrences when they occur.

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