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## Example of irregular bone

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Pelvis: The bones of the pelvis, including the ilium, ischium, and pubis, support the weight of the upper body and protect pelvic organs. Skull: Certain skull bones, like the sphenoid and ethmoid bones, have irregular shapes that contribute to the cranial structure and protect the brain. Irregular bones have complex shapes that do not fit into the conventional categories of long, short, or flat bones.[2] Their unique structures allow them to perform various roles in the body. Shape and Complexity Irregular bones have intricate shapes featuring ridges, notches, and varied projections. These complex shapes are designed to fulfill specific structural and functional requirements in different parts of the body. Composition Irregular bones consist of an inner core of spongy (cancellous) bone, which contains red bone marrow, surrounded by a thin outer layer of compact bone.[3] This composition provides a balance of strength and flexibility. Outer Layer The outer surface of irregular bones is covered by a layer of compact bone. This dense and solid layer provides the bone with its strength and durability. Periosteum Covering the compact bone is the periosteum, a fibrous membrane that contains blood vessels, nerves, and lymphatic vessels.[4] The periosteum is essential for nourishing the bone and facilitating repair and growth. Trabecular Structure The interior of irregular bones is filled with spongy bone, characterized by a lattice-like network of trabeculae (tiny bone struts). These trabeculae are oriented along lines of stress to provide maximum support and flexibility. Red Bone Marrow The spaces within the trabeculae house red bone marrow, which is involved in the production of blood cells.[5] This is a critical feature for bones such as the vertebrae and pelvis. Vertebrae Structure: Each vertebra consists of a vertebral body, a vertebral arch, and several processes (spinous, transverse, and articular). Components: Vertebral Body: The thick, disc-shaped anterior portion that bears weight. Vertebral Arch: Forms the posterior part of the vertebra, enclosing the vertebral foramen. Processes: Projections for muscle attachment and articulation with adjacent vertebrae. Facial Bones Mandible: The lower jawbone, which includes the body, ramus, and several processes (condylar, coronoid, and alveolar). Body: The horizontal part that holds the lower teeth. Ramus: The vertical part that connects to the skull. Processes: Provide attachment points for muscles and articulations with other bones. Maxilla: The upper jawbone that forms the upper dental arch and parts of the orbital floor, nasal cavity, and hard palate. Body: Central portion containing the maxillary sinus. Processes: Frontal, zygomatic, palatine, and alveolar processes that connect to other facial bones. Zygomatic Bones: Form the cheekbones and part of the orbital rim. Processes: Articulate with the maxilla, temporal bone, and frontal bone. Pelvis Ilium: The broad, flaring upper part of the pelvic bone. Ala: The wing-like portion providing muscle attachment. Iliac Crest: The superior border, serving as an attachment site for muscles and ligaments. Ischium: The lower, posterior part of the pelvic bone. Ischial Tuberosity: Supports body weight when sitting. Pubis: The anterior part of the pelvic bone.[6] Pubic Symphysis: The joint where the two pubic bones meet. Skull Bones Sphenoid Bone: A butterfly-shaped bone located at the base of the skull. Body: Contains the sphenoidal sinuses. Greater and Lesser Wings: Extend laterally to form part of the cranial floor. Pterygoid Processes: Project downward for muscle attachment. Ethmoid Bone: A light, spongy bone located between the nasal cavity and the orbits. Cribriform Plate: Contains foramina for olfactory nerves. Perpendicular Plate: Forms the superior part of the nasal septum. Ethmoidal Labyrinth: Contains ethmoidal air cells. Irregular bones play a variety of crucial roles in the human body, contributing to support, protection, movement, and other essential functions. Their unique shapes and structures allow them to fulfill these roles effectively. Providing Structural Framework Irregular bones provide a robust structural framework that supports the body.[7] For example, the vertebrae form the vertebral column, which supports the body's weight and maintains its posture. Maintaining Body Shape The complex shapes of irregular bones, such as those in the pelvis and facial skeleton, help maintain the body's shape and support various soft tissues.