DOWNLOAD PDF THE SKIN AND THE SKELETON

Chapter 1 : Fifth grade Lesson in Science Muscle, Skeleton, and Integumentary System Review

Your skin system is what your skin is made of! It's a layer of dead skin on the outside, helping to protect the inside flesh of your body. Organs of the skin system include: the stratum corneum, which are the dead cells, the capillaries, which regulate the temperature, and the subcutaneous layer.

The arms of octopus are muscular hydrostats The term "Soft Bodied" refers to animals which lack typical systems of skeletal support - included in these are most insect larvae and true worms. Animals that are soft bodied are constrained by the geometry and form of their bodies. However it is the geometry and form of their bodies that generate the forces they need to move. The structure of soft bodied skin can be characterized by a patterned fiber arrangement, which provides the shape and structure for a soft bodied animals. Internal to the patterned fiber layer is typically a liquid filled cavity, which is used to generate hydrostatic pressures for movement. Hydrostatic skeleton[edit] A hydrostatic skeleton uses hydrostatic pressure generated from muscle contraction against a liquid filled cavity. The liquid filled cavity is commonly referred to as the hydrostatic body. The liquid within the hydrostatic body acts as an incompressible fluid and the body wall of the hydrostatic body provides a passive elastic antagonist to muscle contraction, which in turn generates a force, which in turn creates movement. Fiber arrangement[edit] left- and right-handed helices The arrangement of the connective tissue fibers and muscle fibers create the skeletal support of a soft bodied animal. The arrangement of the fibers around a hydrostatic body limits the range of movement of the hydrostatic body the "body" of a soft bodied animal and defines the way the hydrostatic body moves. Muscle fibers[edit] Typically muscle fibers surround the hydrostatic body. There are two main types of muscle fibers orientations that are responsible for the movement: There are four categories of movements of a hydrostatic skeleton: Elongation, which involves an increase in the length of a hydrostatic body requires either circular muscles, a transverse muscle arrangement, or radial muscle arrangement. For a transverse muscle arrangement , parallel sheets of muscle fibers that extend along the length of a hydrostatic body. For a radial muscle arrangement , radial muscles radiate from a central axis along the axis perpendicular to the long axis. Shortening involves the contraction of the longitudinal muscle. Both shortening and bending involve the contraction of longitudinal muscle, but for bending motion some of the antagonistic muscles work synergistically with longitudinal muscles. The amplitude of movements are based upon the antagonistic muscles forces and the amount of leverage the antagonistic muscle provides for movement. For the torsion motion, muscles are arranged in helical layers around a hydrostatic body. This cross helical arrangement is seen in the tube feet starfish, different types of worms and suckers in octopus. This cross helical arrangement allows for the connective tissue layers to evenly distribute force throughout the hydrostatic body. Another commonly observed connective tissue fiber range is when the connective tissue fibers are embedded within a muscle layer. This arrangement of connective tissue fibers creates a stiffer body wall and more muscle antagonism, which allows for more elastic force to be generated and released during movement. Specialized function in vertebrates[edit] Swimming and undulatory locomotion[edit] The skin of these animal that use undulatory motion to locomote have several distinct characteristics. The skin of these animals consists of cross-helical arrangement of collagen and elastin fibers embedded in the dermal layer of skin, [5] a two-dimensional stiffness. Fish , shark , and snakes are all examples of animals that locomote using undulatory locomotion. Eel[edit] Closeup image of the skin of a marbled eel The cross helical fiber arrangement of the two dermal fibers types collagen and elastin , are responsible for the mechanical properties of the skin [6] such as the two dimensional stiffness seen in the eel skin. In the longitudinal direction, eel skin behaves like a pure fiber system, with a lesser tensile strength than skin in the hoop direction. The skin in the hoop direction exhibits a higher elastic modulus than the skin in the longitudinal direction. The extension in the longitudinal direction produces contraction in the hoop direction as the fiber angle decreases until these dimensional changes are resisted by the body of the eel. The skin becomes skin, and additional longitudinal force applied by skin results in force being transmitted along the tail. Therefore, changes in fiber angle of the cross helical arrangement in eel skin allows for the transmission of force through the skin during swimming.

