The Articular System

OBJECTIVES

After studying this chapter, you should be able to:
1. Name and describe the three types of joints.
2. Name the two types of synarthroses joints.
3. Name examples of the two types of amphiarthroses joints.
4. Name and give examples of the six types of diarthroses or synovial joints.
5. Describe the capsular nature of a synovial joint.
6. Describe the three types of bursae.
7. Name some of the disorders of joints.
8. Describe the possible movements at synovial joints.

ACTIVITIES

A. Completion

Fill in the blank spaces with the correct term.
1. A union between two or more bones is a(n) ___.
2. Joints are classified by __ and ___.
3. Skull joints are called ___.
4. Besides sutures, there are two other types of synarthroses; they are __ and ___.
5. Those joints allowing only slight movement are ___.
6. A joint in which two bony surfaces are connected by hyaline cartilage is a(n) ___.

NAME: _____________________________ DATE: ___________
7. Synovial joints are also called ___.
8. Synovial joints are characterized by the presence of a(n) ___ and a(n) ___.
9. A diarthrosis joint provides a smooth gliding surface because of ___.
10. A buffer between two weight-bearing bones is provided by ___.
11. The joint providing the greatest range of motion in the body is found in the ___.
12. Functions of the synovial joints include ___ , ___ , and ___.
13. A decrease in the angle of a joint is denoted as ___.
14. If a joint is forced beyond its normal range of extension, it is ___.
15. Movement of a limb away from the midline of the body is ___.
16. Moving a limb in a direction that causes the bone to describe a cone is ___.
17. ___ is a movement placing the palm in an anterior position.
18. Moving the palm of the hand so that it faces down is called ___.
19. Move the body forward for ___ and backward for ___.
20. ___ is raising the body.
21. Only primates can perform the movement called ___.
22. A ball-and-socket joint will have a ball-shaped head fitting into a(n) ___ ___.
23. In the joint of the hip, the ball-shaped head of the femur fits into the ___.
24. An example of a hinge joint is the ___.
25. A condyloid joint is also known as a(n) ___ joint.
26. The thumb is an example of a(n) ___ joint.
27. Gliding joints are found in the ___.
28. Closed sacs with a synovial lining are ___.
29. Inflammation of a joint is called ___.
30. Degenerative joint disease is sometimes known as ___.
31. ___ is an inflammation of the tissues of the gum.
32. A sprain occurs when a twisting or turning action tears ___.
33. Supination and ___ refer to the movement of the forearm and hand.

B. Matching

Match the term on the right with the definition on the left.

| ___ 34. accumulation of uric acid crystals | a. depression |
| ___ 35. rheumatism | b. pivot joint |
| ___ 36. connective tissue disorder | c. extension |
| ___ 37. inflammation of synovial bursa | d. gout |
| ___ 38. bacterial infection | e. primary fibrositis |
| ___ 39. one tendon overlies another | f. adduction |
40. subfascial bursae  
41. example, atlas vertebra  
42. lowering part of the body  
43. move the sole outward  
44. increase joint angle  
45. move around the central axis  
46. pushing the foot up  
47. move the limb toward the midline  
48. reinforce a joint capsule

C. Key Terms

Use the text to look up the following terms. Write the definition or explanation.

49. Abduction:

50. Adduction:

51. Amphiarthrosis:

52. Bursae:

53. Condyloid joint:

54. Circumduction:

55. Dorsiflexion:
56. Eversion:

57. Fascia:

58. Gliding joint:

59. Osteoarthritis:

60. Primary fibrositis:

61. Reposition:

62. Rotation:

63. Subcutaneous bursae:

64. Subtendinous bursae:

65. Symphysis:

66. Synchondrosis:
D. Labeling Exercise

67. Label the joints as indicated in Figure 8-1.

Figure 8-1

A. _____________________________
B. _____________________________
C. _____________________________
D. _____________________________
E. _____________________________
F. _____________________________
G. _____________________________
68. Label the parts of the knee joint as indicated in Figure 8-2.

![Figure 8-2](image)

A. ____________________________
B. ____________________________
C. ____________________________
D. ____________________________
E. ____________________________
F. ____________________________
E. Coloring Exercise

69. Using Figure 8-3, color the bones red, the articular cartilage blue, the synovial membrane green, and the synovial fluid yellow.

F. Critical Thinking

Answer the following questions in complete sentences.

70. What are the criteria for classifying joints?
71. Why do some authors consider syndesmosis an example of amphiarthrosis?

72. Differentiate amphiarthrosis and diarthrosis.

73. Why does the shoulder joint have the greatest range of motion?

74. Why is moderate, regular exercise important as we age?

75. Why are primates the only animals to use hand tools?

76. What is meant by uniaxial, biaxial, and multiaxial?
77. Of the three types of bursae, which would be least likely to have bursitis? Explain.

78. Why would rheumatic fever affect the heart?

G. Crossword Puzzle

Complete the crossword puzzle using the following clues.

ACROSS
1. Immovable joint
5. Synovial joints
7. Joints with slight movement

DOWN
1. Bones move as one
2. Inflamed joint
3. Saddle joint
Section 2  •  Chapter Exercises

9. Joint
11. Palm down
12. Sole in
13. Hinge joint
14. Condyloid joint
17. Inflamed bursa
21. Move a part backward
22. Decreasing the angle between joints
23. Excessive uric acid
24. Buffer between vertebrae

4. Degenerative joint disease
6. Around an axis
8. Lower a part
10. Motion unique to the thumb
11. Foot pushes down
15. Toward the midline
16. Bone-to-bone connector
18. Joints of skull
20. Synovial fluid

CASE STUDY

Denzel, a 46-year-old man, is working with his physical therapist on a set of back exercises. Around four weeks ago, Denzel was helping a friend move and attempted to lift a heavy box. Since that incident, he has had severe pain in his lower back. His health care provider prescribed physical therapy three times per week to treat the condition.