[8] Shielding Internal Organs Irregular bones protect critical organs. The vertebrae encase and protect the spinal cord, a crucial component of the central nervous system. Similarly, the bones of the pelvis protect pelvic organs, including the bladder, reproductive organs, and parts of the intestines. Protection of the Brain and Sensory Organs Certain irregular bones in the skull, such as the sphenoid and ethmoid bones, protect the brain and support the structure of the nasal cavity and orbits, safeguarding the sensory organs. Attachment Points for Muscles Irregular bones provide numerous attachment points for muscles, tendons, and ligaments. For instance, the vertebrae have processes that serve as attachment sites for muscles that facilitate movement and maintain posture. Joint Articulation Irregular bones form complex joints that allow for a range of movements. The vertebrae articulate with each other to provide flexibility and mobility to the spine, enabling bending, twisting, and other movements. Blood Cell Production The spongy bone within irregular bones, such as the vertebrae and pelvis, contains red bone marrow, which is essential for hematopoiesis. This process involves the production of red blood cells, white blood cells, and platelets, which are crucial for oxygen transport, immune defense, and blood clotting, respectively. Reservoir for Essential Minerals Like other bones, irregular bones serve as reservoirs for essential minerals, particularly calcium and phosphorus. These minerals are vital for various physiological processes, including bone strength, nerve transmission, and muscle contraction. Regulation of Mineral Homeostasis Irregular bones can release stored minerals into the bloodstream as needed, helping to maintain appropriate levels of these minerals in the body. This process is regulated by hormones such as parathyroid hormone and calcitonin. Providing Attachment and Support Irregular bones provide critical attachment points for soft tissues and organs. The bones of the pelvis, for instance, provide attachment and support for the muscles of the lower abdomen and the pelvic floor, which are essential for maintaining the position of pelvic organs. Irregular bones play crucial roles in the body, and their health and integrity are essential for overall well-being. Due to their complex shapes and functions, irregular bones are involved in various medical conditions and injuries that can significantly impact an individual's health. Irregular bones such as the vertebrae form the vertebral column, which is susceptible to several disorders: Herniated Discs: When the intervertebral discs between the vertebrae herniate or bulge, they can compress nearby nerves, causing pain, numbness, or weakness. Scoliosis: An abnormal lateral curvature of the spine that can lead to posture issues and, in severe cases, respiratory and cardiovascular problems. Osteoarthritis: Degenerative changes in the spine's joints can cause pain and reduced mobility. Irregular bones are also prone to fractures due to their locations and functions: Vertebral Fractures: These fractures can result from trauma or conditions like osteoporosis, leading to pain, deformity, and, in severe cases, spinal cord injury. Pelvic Fractures: Often resulting from high-impact trauma, such as car accidents, these fractures can cause significant pain and may require surgical intervention. Infections such as osteomyelitis can affect irregular bones, leading to severe pain, inflammation, and potential bone destruction. Prompt treatment with antibiotics and sometimes surgical debridement is necessary to manage these infections and prevent long-term damage. Primary bone cancers, such as osteosarcoma, and metastatic cancers can affect irregular bones: Vertebral Metastases: Cancer can spread to the vertebrae from other parts of the body, causing pain, fractures, and neurological deficits due to spinal cord compression. Pelvic Bone Tumors: Tumors in the pelvis can impact mobility and organ function, requiring complex treatment strategies, including surgery, chemotherapy, and radiation therapy. Irregular bones are involved in several congenital and developmental disorders: Spina Bifida: A congenital defect where the vertebrae do not fully enclose the spinal cord, leading to neurological impairments. Craniosynostosis: Premature fusion of skull bones, such as the sphenoid or ethmoid, can affect brain and skull growth, necessitating surgical correction. The red bone marrow within irregular bones is critical for blood cell production: Bone Marrow Disorders: Conditions such as leukemia and myelodysplastic syndromes can affect the bone marrow, leading to impaired blood cell production. Bone marrow biopsies from the pelvis are often performed to diagnose and monitor these conditions. Published on July 28, 2024Last updated on April 24, 2025HomeExploreDiscussFlashcardsQuiz As the name suggests, irregular bones have unique shapes that cannot be classified as long, short, or flat bones. Like short bones, irregular bones also primarily comprise spongy bone, with a layer of compact bone forming the outer surface. Irregular Bones In the vertebral column All the vertebrae (cervical, thoracic, lumbar)SacrumCoccyx In the skull These bones provide stability and shape the spinal column and parts of the head and face.The bones in the vertebral column, especially the sacrum, provide multiple attachment points for the skeletal muscles and tendons. This keeps the back and pelvic region flexible, allowing movement. References: Skeletal system tricks to remember the 5 main types of bones in the human body! Includes labeled diagrams and examples of long bones, short bones, flat bones, sesamoid bones, and irregular bones! Save time by watching the video first, then supplement it with the lecture below!Click below to view the EZmed video library. Subscribe to stay in the loop! How many bones are in the average adult human body? 206The 206 bones make up part of the skeletal system, and they can be categorized into 5 main types based on their shape. What if you could learn all 5 types of bones and which bones belong to each type in under 10 minutes?!This lecture will help you do just that!Don't believe it? Check out the video above if you haven't already!You will learn 5 simple tricks to learn the 5 main types of bones, along with which bones are classified into each type. Labeled diagrams and examples are included!So let's get right into it!Types of BonesThe average adult has 206 bones, and they can be categorized into different groups based on their shape. They include:Long Bones (90)Short Bones (28)Flat Bones (36)Sesamoid Bones (48)\*There can be slight variations to how specific bones are classified, so the exact numbers you see for each bone type can vary depending on the resource. This lecture will provide you with one of the more common ways to classify bones.There is one more minor category of bones called sutural bones (Wormian bones).Sutural bones are small accessory bones sometimes found between cranial sutures.Not everyone has them, but know they can exist. Skeletal System: The 5 main types of bones in the human body are long bones, short bones, flat bones, sesamoid bones, and irregular bones; Total 206 bones Let's discuss the long bones first. The long bones get their name because they are longer than they are wide.Trick to Remember Long BonesL = Long = Limb, ClavicLe (CoLLarbone)The trick to remember long bone is to use the letter "L" to remember "Limb". This will help you remember long bones are mainly found in the extremities, except the clavicle.In fact, most of the bones of the arms and legs are long bones.You can then use the "L" to also remember "Clavicle" which has 2 "L"s in it.The clavicle is commonly referred to as the collarbone which also contains 2 "L"s. This will help you remember the clavicle is a type of long bone as well!So whenever you think of long bones, think of limbs and clavicle! Skeletal System Types of Bones: Labeled diagram of long bones which include most of the bones of the arms and legs, as well as the clavicles. L = Long = Limbs, CLavicLes Example Long BonesThe average adult has 90 long bones.Which bones are considered long bones? First we said to remember "long" and "limb" because most of the long bones can be found in the arms and legs including: Upper ExtremityHumerus (2) - ArmRadius (2) - ForearmUlna (2) - ForearmMetacarpals (10) - HandPhalanges (28) FingersLower ExtremityFemur (2) - Upper LegTibia (2) - Lower LegFibula (2) - Lower LegMetatarsals (10) - FootPhalanges (28) - ToesCheck out these simple tricks to remember the anatomy of the femur bone!Next, we said to think of "long" and "clavicle" or "collarbone" which both contain 2 "L"s". This will help you remember the clavicles or collarbones are long bones as well. Clavicle (2) - Collarbone Long Bones in the Human Body: Long bones of the skeletal system include bones of the upper and lower extremities (arms and legs), as well as the clavicles. You can see we have covered most of the bones in the arms and legs (long bones) except for the bones of the wrist and ankle.This is where the short bones come into play. We also skipped over the patella which will be discussed with the sesamoid bones below.The short bones get their name because of their cube-shape as they are about the same length and width.Trick to Remember Short BonesS = Short = Sprain (Wrist & Ankle)The trick for short bones is to use the letter "S" to remember the word "Sprain". This will help you remember the ankle and wrist as they are common areas to be sprained.The short bones are mainly found in the wrists and ankles.In fact, most of the bones of the wrist and ankle are short bones, except for the pisiform which is a sesamoid bone discussed below. Skeletal System Types of Bones: Labeled diagram of short bones which include most of the carpal bones (wrist) and tarsal bones (ankles). S = Short = Sprain (Wrist & Ankle) Example Short BonesThe average adult has 28 short bones. Which bones are considered short bones?As mentioned above, you can use "short" and "sprain" to help you remember wrist and ankle. The short bones are mainly found in the wrist and ankle.In other words, the carpal bones of the wrist and the tarsal bones of the ankle are short bones. The carpal bones include:Scaphoid (2)Lunate (2)Triquetrum (2)Hamate (2)Capitate (2)Trapezoid (2)Trapezium (2)\*The pisiform was omitted as it is considered a sesamoid bone - more on that below! The tarsal bones include:Talus (2)Navicular (2)Cuboid (2)Calcaneus (2)Medial Cuneiform (2)Intermediate Cuneiform (2)Lateral Cuneiform (2)Check out these simple mnemonics to remember the carpal bones and tarsal bones!\*The pisiform is considered a sesamoid bone because it develops within a tendon. \*The average adult has 28 short bones. Be aware you might see conflicting information about how to classify sesamoid bones. Some consider sesamoid bones a subtype of other bones such as short bones, so you may see variations to the number of short bones in the human body. Short Bones in the Human Body: Short bones of the skeletal system include the carpal bones in the wrist and the tarsal bones in the ankle. The next type is flat bones. The flat bones get their name for being thin and broad, and they are found where protection of organs is necessary. Trick to Remember Flat BonesF = Flat = Fort (Rib Cage & Skull/Cranium)The trick to remember flat bones is to use the letter "F" to remember the word "Fort".Forts help protect things, and that's exactly what the flat bones do.Flat bones are located in areas where protecting vital organs is required such as the skull and chest/thorax.Therefore, you can broadly remember flat bones are found in the rib cage and part of the cranium or skull. Skeletal System Types of Bones: Labeled diagram of flat bones which include the bones of the rib cage and parts of the skull. F = Flat = Fort (Rib Cage & Skull) Example Flat BonesThe average adult has 36 flat bones.Which bones are considered flat bones?Remember we said flat bones are located in areas where protecting organs is necessary, such as the skull to protect the brain and the rib cage to protect the heart and lungs.Flat bones include:Sternum (1) - BreastboneRibs (24) SkullFrontal Bone (1)Parietal Bone (2)Occipital Bone (1)Nasal (2)Lacrimal (2)Vomer (1)Scapula (2) - Shoulder BladeCheck out these mnemonics to remember the cranial bones and facial bones of the skull!Most of the flat bones of the skull make up the top of the cranium and the midline of the face.The remainder of the face/skull is made up of irregular bones, which will be discussed below.The scapula is also considered a type of flat bone, and this can be remembered because it is close to the rib cage. Flat Bones in the Human Body: Flat bones of the skeletal system include the sternum, ribs, parts of the skull, and scapulae. Let's move on to the sesamoid bones. The sesamoid bones get their name for resembling a sesame seed.Trick to Remember Sesamoid BonesS = Sesamoid = Sesame Seed Shaped (Pisiform & Patella)Pea-Shaped = Pisiform & PatellaThere are 2 tricks to remember sesamoid bones.The first trick is to use the beginning of the word "sesamoid" to remember "sesame seeds", or use the "S" to remember "Sesame Seed Shaped". This will help you remember the seed-shaped pisiform and patella bones. The other trick is to think of sesamoid bones as being pea-shaped. Ironically the pisiform and patella both start with the letter "P" (Pea). Skeletal System Types of Bones: Labeled diagram of sesamoid bones which include the pisiform and patella. S = Sesamoid = Sesame Seed (Pisiform & Patella); P = Pea-Shaped = Pisiform, Patella Example Sesamoid BonesThe average adult has 4 sesamoid bones.Which bones are considered sesamoid bones?As mentioned above, the sesamoid bones get their name for resembling a sesame seed. The sesamoid bones are the sesame seed or pea-shaped bones within tendons, and they include:Pisiform (2) - Carpal BonePatella (2) - KneecapThe pisiform is in the flexor carpi ulnaris tendon, and the patella is in the quadriceps tendon and provides an attachment point for the patellar tendon.The pisiform is 1 of the 8 carpal bones in the wrist.The patella is the kneecap. Therefore, the average adult has 4 sesamoid bones.