In addition to the eel skin acting as an external tendon, the skin attaches directly to the underlying muscle, which allow for the eel to generate an even greater force per muscle contraction. Longnose gar[edit] Closeup of the skin of the longnose gar Due to the heavily scaled skin of the Longnose gar , some of the mechanical properties differ from model of describing how eel skin adds movement. The scale row resists longitudinal forces, which unlike eel skin, makes the skin stiffer in the longitudinal direction, providing myomeres with leverage and anchorage for pulling tendons. At low curvatures, it appears that the dermis is slack on both the concave and convex sides of the body. When the dermis is placed in tension, and resistance to bending is developed, which is referred to as flexural stiffness of the fish skin. The flexural stiffness is a result of the two dimensional stiffness of fish with heavily scaled skin, such as the longnose gar. This mechanical property of fish skin is important to the way a fish swims, because this mechanical property passively stiffens the body, which would otherwise would have been done muscularly. Snake[edit] Snakes are one of the few vertebrates in which the skin alone is sufficient for locomotion. During Rectilinear locomotion , the skeleton remains fixed, while the skin is alternately lifted and pulled forward, and then allowed to contact the ground and pulled backwards, propelling the body forward. One of the interesting aspects of snake skin are folds of intersquamous skin between longitudinally oriented scale rows. Vertebrates have altered the structure of the skin to accommodate the stresses and strains of flight. Typically mammalian skin consists of collagen fibers arranged in a felt-work pattern, with no preferential fiber orientation. The structural arrangement of the fibers within bat wing skin enables the bat to act like a spring during the down-stroke of flapping. The scales of gliding lizards are arranged in a regular rib like pattern to enable to lizard to act as an airfoil. Avain skin must be structurally arranged such that "the coat of feathers" remains smooth and intact during flight. Drawing of the bat wing skin showing the fibers of "mesh like scaffolding" A closeup view of the felt like fiber pattern seen in elephant skin Bats rely on skin on their wings to generate lift and thrust used in flight. Therefore, the structure of the bat wing skin is different from the skin of the bat body. Within the dermal and epidermal layer of bat wing skin, the connective tissue and muscle fibers provide the structural support. The connective tissue fibers within bat wing skin consists of collagen and elastin fiber bundles arranged in a "regular mesh like scaffolding", [13] which the nerves, skeletal muscle fibers and blood vessels embed themselves into. Of the muscles that insert themselves into the mesh scaffolding, larger muscles anchor the skin to the bone and control the membrane tension and camber of the bat wing during flight, [14] whereas smaller muscles, which originate from within the mesh scaffolding, attach to collagen fibers within the fiber network and modulate bone loading and allow for precise control of wing shape and tension. Within the mesh scaffolding of bat wing skin, collagen fibers cross bones perpendicular to the long axes of the bones, therefore mechanical properties of bat wing skin oriented perpendicular to the long axes of the bones exhibit a lower stiffness than the skin that is oriented parallel to the long axes of the bodies. Stiffer skin is necessary for bat wing skin oriented in the direction parallel to the long axes of the bones to prevent too much deformation of bat wing skin during flight with respect to the bone , resulting in the shearing of the bat wing skin off of the bone. Flexible skin is necessary for the direction perpendicular to the long axes of the bones for facilitating the shape changes needed for movement and control during flight. The wing skin expands and counteracts the aerodynamic force. After the wing is fully extended, the orientation of the wing is nearly vertical and the aerodynamic forces on the wing are reduced. As the aerodynamic force is reduced, the wing recoils, drawing the digits of the wings together in preparation for the upstroke. Gliding lizards[edit] There are two different mechanisms by which lizards glide through the air. Both mechanisms involve the patagia. Active parachuting mechanism In the active mechanism, skeletal supports and muscles run through the patagia of lizards. The skeletal supports and muscle erect the flight membrane and control the gliding using the patagia. Most of the lizards that exhibit this active gliding mechanism are agamine lizards such lizards in the genus Draco. For the passive mechanism of gliding in lizards, the patagia is unfurled by air pressure alone. The patagia of the passive mechanism differs from patagia of the active mechanism; there is the lack of skeleton support and musculature in patagia of the gliding lizards with the passive gliding mechanism. The passive mechanism of gliding is seen in smaller lizards such as the geckos of the genus Ptychozoon. For the passive mechanism of gliding, body movements are believed to control the descent of the gliding lizard. The difference in the distribution of

surface area indicates the differences in the role of the patagia and accessory areas for the different flight mechanisms. Lizards with passive gliding mechanisms tend to have smaller patagia relative to lizards with active flight mechanisms. However, lizards with passive flight mechanism have, ore surface area located in accessory areas i. The distribution of the adipose tissue IS thickest close to the body wall. This thick layer of adipose tissue at close to the body wall is believed to provide a "safety factor" for the structural elements of the skin i. The layer of adipose tissue also aids in the creation of the domed and cambered shape of the patagia. With regards to the structure of the dermal layer of the patagia, there is a thick layer of collagen fibers oriented parallel to the axis of the patagial ribs. The most prominent features of the epidermal layer of the patagia are the scales. The morphology of the dorsal scales of the patagia change as a result of their functional role. A large portion of the dorsal scales of the patagia are arranged in regular rib-like pattern, which guide the flow of air and allow for the lizard to behave as an airfoil. This breakdown of scales is believed to aid in the mechanical loading of the patagia during the unfurling process and also determining the extent the patagia unfurling during flight. In addition to the counteracting stresses and stains associated with flight, avian skin must provide a means to monitor and anchor a "coat of feathers", thus the structure of avian skin is different from skin of other flying and gliding animals. To better understand the structure of avian skin, avian skin has been broken down into three different functional components: This functional component was named "hydraulic skeletal" due to the fact that the fat bodies embedded within cutis and fascia act similar to the hydrostatic bodies within a hydrostatic skeleton. However the functional role of the fat bodies within the hydraulic skeleto-muscular apparatus of the feathers is to counteract forces generated by the erector and depressor muscle of the feathers tracts. The smooth muscles of the apertia counteract the horizontal forces experienced by the feather follicles. The majority of the fat bodies are located either between fascia superficialis and the Fascia subcutanea. These fat bodies are stratically located at depression within the body of the bird and function to even out depressions so that feather tracts of the skeleto-muscular apparatus function properly.

Chapter 2 : Punk Skeleton Minecraft Skin - Download Punk Skeleton Skin

The Skeleton-and-Skin System like the human body - uses a strong material for support (in skyscrapers, steel) & lighter material to cover it (like glass or aluminum siding) 2 basic families of structural systems.