QUESTIONS

1. What condition might Denzel be suffering from?

2. What can cause this condition to develop?

3. What treatment might be considered if Denzel does not respond to physical therapy?

CHAPTER QUIZ

1. Joints are classified into how many major groups?
   a. 1          d. 4
   b. 2          e. 5
   c. 3

   Answer:
2. In a suture, the bones are united by
   a. ligaments  
   b. tendons  
   c. epithelial tissue
   d. adipose tissue  
   e. fibrous tissue

**Answer:**

3. In a syndesmosis joint, the bursae are united by
   a. ligaments  
   b. tendons  
   c. epithelial tissue
   d. adipose tissue  
   e. fibrous tissue

**Answer:**

4. A tooth is an example of a(n)
   a. synchondrosis  
   b. diarthrosis  
   c. amphiarthrosis

**Answer:**

5. A joint in which the bones are connected by a disk of fibrocartilage is a
   a. synchondrosis  
   b. diarthrosis  
   c. synarthrosis

**Answer:**

6. Two bony surfaces are connected by hyaline cartilage; this is a
   a. synchondrosis  
   b. diarthrosis  
   c. synarthrosis

**Answer:**

7. Cartilage supplying a smooth, gliding surface is
   a. fibrous  
   b. aponeurosis  
   c. articular
   d. hyaline  
   e. collagenous

**Answer:**

8. Material connecting one bone to another and forming a joint capsule is
   a. ligamentous  
   b. collagenous  
   c. tendinous
   d. adipose  
   e. cartilaginous

**Answer:**

9. The femur joins with the tibia at its distal end and fits into what at its proximal end?
   a. glenoid fossa  
   b. symphysis  
   c. carpal
   d. acetabulum  
   e. none of the above

**Answer:**
10. The proximal end of the femur is attached at the joint by
   a. tendons
   b. ligaments
   c. cartilage
   d. collagen
   e. none of the above

   **Answer:**

11. Which of the following movements is possible in a synarthrosis joint?
   a. flexion
   b. rotation
   c. abduction
   d. opposition
   e. none of the above

   **Answer:**

12. With circumduction, the bone movement is a circle and a(n)
   a. square
   b. extension
   c. cone
   d. rotation
   e. none of the above

   **Answer:**

13. The opposite of abduction is
   a. circumduction
   b. adduction
   c. flexion
   d. dorsiflexion
   e. none of the above

   **Answer:**

14. The opposite of dorsiflexion is
   a. extension
   b. adduction
   c. inversion
   d. plantar flexion
   e. none of the above

   **Answer:**

15. Supination and pronation refer to movement of the
   a. foot and ankle
   b. knee and hip
   c. wrist and elbow
   d. shoulder and spine
   e. none of the above

   **Answer:**

16. If the palm is moved from posterior to anterior, this is an example of
   a. inversion
   b. supination
   c. pronation
   d. rotation
   e. none of the above

   **Answer:**

17. Opposition is unique to
   a. primates
   b. man
   c. mammals
   d. apes
   e. none of the above

   **Answer:**
18. The number of diarthroses or synovial joints is
   a. 2
   b. 4
   c. 6
   d. 8
   e. none of the above

   Answer:

19. A convex surface fits into a concave surface. What kind of joint is this?
   a. hinge
   b. condyloid
   c. pivot
   d. saddle
   e. gliding

   Answer:

20. An ellipsoidal joint is also known as which type of joint?
   a. hinge
   b. condyloid
   c. pivot
   d. saddle
   e. gliding

   Answer:

21. The type of joint formed by opposing planes surfaces is a
   a. hinge
   b. condyloid
   c. pivot
   d. saddle
   e. gliding

   Answer:

22. The joint allowing for thumb opposition is the
   a. hinge
   b. condyloid
   c. pivot
   d. saddle
   e. gliding

   Answer:

23. Subfascial bursae are located between
   a. bones
   b. muscles
   c. ligaments
   d. tendon
   e. skin and bone

   Answer:

24. Subcutaneous bursae are found between
   a. bones
   b. muscles
   c. ligaments
   d. tendons
   e. skin and bone

   Answer:

25. Subtendinous bursae are found between
   a. bones
   b. muscles
   c. ligaments
   d. tendons
   e. skin and bone

   Answer:
26. Synovial sac inflammation is
   a. bursitis
d   . gout
c. osteoarthritis

Answer:

27. Total joint inflammation is
   a. bursitis
d   . gout
c. osteoarthritis

Answer:

28. Lumbago is
   a. bursitis
d   . gout
c. osteoarthritis

Answer:

29. Which of the following causes joint degeneration?
   a. bursitis
d   . gout
c. osteoarthritis

Answer:

30. Which of the following can cause kidney damage?
   a. bursitis
d   . gout
c. osteoarthritis

Answer:

31. A slipped disk is also referred to as (a)
   a. herniated disk
d   . sprain
c. gout

Answer:

32. The joint between the atlas vertebra and the axis vertebra is an example of which type of joint?
   a. pivot
d   . gliding
c. ball and socket

Answer:

33. Synovial fluid has two functions: creating a gliding surface and nourishing
   a. articular cartilage
d   . white blood cells
c. muscles

Answer: