

A&P 08

Appendicular

Skeleton

Essay

Author: OpenStax College

Published 2014

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4. Chapter: A&P 08 Appendicular Skeleton Essay

1. A&P 08 Appendicular Skeleton Essay Questions

4.1.1. Watch this video (<http://openstaxcollege.org//fractures>) to see ho...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org//fractures>) to see how fractures of the distal radius bone can affect the wrist joint.

Explain the problems that may occur if a fracture of the distal radius involves the joint surface of the radiocarpal joint of the wrist.

- A fracture through the joint surface of the distal radius may make the articulating surface of the radius rough or jagged. This can then cause painful movements involving this joint and the early development of arthritis. Surgery can return the joint surface to its original smoothness, thus allowing for the return of normal function.

Check the answer of this question online at QuizOver.com:

Question: [Watch this video http://openstaxcollege](http://openstaxcollege.org//fractures) OpenStax College Anatomy

4.1.2. Visit this site (<http://openstaxcollege.org/l/handbone>) to explore ...

Author: OpenStax College

Visit this site (<http://openstaxcollege.org/l/handbone>) to explore the bones and joints of the hand.

What are the three arches of the hand, and what is the importance of these during the gripping of an object?

- The hand has a proximal transverse arch, a distal transverse arch, and a longitudinal arch. These allow the hand to conform to objects being held. These arches maximize the amount of surface contact between the hand and object, which enhances stability and increases sensory input.

Check the answer of this question online at QuizOver.com:

Question: [Visit this site http://openstaxcollege.org/l/handbone](http://openstaxcollege.org/l/handbone) OpenStax College Anatomy Quest

4.1.3. Watch this video (<http://openstaxcollege.org/l/colles>) to learn abo...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org/l/colles>) to learn about a Colles fracture, a break of the distal radius, usually caused by falling onto an outstretched hand.

When would surgery be required and how would the fracture be repaired in this case?

- Surgery may be required if the fracture is unstable, meaning that the broken ends of the radius won't stay in place to allow for proper healing.
In this case, metal plates and screws can be used to stabilize the fractured bone.

Check the answer of this question online at QuizOver.com:

Question: [Watch this video http://openstaxcollege.org/l/colles](http://openstaxcollege.org/l/colles) OpenStax College Anatomy

4.1.4. Watch this video (<http://openstaxcollege.org/l/3Dpelvis>) for a 3-D ...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org/l/3Dpelvis>) for a 3-D view of the pelvis and its associated ligaments.

What is the large opening in the bony pelvis, located between the ischium and pubic regions, and what two parts of the pubis contribute to the formation of this opening?

- The obturator foramen is located between the ischium and the pubis. The superior and inferior pubic rami contribute to the boundaries of the obturator foramen.

Check the answer of this question online at QuizOver.com:

Question: [Watch this video http://openstaxcollege](http://openstaxcollege.org/l/3Dpelvis) OpenStax College Anatomy

4.1.5. Watch this video (<http://openstaxcollege.org/l/midfemur>) to view ho...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org/l/midfemur>) to view how a fracture of the mid-femur is surgically repaired.

How are the two portions of the broken femur stabilized during surgical repair of a fractured femur?

- A hole is drilled into the greater trochanter, the bone marrow (medullary) space inside the femur is enlarged, and finally an intramedullary rod is inserted into the femur. This rod is then anchored to the bone with screws.

Check the answer of this question online at QuizOver.com:

Question: [Watch this video http://openstaxcollege.org/l/midfemur](http://openstaxcollege.org/l/midfemur) OpenStax College Anatomy

4.1.6. Visit this site (<http://openstaxcollege.org/l/kneesurgery>) to perfo...

Author: OpenStax College

Visit this site (<http://openstaxcollege.org/l/kneesurgery>) to perform a virtual knee replacement surgery.

The prosthetic knee components must be properly aligned to function properly. How is this alignment ensured?

- Metal cutting jigs are attached to the bones to ensure that the bones are cut properly prior to the attachment of prosthetic components.

Check the answer of this question online at QuizOver.com:

Question: [Visit this site http://openstaxcollege.org/l/kneesurgery](http://openstaxcollege.org/l/kneesurgery) OpenStax College Anatomy Quest

4.1.7. Use this tutorial (<http://openstaxcollege.org/l/footbones>) to review...

Author: OpenStax College

Use this tutorial (<http://openstaxcollege.org/l/footbones>) to review the bones of the foot.

Which tarsal bones are in the proximal, intermediate, and distal groups?

- The proximal group of tarsal bones includes the calcaneus and talus bones, the navicular bone is intermediate, and the distal group consists of the cuboid bone plus the medial, intermediate, and lateral cuneiform bones.

Check the answer of this question online at QuizOver.com:

Question: [Use this tutorial http://openstaxcollege](http://openstaxcollege.org/l/footbones) OpenStax College Anatomy

4.1.8. View this link (<http://openstaxcollege.org/l/bunion>) to learn about...

Author: OpenStax College

View this link (<http://openstaxcollege.org/l/bunion>) to learn about a bunion, a localized swelling on the medial side of the foot, next to the first metatarsophalangeal joint, at the base of the big toe.

What is a bunion and what type of shoe is most likely to cause this to develop?

- A bunion results from the deviation of the big toe toward the second toe, which causes the distal end of the first metatarsal bone to stick out.
A bunion may also be caused by prolonged pressure on the foot from pointed shoes with a narrow toe box that compresses the big toe and pushes it toward the second toe.

Check the answer of this question online at QuizOver.com:

Question: [View this link http://openstaxcollege.org](http://openstaxcollege.org) OpenStax College Anatomy

4.1.9. Watch this animation (<http://openstaxcollege.org/l/limbbuds>) to fol...

Author: OpenStax College

Watch this animation (<http://openstaxcollege.org/l/limbbuds>) to follow the development and growth of the upper and lower limb buds.

On what days of embryonic development do these events occur:

- (a) first appearance of the upper limb bud (limb ridge);
 - (b) the flattening of the distal limb to form the handplate or footplate; and
 - (c) the beginning of limb rotation?
- (a) The upper limb bud initially appears on day 26 as the upper limb ridge. This becomes the upper limb bud by day 28.
 - (b) The handplate and footplate appear at day 36.
 - (c) Rotation of the upper and lower limbs begins during the seventh week (day 48).

Check the answer of this question online at QuizOver.com:

Question: [Watch this animation http://openstaxcollege](http://openstaxcollege.org/l/limbbuds) OpenStax College Anatomy

4.1.10. Describe the shape and palpable line formed by the clavicle and sca...

Author: OpenStax College

Describe the shape and palpable line formed by the clavicle and scapula.

- The clavicle extends laterally across the anterior shoulder and can be palpated along its entire length. At its lateral end, the clavicle articulates with the acromion of the scapula, which forms the bony tip of the shoulder. The acromion is continuous with the spine of the scapula, which can be palpated medially and posteriorly along its length. Together, the clavicle, acromion, and spine of the scapula form a V-shaped line that serves as an important area for muscle attachment.

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [Describe the shape and palpable line formed OpenStax College Anatomy](#)

4.1.11. Discuss two possible injuries of the pectoral girdle that may occur...

Author: OpenStax College

Discuss two possible injuries of the pectoral girdle that may occur following a strong blow to the shoulder or a hard fall onto an outstretched hand.

- A blow to the shoulder or falling onto an outstretched hand passes strong forces through the scapula to the clavicle and sternum.
A hard fall may thus cause a fracture of the clavicle (broken collarbone) or may injure the ligaments of the acromioclavicular joint.
In a severe case, the coracoclavicular ligament may also rupture, resulting in complete dislocation of the acromioclavicular joint (a "shoulder separation").

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Question: [Discuss two possible injuries of the OpenStax College Anatomy Quest](#)

4.1.12. Your friend runs out of gas and you have to help push his car.

Disc...

Author: OpenStax College

Your friend runs out of gas and you have to help push his car.

Discuss the sequence of bones and joints that convey the forces passing from your hand, through your upper limb and your pectoral girdle, and to your axial skeleton.

- As you push against the car, forces will pass from the metacarpal bones of your hand into the carpal bones at the base of your hand.
Forces will then pass through the midcarpal and radiocarpal joints into the radius and ulna bones of the forearm.
These will pass the force through the elbow joint into the humerus of the arm, and then through the glenohumeral joint into the scapula.
The force will travel through the acromioclavicular joint into the clavicle, and then through the sternoclavicular joint into the sternum, which is part of the axial skeleton.

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [Your friend runs out of gas and you have OpenStax College Anatomy](#)

4.1.13. Name the bones in the wrist and hand, and describe or sketch out th...

Author: OpenStax College

Name the bones in the wrist and hand, and describe or sketch out their locations and articulations.

- The base of the hand is formed by the eight carpal bones arranged in two rows (distal and proximal) of four bones each.
The proximal row contains (from lateral to medial) the scaphoid, lunate, triquetrum, and pisiform bones. The distal row contains (from medial to lateral) the hamate, capitate, trapezoid, and trapezium bones. (Use the mnemonic "So Long To Pinky, Here Comes The Thumb" to remember this sequence).
The rows of the proximal and distal carpal bones articulate with each other at the midcarpal joint. The palm of the hand contains the five metacarpal bones, which are numbered 1-5 starting on the thumb side. The proximal ends of the metacarpal bones articulate with the distal row of the carpal bones. The distal ends of the metacarpal bones articulate with the proximal phalanx bones of the thumb and fingers. The thumb (digit 1) has both a proximal and distal phalanx bone. The fingers (digits 2-5) all contain proximal, middle, and distal phalanges.

Check the answer of this question online at QuizOver.com:

Question: [Name the bones in the wrist and hand and OpenStax College Anatomy](#)

4.1.14. Describe the articulations and ligaments that unite the four bones ...

Author: OpenStax College

Describe the articulations and ligaments that unite the four bones of the pelvis to each other.

- The pelvis is formed by the combination of the right and left hip bones, the sacrum, and the coccyx. The auricular surfaces of each hip bone articulate with the auricular surface of the sacrum to form the sacroiliac joint. This joint is supported on either side by the strong anterior and posterior sacroiliac ligaments. The right and left hip bones converge anteriorly, where the pubic bodies articulate with each other to form the pubic symphysis joint. The sacrum is also attached to the hip bone by the sacrospinous ligament, which spans the sacrum to the ischial spine, and the sacrotuberous ligament, which runs from the sacrum to the ischial tuberosity. The coccyx is attached to the inferior end of the sacrum.

Check the answer of this question online at QuizOver.com:

Question: [Describe the articulations and ligaments OpenStax College Anatomy](#)

4.1.15. Discuss the ways in which the female pelvis is adapted for childbirth.

Author: OpenStax College

Discuss the ways in which the female pelvis is adapted for childbirth.

- Compared to the male, the female pelvis is wider to accommodate childbirth. Thus, the female pelvis has greater distances between the anterior superior iliac spines and between the ischial tuberosities. The greater width of the female pelvis results in a larger subpubic angle. This angle, formed by the anterior convergence of the right and left ischiopubic rami, is larger in females (greater than 80 degrees) than in males (less than 70 degrees). The female sacral promontory does not project anteriorly as far as it does in males, which gives the pelvic brim (pelvic inlet) of the female a rounded or oval shape. The lesser pelvic cavity is wider and more shallow in females, and the pelvic outlet is larger than in males. Thus, the greater width of the female pelvis, with its larger pelvic inlet, lesser pelvis, and pelvic outlet, are important for childbirth because the baby must pass through the pelvis during delivery.

Check the answer of this question online at QuizOver.com:

Question: [Discuss the ways in which the female pelvis OpenStax College Anatomy](#)

4.1.16. Define the regions of the lower limb, name the bones found in each ...

Author: OpenStax College

Define the regions of the lower limb, name the bones found in each region, and describe the bony landmarks that articulate together to form the hip, knee, and ankle joints.

- The lower limb is divided into three regions. The thigh is the region located between the hip and knee joints. It contains the femur and the patella. The hip joint is formed by the articulation between the acetabulum of the hip bone and the head of the femur.
The leg is the region between the knee and ankle joints, and contains the tibia (medially) and the fibula (laterally).
The knee joint is formed by the articulations between the medial and lateral condyles of the femur, and the medial and lateral condyles of the tibia.
Also associated with the knee is the patella, which articulates with the patellar surface of the distal femur.
The foot is found distal to the ankle and contains 26 bones. The ankle joint is formed by the articulations between the talus bone of the foot and the distal end of the tibia, the medial malleolus of the tibia, and the lateral malleolus of the fibula.
The posterior foot contains the seven tarsal bones, which are the talus, calcaneus, navicular, cuboid, and the medial, intermediate, and lateral cuneiform bones.
The anterior foot consists of the five metatarsal bones, which are numbered 1-5 starting on the medial side of the foot. The toes contain 14 phalanx bones, with the big toe (toe number 1) having a proximal and a distal phalanx, and the other toes having proximal, middle, and distal phalanges.

Check the answer of this question online at QuizOver.com:

Question: [Define the regions of the lower limb name OpenStax College Anatomy](#)

4.1.17. The talus bone of the foot receives the weight of the body from the...

Author: OpenStax College

The talus bone of the foot receives the weight of the body from the tibia.

The talus bone then distributes this weight toward the ground in two directions: one-half of the body weight is passed in a posterior direction and one-half of the weight is passed in an anterior direction.

Describe the arrangement of the tarsal and metatarsal bones that are involved in both the posterior and anterior distribution of body weight.

- The talus bone articulates superiorly with the tibia and fibula at the ankle joint, with body weight passed from the tibia to the talus.
Body weight from the talus is transmitted to the ground by both ends of the medial and lateral longitudinal foot arches.
Weight is passed posteriorly through both arches to the calcaneus bone, which forms the heel of the foot and is in contact with the ground.
On the medial side of the foot, body weight is passed anteriorly from the talus bone to the navicular bone, and then to the medial, intermediate, and lateral cuneiform bones.
The cuneiform bones pass the weight anteriorly to the first, second, and third metatarsal bones, whose heads (distal ends) are in contact with the ground.
On the lateral side, body weight is passed anteriorly from the talus through the calcaneus, cuboid, and fourth and fifth metatarsal bones.
The talus bone thus transmits body weight posteriorly to the calcaneus and anteriorly through the navicular, cuneiform, and cuboid bones, and metatarsals one through five.

Check the answer of this question online at QuizOver.com:

Question: [The talus bone of the foot receives the OpenStax College Anatomy](#)

4.1.18. How can a radiograph of a child's femur be used to determine the ap...

Author: OpenStax College

How can a radiograph of a child's femur be used to determine the approximate age of that child?

- A radiograph (X-ray image) of a child's femur will show the epiphyseal plates associated with each secondary ossification center.
These plates of hyaline cartilage will appear dark in comparison to the white imaging of the ossified bone. Since each epiphyseal plate appears and disappears at a different age, the presence or absence of these plates can be used to give an approximate age for the child.
For example, the epiphyseal plate located at the base of the lesser trochanter of the femur appears at age 9-10 years and disappears at puberty (approximately 11 years of age).
Thus, a child's radiograph that shows the presence of the lesser trochanter epiphyseal plate indicates an approximate age of 10 years.

Check the answer of this question online at QuizOver.com:

Question: [How can a radiograph of a child's femur OpenStax College Anatomy](#)

4.1.19. How does the development of the clavicle differ from the developmen...

Author: OpenStax College

How does the development of the clavicle differ from the development of other appendicular skeleton bones?

- Unlike other bones of the appendicular skeleton, the clavicle develops by the process of intramembranous ossification.

In this process, embryonic mesenchyme accumulates at the site of the future bone and then differentiates directly into bone-producing tissue.

Because of this direct and early production of bone, the clavicle is the first bone of the skeleton to begin to ossify.

However, the growth and enlargement of the clavicle continues throughout childhood and adolescence, and thus, it is not fully ossified until 25 years of age.

Check the answer of this question online at QuizOver.com:

Question: [How does the development of the clavicle OpenStax College Anatomy](#)