March 16, The skeletal system performs vital functions â€" support, movement, protection, blood cell production, calcium storage and endocrine regulation â€" that enable us to survive. Animals with internal skeletons made of bone, called vertebrates, are actually the minority on Earth. As much as 98 percent of all animals are invertebrates, meaning they do not have internal skeletons or backbones. Human infants are born with about bones, some of which fuse together as the body develops. Human males grow until their late teens and females grow until two years after the beginning of their menstrual cycle, typically. This is when the growth plates on bones usually close, halting bone expansion. The skeletons of adult males and females have some variation, primarily to accommodate childbirth. The female pelvis is flatter, more rounded and proportionally larger, for example. The BioDigital Human] While they become brittle when outside of the body, bones are very much alive inside the body, being fed by a network of blood vessels from the circulatory system and nerves from the nervous system , according to Healthline. A typical bone has a dense and tough outer layer. Next is a layer of spongy bone, which is lighter and slightly flexible. In the middle of some bones is jelly-like bone marrow, where new cells are constantly being produced for blood, according to the Merck Manuals. Teeth are considered part of the skeletal system but they are not counted as bones. Teeth are made of dentin and enamel, which is strongest substance in your body. Teeth also play a key role in the digestive system. The skeletal system has two distinctive parts: The axial skeleton, with a total of 80 bones, consists of the vertebral column, the rib cage and the skull. The axial skeleton transmits the weight from the head, the trunk and the upper extremities down to the lower extremities at the hip joints, which help humans maintain our upright posture, the NLM noted. The appendicular skeleton has a total of bones, and is formed by the pectoral girdles, the upper limbs, the pelvic girdle and the lower limbs, according to the NLM. Their functions are to make walking, running and other movement possible and to protect the major organs responsible for digestion, excretion and reproduction. Diseases of the skeletal system X-rays, MRIs, bone density tests and arthroscopy are some of the primary diagnostic tools used to detect diseases and deformities of the skeletal system. Bone scans and bone marrow biopsies are used to diagnose cancer, according to the Merck Manuals. The primary skeletal conditions are metabolic bone diseases such as osteoporosis, osteomalacia, and a few other rarer conditions, said Dr. Nathan Wei of the Arthritis Treatment Center. Osteoporosis is a prevalent disease, particularly among the elderly, resulting in the loss of bone tissue. In osteoporosis, bone loses calcium, becomes thinner and may disappear completely, according to Wei. Osteomalacia is a softening of the bones, according to the Mayo Clinic. It is often caused by a vitamin D deficiency and results from a defect in the bone-building process. Osteoporosis, on the other hand, develops in previously constructed bones. Arthritis is a group of more than inflammatory diseases that damage joints and their surrounding structures. Arthritis can attack joints, joint capsules, the surrounding tissue or parts throughout the body. It usually affects the joints of the neck, shoulders, hands, lower back, hips or knees. Treatment depends on the type of arthritis," Wei said. Also common is scoliosis, a side-to-side curve in the back or spine, often creating a pronounced "C" or "S" shape when viewed on an x-ray of the spine. This condition is typically becomes evident during adolescence, the Merck Manuals noted. Two to 3 percent of the population â€" an estimated 6 to 9 million people in the United States â€" suffers from scoliosis, according to the American Association of Neurological Surgeons. About 90 percent of people will experience lower back pain at some point in their lives, according to Dr. James Nace of LifeBridge Health. It may originate in the bones or spread there from another part of the body. The American Cancer Society estimates around 3, new cases will be diagnosed for bones and joint cancer and around 1, people will die from it in in the United States. Bone cancer accounts for less than 0. Cancers that metastasize â€" originate from other parts of the body and then spread to the bones â€" are much more common than primary bone cancer. Bone cancer is a malignancy arising in the bones and supporting structures such as cartilage, according to Dr. With this type of cancer, abnormal white blood cells multiply

uncontrollably, affecting the production of normal white blood cells and red blood cells, according to the American Cancer Society. Bursitis is a disorder that most commonly affects the shoulder and hip joints, Nace said. It is caused by an inflammation of the bursa, small fluid-filled bags that act as lubricating surfaces for muscles to move over bones. The skeletal system is also susceptible to breaks, strains and fractures. Bones such as the skull and femur are much tougher to break. Study of the skeletal system Orthopedics is the medical specialty responsible for treating entire skeletal system. In the United States, orthopedic surgeons have typically completed four years of undergraduate education and four years of medical school. They then undergo residency training in orthopedic surgery. The American Board of Orthopaedic Surgery oversees the certification process for this specialty. Many go on to further specialize in specific areas, such as the spine, hand or sports injuries. Milestones Humans have been dealing with injuries and disease from the beginning of time. Some important milestones in the history of orthopedics include: In the Paleolithic period, early man engraved human bones after eating their owners. Hippocrates, the ancient Greek father of medicine, develops splints for fractures of the tibia. During the Roman era, Galen B. Medical experts of the time also develop the first artificial prostheses. Ambroise Pare , the father of French surgery, develops techniques for amputations and artificial limbs. A POP cast remains the primary method of fracture immobilization today. In , Wilhelm Conrad Roentgen accidentally discovers an image cast from his cathode ray generator, projected far beyond the possible range of the cathode rays. He wins the Nobel Prize for Physics in for his discovery of X-rays. Sir Reginald Watson-Jones publishes "Fractures and Joint Injuries" in , which remains a standard reference for several decades. Lowry Rush uses stainless steel pins to treat long bone fractures. Additional reporting by Alina Bradford, Live Science contributor.

Chapter 3 : Skeletal Animations â€" cocos v documentation

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When the body does not get enough vitamin D, it is not able to absorb calcium effectively. This makes it very important for good bone health. Children who do not get adequate vitamin D develop rickets, a condition that causes weak bones, deformities in the skeleton, and a stooped posture. What is Vitamin D? It is actually a hormone. A vitamin is a nutrient that the human body requires but is unable to produce. This means that it can only be obtained through supplements and food. However, the body is able to manufacture vitamin D. When the skin is exposed to the appropriate sunlight, the body begins a process that produces vitamin D. It should also be noted that vitamin D plays a part in a strong immune system and can prevent certain chronic diseases in older adults. There are supplements for people who do not produce enough vitamin D or who do not get adequate amounts in the food that they eat fish liver oils, certain fish, and egg yolks are good sources. Children and adults typically do not get enough from their foods and activities. People spend a great deal of time indoors with adults at work and children at school. The emergence of digital devices and video games has managed to keep children inside as they engage in these activities. Vitamin D is not measured in milligrams like many other supplements, but in International Units IU instead. Research has caused the daily recommended allowance for vitamin D to increase over the years, and the current recommendation is IU. It has been determined that this amount is the most beneficial in promoting healthy bones. The Role of the Skeletal System The skeletal system has several functions. The first and most obvious is that it is the structural support for the body. It also protects vital organs. For instance, the skull protects the brain and the rib cage protects the lungs and heart. It is also an anchor point for muscle so it helps with mobility. The red bone marrow provides illness fighting white blood cells, as well as red blood cells. Calcium is stored in the marrow, as is phosphorous. Certain minerals and fats are stored in the yellow marrow which is found in the long bones of the body. In addition to that task, it also promotes good muscle health. Stronger muscles can work much more effectively in protecting the muscles and supporting the skeletal system. This can help with joint health as well. Older people who have adequate vitamin D do not fall down as often and people of all ages have fewer broken bones. Muscle weakness and bone pain are two common symptoms, but are typically seen in more severe cases. A simple blood test can check for vitamin D levels â€" and it should be checked regularly. Certain cancers Asthma â€" often severe, especially in children Cognitive impairment, especially in older adults Increased risk of death due to cardiovascular disease Vitamin D is generally very accessible. You can get it through foods and sunlight or via a supplement. People who may have some trouble getting adequate amounts are those who have limited exposure to sunlight, fail to consume the necessary levels of the vitamin, and people who have dark skin. If you think that you may have low vitamin D, it is best to talk to your doctor so you can come up with a plan to get your body back in balance.

Chapter 4 : Role of skin in locomotion - Wikipedia

Skeleton and Skin Almost everything constructed in nature, and constructed by us, is built on the skeleton and skin principal: a generally internal, supportive frame surrounded by an outer skin or layer.

Aging changes in the bones - muscles - joints URL of this page: Changes in the skin and hair are also common. The skeleton provides support and structure to the body. Joints are the areas where bones come together. They allow the skeleton to be flexible for movement. In a joint, bones do not directly contact each other. Instead, they are cushioned by cartilage in the joint, synovial membranes around the joint, and fluid. Muscles provide the force and strength to move the body. Coordination is directed by the brain, but is affected by changes in the muscles and joints. Changes in the muscles, joints, and bones affect the posture and walk, and lead to weakness and slowed movement. The bones lose calcium and other minerals. The spine is made up of bones called vertebrae. The middle of the body trunk becomes shorter as the disks gradually lose fluid and become thinner. The spinal column becomes curved and compressed packed together. Bone spurs caused by aging and overall use of the spine may also form on the vertebrae. The foot arches become less pronounced, contributing to a slight loss of height. The long bones of the arms and legs are more brittle because of mineral loss, but they do not change length. This makes the arms and legs look longer when compared with the shortened trunk. The joints become stiffer and less flexible. Fluid in the joints may decrease. The cartilage may begin to rub together and wear away. Minerals may deposit in and around some joints calcification. This is common in the shoulder. Hip and knee joints may begin to lose cartilage degenerative changes. The finger joints lose cartilage and the bones thicken slightly. Finger joint changes are more common in women. These changes may be inherited. Lean body mass decreases. This decrease is partly caused by a loss of muscle tissue atrophy. The speed and amount of muscle changes seem to be caused by genes. Muscle changes often begin in the 20s in men and in the 40s in women. Lipofuscin an age-related pigment and fat are deposited in muscle tissue. The muscle fibers shrink. Muscle tissue is replaced more slowly. Lost muscle tissue may be replaced with a tough fibrous tissue. This is most noticeable in the hands, which may look thin and bony. Muscles are less toned and less able to contract because of changes in the muscle tissue and normal aging changes in the nervous system. Muscles may become rigid with age and may lose tone, even with regular exercise. Overall height decreases, mainly because the trunk and spine shorten. Breakdown of the joints may lead to inflammation, pain, stiffness, and deformity. Joint changes affect almost all older people. These changes range from minor stiffness to severe arthritis. The posture may become more stooped bent. The knees and hips may become more flexed. The neck may tilt, and the shoulders may narrow while the pelvis becomes wider. Movement slows and may become limited. The walking pattern gait becomes slower and shorter. Walking may become unsteady, and there is less arm swinging. Older people get tired more easily and have less energy. Strength and endurance change. Loss of muscle mass reduces strength. Bones break more easily. Compression fractures of the vertebrae can cause pain and reduce mobility. Muscle weakness contributes to fatigue, weakness, and reduced activity tolerance. The risk of injury increases because gait changes , instability, and loss of balance may lead to falls. Some older people have reduced reflexes. This is most often caused by changes in the muscles and tendons, rather than changes in the nerves. Decreased knee jerk or ankle jerk can occur. Some changes, such as a positive Babinski reflex , are not a normal part of aging. Involuntary movements muscle tremors and fine movements called fasciculations are more common in the older people. Older people who are not active may have weakness or abnormal sensations paresthesias. People who are unable to move on their own, or who do not stretch their muscles with exercise, may get muscle contractures. A moderate exercise program can help you maintain strength, balance, and flexibility. Exercise helps the bones stay strong. Talk to your health care provider before starting a new exercise program. It is important to eat a well-balanced diet with plenty of calcium. Women need to be particularly careful to get enough calcium and vitamin D as they age. Postmenopausal women and men over age 70 should take in 1, mg of calcium per day. Women and men over 70 should get international units IU of vitamin D daily. If you have osteoporosis, talk to your provider about prescription treatments.

Chapter 5 : what is skeleton and skin method of construction? | Yahoo Answers

*The Skin and the Skeleton [Ken Peters] on calendrierdelascience.com *FREE* shipping on qualifying offers. This Book is for Extreme Opposites! Did you marry someone who seems to be the complete opposite of you?*

Skeletons are defined in. The first thing you will do is create the root bone for your skeleton. Here we create what is going to be the body of our human skeleton as follows: We rotate the bone because we want to be able to move its shoulders and not its legs, so the fixed part of the skeleton will be its waist, ie, the origin of the root bone. You can see the skeleton you have created using with a small piece of code. The important new concept here is the skin. Skins are responsible for drawing the skeletons. Here we use the basic skin, ColorSkin, that just draws a colored line over the bone. A skin, like everything else, is just a cocosnode, so you can add it to your node to place it on screen. Now, we want to skin this skeleton with some images, so we create a skin file. The skin file will look like this: Now we can show the skeleton with the skin we have just created. At this point, we can use the first tool provided, the skeleton editor. You start the editor like this: There you can see the skin part of your skeleton and several control points. Control points can be dragged. If a control point is on top of another control point, you can change your selection using the scroll weel. The current control point has a small halo. In this example you can see the red control point, which controls the rotation of the bone, the two blue control points, which control the position of the bone and skin part, and the green control point behind one of the blue ones which controls the skeleton position. This will overwrite the. This is a helpfull tool in creating your skins, as the only way to know the real offsets between your skeleton parts and the image the artist has creates is visually. Now we add more bones and skin parts to the skeleton. Bones, other than the root bone, are attached to other bones and thei position and rotation are relative to its parent bone position and rotation. The upper arm is 30 pixels long and is placed at the end of the body by offsetting if pixels. The lower arm is also 30 pixels long and is also placed at the end of its parent, the upper arm. Bone length doesnt affect the transofrmations or placement of other bones, but it useful to see what you are creating. The skeleton we have just created looks like this: Now we add the skin. We wont care about the positions or flipping, as we will be changing that parameters when looking at it. We now have to use the editor to drag the parts until it looks like this: When moving the control points, things look weird. Its because you are actually only aplying a translation to the point. But the translation is then aplied over the transformed point. It looks crazy, but you can get used to it if you play with it for a while. And if you dont, you can just submit a patch. It is important to move the bones, not just the skin, so the shoulder and elbow move at the right locations. You can test that rotating the bones and making sure that the images look good in all positions. You should continue this way until you have the full skeleton and skin defined. You can see and use the sample skeleton and skin provided in the test directory: An animation has a list of keyframes, ie, skeleton poses and times. When you play an animation, cocos will pose your skeleton according to the current time, interpolating between the previous and next frame. Start the animation editor doing: You can also see the first keyframe, with its skin and control points. You can control the animator with the following keys: Save the current animator LEFT: Go to the start of the animation END: Play the animation When standing on a keyframe you will see some control points, that you can move to edit the keyframe. You can play an animation on a skin doing: Animate anim The Animate action has the following parameters: This control how the skeleton position is moved. If you run two walk left animations without translation you will see a player move left, go to the origin and move left again. Also, animations can be flipped, which makes the character look to the other side.

Chapter 6 : How Vitamin D Supports the Skeletal System

The skin is far more than just the outer covering of human beings; it is an organ just like the heart, lung, or liver. Besides providing a layer of protection from pathogens, physical abrasions, and radiation from the sun, the skin serves many functions. It plays a vital role in homeostasis by.

The skeleton of a woman with the scientific names for the bones A skeleton from the back The important parts of a human body are the head, the spine, the chest, the abdomen, the arms and hands , and the legs and feet. Bones of the head[change change source] The head bones all together are called the skull. The skull is made of a group of curved bones fitted together like a ball, which protects the brain , the eyes and the inside parts of the ears. The bones of this part of the head, together, are called the cranium. The skull has a top jaw , and a bottom jaw, with teeth in them. The jaws are called the "upper" and "lower" mandibles. The "lower mandible" is moved by strong muscles so that the teeth can bite and chew food. There are several other small bones which make up the face. There are also several small bones in the front and side of the neck. The smallest bones in the body are three tiny bones inside the ear , which vibrate to help a person hear sounds. Bones of the spine[change change source] The spine supports the head, the chest and the structure that carries the arms. It is made of small bones called vertebrae. The spine, all together, is called the spinal column. It is not straight, but has curves that help to support the body, and help the person to move and bend. One bone is a "vertebra". More than one are "vertebrae". The "vertebrae" have different names, depending on the part of the body they are joined to. The neck vertebrae are called cervical vertebrae. The next vertebrae are joined together in a triangular shape called the sacrum. The hip bones are attached to the sacrum and support it. At the bottom of the "sacrum" are some little tail-bones. They are called the coccyx. On many animals the "coccyxal vertebrae" are long, making a tail that the animal can move, but on humans, apes and some other creatures, they are very short. Bones of the pelvis[change change source] This part of the body is made of the sacrum and the two pelvic bones which are joined to it on either side. The pelvic bones are carried by the leg bones, and they support the "spinal column". Each pelvic bone has a strong structure for the leg bone to fit into, so that a person can stand, walk, run and jump. At the bottom of the pelvis is a large opening, big enough for a baby to pass through. The thorax is made up of long flat curved bones called ribs. At the back, the ribs are joined to the vertebrae. At the front, most of the ribs are joined to the sternum, which is often called the "breast bone". All together, the "thorax" protects the heart , lungs and stomach. At the top of the "thorax" is the shoulder girdle. This is made of two thin horizontal bones at the front, joined to the "sternum". These two bones are called the clavicles or "collar bones". At the back of the "thorax" are two flat triangular-shaped bones called the scapulae, or "shoulder blades". The "clavicles" and "scapulae" come together on each side to make "shoulders". The bones of the arms fit into sockets cup-like holes in the "scapulae". Bones of the limbs[change change source] Arms and legs both have a thicker bone at the top and two thinner bones at the bottom. They both have a rotating joint at the top, and a hinge joint in the middle. The hands and feet have lots of bones and are joined to the arms and legs by small bones with sliding parts. Bones of the arms[change change source] The upper bone is the humerus, so when people bang their elbow, they often say that they bumped their "funny bone". The bone that sticks out at the elbow and runs down the outside of the arm is the ulna. The bone that is on the thumb-side is called the radius. Near the elbow, it is joined to the "ulna" in a way that allows it to rotate. The "radius" and the "ulna" can twist around each other, allowing a person to turn their hand. The small bones of the wrist are called carpals, and the bones inside the hand are called metacarpals. The finger bones are the phalanges. Bones of the legs[change change source] The upper bone of the leg, which is the longest bone in the body, is called the femur. The bone at the back of the leg is called the tibia, or "shin bone". It makes the inside ankle bone. The thinner bone at the side of the leg is called the fibula. It makes the outside ankle bone. The small bones that join the foot to the leg bones and allow it to move are called the tarsals. The bones inside the foot are the metatarsals. The toe bones are called phalanges, like the finger bones. The leg has another bone. At the front of the joint where the "tibia" meets the "femur" is a small round bone like a little shield, to protect the joint. It is called the patella. Skeletons as symbols[change change

source] A skeleton, or just a skull , has often been used as a symbol for Death. Skeletons and skulls can be seen carved on many tombs , from ancient times to the 20th century. Skeletons or skulls are often seen in medieval and Renaissance paintings or stained glass windows, reminding people that life is short. Skeletons or skulls were often used as a sign to frighten people. Skeletons would be left hanging in public places, such as cross-roads or bridges to remind the people of a town that they would be punished by death if they broke the law. Skeletons or skulls were a symbol used by pirates. Skeletons in popular culture[change change source] Animated skeletons from La Danse Macabre by Hans Holbein the Younger Skeletons, particularly living skeletons, have often been used in horror stories and comedies. There are stories where skeletons rise from the dead. Things that come back to life are called undead. In these stories, most skeletons are controlled by a person who brings them back to life. These people are called necromancers. Skeletons in popular games[change change source] Skeletons appear in the popular game: In Minecraft, skeletons have bows that try to shoot the player.

Chapter 7 : Skeleton - Simple English Wikipedia, the free encyclopedia

When the skin is exposed to the appropriate sunlight, the body begins a process that produces vitamin D. It should also be noted that vitamin D plays a part in a strong immune system and can prevent certain chronic diseases in older adults.

Information about the Musculoskeletal and Skin Systems Introduction Adolescents, and many adults, take the health of their bone, muscle, and skin for granted. Only when there is a problem such as a broken bone, a muscle sprain, or a skin blemish especially before an important event do people think about these vital body systems. Health problems that affect bone, muscle, and skin are common. In fact, muscle and bone problems have prompted the World Health Organization to declare the years â€" the Bone and Joint Decade. Thirty-eight nations, including the United States, have endorsed this initiative. This section provides an introduction to the musculoskeletal and skin systems, including their involvement both in maintenance of good health and their dysfunction in disease. As such, it uses language and concepts not appropriate for middle school students. The musculoskeletal and skin systems and their functions are topics that are extremely well suited for middle school students. As stated in the National Science Education Standards NSES , topics related to human biology are especially relevant to middle school students because students at this point in cognitive development begin to understand the relationship between structure and function. Students can integrate structure-function relationships in the context of human body systems working together. Figure 1 Looking Good, Feeling Good: In this module, students learn that their bones, muscles, and skin fulfill many roles that enable a person to complete complex voluntary tasks as well as involuntary actions that are essential to health. The information about the musculoskeletal and skin systems will also help students achieve the content standards related to Life Science, particularly concepts related to the structure and function of living systems. In addition, this module addresses standards related to Science in Personal and Social Perspectives personal health. The concepts conveyed will also address several of the National Health Education Standards. Misconceptions about the Musculoskeletal and Skin Systems Adolescents, like many adults, have perceptions about their musculoskeletal and skin systems that are likely to be incorrect or incomplete. Almost every day, people are exposed to material on television or radio or in the newspapers about a new medicine, exercise, treatment, product, or diet that can influence their health. For example, advertisements promote "nutritional supplements" that will build muscle without exercise or dieting. Adolescents hear, see, or read about many over-the-counter treatments for acneâ€"a condition about which they are especially aware because of their age. Many teenagers will try these products in search of help. Teenagers also receive inaccurate information about acne from peers or family members who believe that acne is caused by eating chocolate or other sweets. In addition, pharmaceutical companies often advertise prescription medications that are used to prevent disease. Although these medications can be valuable when used correctly, the advertisements do not give a complete picture. Generally, science textbooks for middle school students present limited scientific information on the musculoskeletal and skin systems. As part of the presentation on the major body systems, science textbooks include a diagram of each of these systems with the parts labeled and some cursory information about their functions. Too often, however, this information becomes a vocabulary exercise without conveying any real understanding of how these systems work or regulate a vast array of physiological processes. Some misconceptions about the musculoskeletal and skin systems are the following: Muscles are only used for voluntary physical actions like walking, running, or throwing. Skeletal muscles are probably most familiar to middle school students even though other types of muscles, cardiac and smooth, are essential for life functions. The heart muscle is composed of a different type of muscle cell cardiac muscle cells and beats to move blood throughout the body. Smooth muscle cells line blood vessels and the intestinal tract to help move blood or food through those passages. The tongue is made up of muscle cells that enable us to speak and is also an important part of the digestive system. Your muscles turn to fat if you quit exercising. Misconception 2 is common not only among adolescents but also among adults and reflects a basic misunderstanding of how the body works. If a person stops exercising, his or her muscle cells may decrease in volume and become smaller. At the same time, a person may increase the volume of fat cells in his or her body. This concurrent

change may give the impression that muscle is becoming fat, but this is not the case. Fat cells are different from muscle cells; muscle cells do not turn into fat. Bones are not living structures. Adolescents may have conflicting ideas about whether bones are living structures, depending upon the context of the situation they are considering. On the one hand, they may believe that bones are just hard things that hold the body up and have muscles attached to them. On the other hand, teenagers recognize that broken bones heal. Few students have an understanding of how their bones grow during development or recognize that the bone marrow is critical for production of both red and white blood cells. Even maintenance of bone structure is a dynamic process; the action of specialized cells called osteoblasts to form new bone is counterbalanced by other cells, osteoclasts, which break down bone through resorption. As people age, bone resorption predominates over bone formation. Diseases like osteoporosis or arthritis affect only old people, so teenagers do not need to be concerned about them. Although osteoporosis, a disease in which bone density decreases, affects older individuals, scientists now realize that it is important for young people to take care of their bones because this can influence the onset of osteoporosis in later life. Acne is caused by eating chocolate or greasy foods. The exact cause of acne is not known. This incomplete understanding has allowed many myths about the causes of acne to become widespread. There is little evidence that diet causes or affects the course of acne. Rather, acne is caused by a number of interacting factors. One important factor is the increase in male hormones androgens that accompanies puberty in both boys and girls. Nearly 85 percent of adolescents and young adults develop acne. Since acne seems to run in families, it is thought to have a genetic component as well. Although the causes of acne are unclear, several factors have been shown to exacerbate the disorder. These include changing hormone levels in females as before their menstrual periods , friction caused by rubbing the skin, irritants such as pollution, squeezing of the lesions, and vigorous scrubbing of the skin. Body piercings and tattoos are completely safe. Body modifications involve breaking the skin, and consequently, carry a risk of infection. People with tattoos are nine times more likely to be infected with the hepatitis C virus than are people without tattoos. There are health risks associated with body piercings and tattoos. Anyone considering undergoing these procedures should first research them, be aware of the health risks, find a provider who performs the procedure correctly, and use proper follow-up care. Characteristics of Living and Nonliving Systems It should be simple to distinguish between living and nonliving systems. After all, even children know that a rock is nonliving and a spider is a living creature. However, defining life is not a trivial task. Life has been defined in many ways for many different purposes, and there is no single definition that works for everyone. The Characteristics of Living Systems table lists some characteristics that are commonly found in definitions of living systems. Characteristics of Living Systems Composed of one or more cells Function according to a genetic blueprint Obtain and generate energy that is, have a metabolism Interact with their environment These characteristics were derived with the following in mind: Some objects that are clearly nonliving are derived from once-living systems, however. A lump of coal is largely made up of material from plants that lived millions of years ago. The ability to reproduce is often identified as a characteristic of living systems. This characteristic is not listed separately because bone, muscle, and skin are living systems, but they do not reproduce themselves. The cells of bone reproduce and carry out activities such as making protein and depositing mineral that allow bone to grow, repair, and remodel itself. Bone cells do not reproduce and make new bones. In the Characteristics of Living Systems table, reproduction falls under the characteristic "function according to a genetic blueprint. As with the amoeba, we can classify a human as living. Indeed, close examination of the human body reveals that it is composed of living cells, cells that were once living, and nonliving substances produced by living cells. These distinctions become important as we investigate the structures and functions of bone, muscle, and skin. Characteristics of Bone, Muscle, and Skin Human development is a complex process that begins with a fertilized egg cell and eventually gives rise to an adult human composed of over trillion cells. Cells with the same function may group together in specific ways to form a colony of cells called a tissue. An adult human makes use of over different tissues. As the number of cells in the developing human increases, the fate of the individual cells becomes evermore restricted. This process by which a cell becomes committed to a specific function is called differentiation. Just as the human body has different organs that carry out specific functions, the human cell has different organelles that have

specialized functions. All human cells share certain characteristics. They possess a plasma membrane that separates their inside contents from the outside environment, enclose their genetic material inside a membrane-bound organelle called a nucleus, generate usable energy within organelles called mitochondria, and synthesize proteins using ribosomes. Despite these similarities, differentiation produces cells that differ in significant ways from one another. The shapes of different cells relate to their functions within the body. For example, nerve cells have many long branches that enable them to communicate with each other and with other cells. Even the presence or absence of a critical organelle, such as the nucleus, can vary by cell type. A mature red blood cell has no nucleus, while a mature skeletal muscle cell has many nuclei derived from cells that have fused together. We shall learn in the following sections how the cells of the musculoskeletal and skin systems have characteristic shapes that relate to their functions and how they combine to form specialized tissues. Bone Bones serve many important functions. They allow us to do things we take for granted, such as stand and sit, walk and run. They do this in concert with muscles, which attach to bones via tendons. Our bones provide structural support for the body and help determine our shape. Bones also protect internal organs the skull protects the brain, and the ribs protect the heart and lungs , and the bone marrow produces red blood cells and the white blood cells of the immune system. Bones are lightweight yet very strong, static in appearance yet very dynamic. How does the structure of bones determine how they function in the body?

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Without the skeletal system, you would be a limp mass of organs, muscle, and skin. Bones also facilitate movement by serving as points of attachment for your muscles. While some bones only serve as a support for the muscles, others also transmit the forces produced when your muscles contract.

Review of Body Systems Lesson Objective The student will reinforce the information learned about the function and location of the Skeletal, Muscular, and Integumentary Systems. Identify human body systems: Investigate functions of human body systems Begin by looking at the chicken bones again. Was anyone surprised by the way they look today? Have the students cut apart the word bank from a worksheet of the muscle system, matching the muscles and timing themselves. Try to break a PR. Project the noodle man made on Wednesday onto the board and let students try to label it as quickly as they can. Give them a small whiteboard and have them draw the entire skin diagram. Let them use their sheet from earlier this week to draw the structures and label the first time. They should try to label the structures a couple times without using the sheet. Bring the students back together and have them play the basketball review game. Divide them into three teams. The person that stands up first gets to answer the question. If they answer it correctly in the first 10 seconds after the teacher calls their name, they can shoot a piece of paper into the trash for an extra point. Use the following questions: What combines to make a tissue? Many cells An organ? Many tissues An organ system? Many organs An organism? Many organ system What is the outer covering of a cell? Cell membrane What is the substance called that holds all the structures in the cell in place? Cytoplasm What are the three things cells need to stay alive? Water, Food, and Oxygen What two things are produced by the cell when it uses up the supplies it needs? Urea and Carbon Dioxide What is the main part of the cell, sometimes called the brains of the cell? Nucleus What three parts of your body make up the integumentary system? Hair, skin, and nails What is the top layer of the skin called? Hypodermis What does the sebaceous gland produce? Bone marrow What is the name of the cushion between the bones? Cartilage What holds the muscles to the bones? Tendons What connects bones to other bones? Ligaments What is another name for smooth muscles? Involuntary muscles Where is one place in your body where you have smooth muscles? Eyes, digestive system, bladder Can you control involuntary muscles? Pump blood through the body What is another name for the cardiac muscle? Myocardium What is the name for the system containing the muscles and the skeleton? Give you the ability to move and strength What is the name of the muscles on your shoulders? Deltoid What is the name of the muscles on the front of your thighs? Quardriceps What are extensors and flexors? They are a muscle pair in which one contracts while the other relaxes to let a bone move one direction. Then the other contracts while the first relaxes to let the muscle move back the other way. How are the muscles in your face different than the other striated muscles you have in your body? They are attached under the skin rather than stretching from bone to bone. If extra time, go through the homeostasis gizmo with them using the student activity guide.

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Chapter 9 : Fifth Grade (Grade 5) Skin, Skeleton, and Muscles Questions for Tests and Worksheets

The skin is the largest organ of the body, with a total area of about 20 square feet. The skin protects us from microbes and the elements, helps regulate body temperature, and permits the.

In the medical field, traction refers to the practice of slowly and gently pulling on a fractured or dislocated body part. These tools help apply force to the tissues surrounding the damaged area. The purpose of traction is to guide the body part back into place and hold it steady. Traction may be used to: The type of traction used will depend on the location and the nature of the problem. Skeletal Traction Skeletal traction involves placing a pin, wire, or screw in the fractured bone. After one of these devices has been inserted, weights are attached to it so the bone can be pulled into the correct position. This type of surgery may be done using a general, spinal, or local anesthetic to keep you from feeling pain during the procedure. Skeletal traction is most commonly used to treat fractures of the femur, or thighbone. The force is directly applied to the bone, which means more weight can be added with less risk of damaging the surrounding soft tissues. Skin Traction Skin traction is far less invasive than skeletal traction. It involves applying splints, bandages, or adhesive tapes to the skin directly below the fracture. Once the material has been applied, weights are fastened to it. The affected body part is then pulled into the right position using a pulley system attached to the hospital bed. Skin traction is used when the soft tissues, such as the muscles and tendons, need to be repaired. Less force is applied during skin traction to avoid irritating or damaging the skin and other soft tissues. Skin traction is rarely the only treatment needed. Cervical Traction During cervical traction, a metal brace is placed around your neck. The brace is then attached to a body harness or weights, which are used to help correct the affected area. Cervical traction might be used in two different situations. First, it may be done to gently stretch the neck muscles so muscle spasms can be relieved or prevented. It may also be performed to immobilize the spine after a neck injury. What Happens After Traction? These programs often consist of physical and occupational therapy to help you regain your strength and relearn skills that may have been affected by your injury. A therapist can also teach you new skills to compensate for any pain, weakness, or paralysis you may have experienced as a result of being injured. The first few days after traction is performed can be difficult. The muscles are often weak since you must spend a lot of time in bed after traction is performed. Moving around and walking may be challenging and can make you tired. There are risks involved in all surgical procedures. Traction used to be considered a state-of-the-art treatment. In recent years, however, other surgical techniques have become more advanced and more effective in correcting fractures, damaged muscles, and spinal conditions. Traction saved many lives during World War II by allowing soldiers to be transported safely without injury to their surrounding tissues. However, traction can be beneficial in treating certain conditions. You and your doctor can discuss whether traction is the best option for your particular condition.