\*Nearly everyone has 2 patellae and 2 pisiform bones which is why they are counted in the 206 bones, but some people can also have additional sesamoid bones in the tendons near the joints of the hands or ankles. Sesamoid Bones in the Human Body: Sesamoid bones of the skeletal system include the pisiform and patella. The final major classification is the irregular bones. The irregular bones get their name for their odd shapes that do not fit the other categories of long, short, flat, or sesamoid.Trick to Remember Irregular BonesI = Irregular = I-Shaped (Hips, Vertebrae, Skull, Ears)The trick to remember irregular bones is to use the letter "I" to remember "I-shaped", as the irregular bones collectively make the shape of an "I". So what do we mean by that?The irregular bones are mainly found in the hips, spine, skull, and ears. Skeletal System Types of Bones: Labeled diagram of irregular bones which include the hip bones, vertebrae, parts of the skull, and ear ossicles. I = I-Shaped (Hips, Vertebrae, Skull, Ear Ossicles) Example Irregular BonesThe average adult has 48 irregular bones. Which bones are considered irregular bones?As mentioned above, irregular bones are mainly found in the hips, spine, parts of the skull, and ears. Remember collectively they form the shape of an "I" which can help you remember the overall location of the irregular bones. The irregular bones include:Hip Bones (2)Vertebral ColumnCervical (7)Thoracic (12)Lumbar (5)Sacrum (1)Hyoid Bone (1)SkullTemporal Bone (2)Ethmoid (1)Sphenoid (1)Zygomatic (2)Maxilla (2)Mandible (1)Inferior Nasal Concha (2)Palatine (2)Ear OssiclesMalleus (2)Incus (2)Stapes (2)The number of vertebrae listed above is for an adult. Remember most individuals are born with 33 vertebrae, and then the 5 sacral and 4 coccygeal vertebrae fuse by adulthood to form the sacrum and coccyx respectively. Check out this simple trick to remember the anatomy of the vertebrae!The skull contains irregular bones in addition to the flat bones we discussed above. The irregular bones of the skull make up much of the face, whereas the flat bones form the top of the cranium to protect the brain.Remember flat bones help protect vital organs. \*Again there can be slight variations to how some bones are specifically classified, but this should give you an overall understanding of the different types of bones. Irregular bones in the Human Body: Irregular bones of the skeletal system include the hip bones, vertebrae, hyoid bone, parts of the skull, and ear ossicles. We now know the 5 major types of bones along with examples. Let's recap the tricks we used to help us remember them. 1. Long Bones: Remember limbs and clavicle (collarbone). L = Long = Limb, ClavicLe (CoLLarbone)This will help you remember the long bones include most of the bones of the arms and legs, as well as the clavicle. 2. Short Bones: Remember sprain. S = Short = Sprain (Wrist & Ankle)This will help you think of ankle and wrist as they are commonly sprained. The short bones include the bones of the ankle (tarsals) and wrist (carpals).3. Flat Bones: Remember fort.F = Flat = Fort (Rib Cage & Skull/Cranium)Forts help protect things. This will help you remember the flat bones include the sternum, rib cage, scapula, and part of the skull, which help protect vital organs such as the heart, lungs, and brain.4. Sesamoid Bones: Remember sesame seed-shaped or pea-shaped.S = Sesamoid = Sesame Seed Shaped (Pisiform & Patella)Pea-Shaped = Pisiform & PatellaThis will help you remember the sesame seed or pea-shaped pisiform and patella. 5. Irregular Bones: Remember how they collectively form the shape of an "I".I = Irregular = I-Shaped (Hips, Vertebrae, Skull, Ears)This will help you remember the overall location of the irregular bones including the hip bones, vertebrae, part of the skull, and ears. Skeletal System: Tricks to remember the 5 main bone types in the human body including long bones, short bones, flat bones, sesamoid bones, and irregular bones. As the name suggests, irregular bones have unique shapes that cannot be classified as long, short, or flat bones. Like short bones, irregular bones also primarily comprise spongy bone, with a layer of compact bone forming the outer surface. Irregular Bones In the vertebral column All the vertebrae (cervical, thoracic, lumbar)SacrumCoccyx In the skull These bones provide stability and shape the spinal column and parts of the head and face.The bones in the vertebral column, especially the sacrum, provide multiple attachment points for the skeletal muscles and tendons. This keeps the back and pelvic region flexible, allowing movement. References: