

Chapter 13: Skeletal System

Building a Medical Terminology Foundation 2e – Student Companion by Kimberlee Carter; Marie Rutherford; and Connie Stevens

This book is intended as a companion to *Building a Medical Terminology Foundation 2e* (<https://ecampusontario.pressbooks.pub/medicalterminology2/>).

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Skeletal System

If you would like to review the textbook chapter content, please visit [Chapter 13: Skeletal System \[New Tab\]](#).

Learning Objectives

- Identify the anatomy of the skeletal system and describe the main functions of the skeletal system
- Analyze, translate, and define medical terms and common abbreviations of the skeletal system
- Practice the spelling and pronunciation of skeletal system terminology
- Identify the medical specialties associated with the skeletal system and explore common diseases, disorders, and procedures

Key Word Components

Identify meanings of key word components of the skeletal system:

Prefixes

- a- (absence of, without)
- ab- (away from)
- ad- (towards)
- brady- (slow)
- dys- (painful, difficult, abnormal, labored)
- hyper- (above, excessive)
- inter- (between)
- intra- (within, in)
- poly- (many, much)

- sub- (below, under)
- supra- (above)
- sym- (together, joined)
- syn- (together, joined)

Combining Forms

- anky/o (stiff, bent)
- aponeur/o (aponeurosis)
- arthr/o (joint)
- burs/o (bursa)
- carp/o (carpals, wrist)
- chondr/o (cartilage)
- clavic/o (clavicle, collarbone)
- clavicul/o (clavicle, collarbone)
- cost/o (ribs)
- crani/o (cranium)
- disk/o (intervertebral disk)
- femor/o (femur, upper leg bone)
- fibul/o (fibula, lower leg bone)
- humer/o (humerus, upper arm bone)
- ili/o (ilium)
- ischi/o (ischium)
- kinesi/o (movement, motion)
- kyph/o (increased convexity of the spine)
- lord/o (bent forward, increased concavity of the spine)
- lumb/o (loin, lumbar region of the spine)
- mandibul/o (mandible, lower jaw bone)
- maxill/o (maxilla, upper jaw bone)
- menisc/o (meniscus, crescent)
- myel/o (marrow [bone], spinal cord)
- oste/o (bone)
- patell/o (patella, kneecap)
- pelv/i (pelvis, pelvic bone)
- pelv/o (pelvis, pelvic bone)
- petr/o (stone)
- phalang/o (phalanges, bones of finger and toes)
- pub/o (pubis)
- rachi/o (vertebral spine, vertebral column)
- radi/o (nerve root)
- scapul/o (scapula, shoulder blade)
- scoli/o (crooked, curved)
- spondyl/o (vertebra, spine, vertebral column)

- stern/o (sternum, breast bone)
- tars/o (tarsals, ankle bones)
- ten/o (tendon)
- tendin/o (tendon)
- tend/o (tendon)
- tibi/o (tibia, lower leg bone)
- uln/o (ulna, lower arm bone)
- vertebr/o (vertebra, spine, vertebral column)

Suffixes

- -al (pertaining to)
- -algia (pain)
- -ar (pertaining to)
- -asthenia (weakness)
- -centesis (surgical puncture to aspirate fluid)
- -clasia (break)
- -clasis (break)
- -clast (break)
- -desis (surgical fixation, fusion)
- -ectomy (excision, surgical removal, cutting out)
- -gram (the record, radiographic image)
- -graphy (process of recording, radiographic imaging)
- -ic (pertaining to)
- -itis (inflammation)
- -lysis (loosening, separating, dissolution)
- -malacia (softening)
- -oid (resembling)
- -oma (tumor)
- -osis (abnormal condition)
- -penia (abnormal reduction)
- -physis (growth)
- -plasty (surgical repair)
- -rrhaphy (suturing, repairing)
- -sarcoma (malignant tumour)
- -schisis (split, fissure)
- -scopy (process of viewing, visual examination)
- -tomy (incision, cut into)
- -trophy (nourishment, development)

Skeletal System Words

Skeletal System Medical Terms (Text Version)

Practice the following **skeletal system** words by breaking into word parts and pronouncing.

1. **ulnoradial**

- uln/o/radi/al
- pertaining to the ulna and radius

2. **tarsectomy**

- tars/ectomy
- excision of the tarsal

3. **osteocyte**

- oste/o/cyte
- bone cell

4. **cranioschisis**

- crani/o/schisis
- fissure of the cranium

5. **carpectomy**

- carp/ectomy
- excision of a carpal (wrist)

6. **chondroplasty**

- chondr/o/plasty
- surgical repair of cartilage

7. **cranioplasty**

- crani/o/plasty
- surgical repair of the cranium

8. **pelvisacral**

- pelv/i/sacr/al
- pertaining to the pelvis and sacrum

9. **subscapular**

- sub/scapul/ar

- pertaining to below the scapula

10. **tenosynovitis**

- ten/o/synov/itis
- inflammation of the tendon and synovial membrane

11. **sarcopenia**

- arc/o/penia
- abnormal reduction of connective tissue presenting as skeletal muscle mass loss and loss of strength

12. **tibial**

- tibi/al
- pertaining to the tibia

13. **discitis**

- disc/itis
- Inflammation of the intervertebral disk

14. **phalangectomy**

- phalang/ectomy
- excision of the phalanges

15. **sternoclavicular**

- stern/o/clavicul/ar
- pertaining to sternum and clavicle

16. **humeral**

- humer/al
- pertaining to the humerus

17. **arthralgia**

- arthr/algia
- painful joint

18. **lumbosacral**

- lumb/o/sacr/al
- pertaining to the lumbar region of the spine and sacrum

19. **hyperkinesia**

- hyper/kines/ia
- condition of excessive movement

20. **radial**

- radi/al
 - pertaining to radius
21. **vertebroplasty**
- vertebr/o/plasty
 - surgical repair of the vertebral column
22. **arthrodesis**
- arthr/o/desis
 - surgical fixation of a joint
23. **rachischisis**
- rach/ischisis
 - fissure of vertebral column
24. **pubic**
- pub/ic
 - pertaining to pubis
25. **intercostal**
- inter/cost/al
 - pertaining to between the ribs
26. **osteopetrosis**
- oste/o/petr/osis
 - abnormal condition of stone-like bones
27. **ankylosis**
- ankyl/osis
 - abnormal condition of stiffness
28. **sternoid**
- stern/oid
 - resembling the sternum
29. **chondrectomy**
- chondr/ectomy
 - excision of cartilage
30. **osteonecrosis**
- oste/o/necr/osis
 - abnormal condition of bone death (lack of blood supply)
31. **synovial sarcoma**

- synovi/al sarcoma
- malignant tumor pertaining to the synovial membrane

32. **dystrophy**

- dys/trophy
- abnormal development

33. **synovectomy**

- synov/ectomy
- excision of the synovial membrane

34. **osteopenia**

- oste/o/penia
- abnormal reduction of bone mass

35. **kyphosis**

- kyph/osis
- abnormal condition of convexity of the spine

36. **osteitis**

- oste/itis
- inflammation of bone

37. **hypertrophy**

- hyper/trophy
- excessive development

38. **spondylosis**

- spondyl/osis
abnormal condition of the vertebrae

39. **spondylarthritis**

- spondyl/arthr/itis
- inflammation of the vertebra and joint

40. **cranial**

- crani/al
- pertaining to the cranium

41. **osteoclasia**

- oste/o/clasia
surgical breaking of a bone

42. **costochondral**

- cost/o/chondr/al
- pertaining to ribs and cartilage

43. **arthroscopy**

- arthr/o/scopy
- process of viewing a joint

44. **pelvic**

- pelv/ic
- pertaining to pelvis, pelvic bone

45. **lumbar**

- lumb/ar
- pertaining to the lumbar region of the spine

46. **osteomyelitis**

- oste/o/myel/itis
- inflammation of bone and bone marrow

47. **osteoblast**

- oste/o/blast
- developing bone cell

48. **tenorrhaphy**

- ten/o/rrhaphy
- suturing of a tendon

49. **clavicular**

- clavicul/ar
- pertaining to the clavicle

50. **rachiotomy**

- rachi/o/tomy
- incision into the vertebral column

51. **intracranial**

- intra/crani/al
- pertaining to within the cranium

52. **tendinitis**

- tendin/itis
- inflammation of the tendon

53. **costectomy**

- cost/ectomy
- excision of rib(s)

54. **vertebrocostal**

- vertebr/o/cost/al
- pertaining to vertebrae and ribs

55. **bursectomy**

- burs/ectomy
- excision of bursa

56. **laminectomy**

- lamin/ectomy
- excision of the lamina

57. **craniotomy**

- crani/o/tomy
- incision into the cranium

58. **pubofemoral**

- pub/o/femor/al
- pertaining to pubic bone and femur

59. **submandibular**

- sub/mandibul/ar
- pertaining to under the mandible

60. **patellectomy**

- patell/ectomy
- excision of the kneecap

61. **lumbocostal**

- lumb/o/cost/al
- pertaining to the lumbar region of the spine and ribs

62. **intervertebral**

- inter/vertebr/al
- pertaining to between the vertebrae

63. **femoral**

- femor/al
- pertaining to the femur

64. **lordosis**

- lord/osis
- abnormal condition of increased concavity of the spine (bent forward)

65. **arthroplasty**

- arthr/o/plasty
- surgical repair of a joint

66. **iliofemoral**

- ili/o/femor/al
- pertaining to the ilium and femur

67. **bursitis**

- burs/itis
- inflammation of the bursa

68. **arthrography**

- arthr/o/graphy
- process of recording a joint

69. **subcostal**

- sub/cost/al
- pertaining to below the ribs

70. **sternoclavicular**

- stern/o/clavicul/ar
- pertaining to the sternum and clavicle

71. **dyskinesia**

- dys/kines/ia
- condition of difficult movement

72. **bradykinesia**

- brady/kines/ia
- condition of slow movement

73. **sacral**

- sacr/al
- pertaining to the sacrum

74. **arthritis**

- arthr/itis
- inflammation of a joint

75. **discectomy**

- disk/ectomy
- excision of the intervertebral disk

76. **maxillitis**

- maxill/itis
- inflammation of the maxilla

77. **suprapatellar**

- supra/patell/ar
- pertaining to above the knee cap

78. **ischiofibular**

- ischi/o/fibul/ar
- pertaining to the ischium and fibula

79. **tenomyoplasty**

- ten/o/my/o/plasty
- surgical repair of the tendon and muscle

80. **arthrocentesis**

- arthr/o/centesis
- surgical puncture to aspirate fluid from a joint

81. **osteosarcoma**

- oste/o/sarcoma
- malignant tumour of bone

82. **osteochondritis**

- oste/o/chondr/itis
- inflammation of bone and cartilage

83. **ostectomy**

- ost/ectomy
- excision of bone

84. **osteoarthritis**

- oste/o/arthritis
- inflammation of the bone and joint

85. **carpal**

- carp/al
- pertaining to carpal (wrist)

86. **chondromalacia**

- chondr/o/malacia
- softening of cartilage

87. **submaxillary**

- sub/maxill/ary
- pertaining to under the maxilla

88. **arthroclasia**

- arthr/o/clasia
- surgical breaking of a joint

89. **meniscitis**

- menisc/itis
- inflammation of the meniscus

90. **meniscectomy**

- menisc/ectomy
- excision of the meniscus

91. **maxillectomy**

- maxill/ectomy
- excision of the maxilla

92. **substernal**

- sub/stern/al
- pertaining to below the sternum

93. **osteomalacia**

- oste/o/malacia
- softening of bone

94. **scoliosis**

- scoli/osis
- abnormal condition of (lateral) curved spine

95. **ulnoradial**

- uln/o/radi/al
- pertaining to the ulna and nerve root

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Pronouncing and Defining Skeletal System Medical Terms

Musculoskeletal System Body Movements (Text Version)

Practice the following endocrine system words by breaking into word parts and pronouncing.

1. **adduction**

- moving toward the midline

2. **rotation**

- turn around on own axis

3. **extension**

- increased angle between bone and joint by placing a limb in a straight position

4. **abduction**

- moving away from the midline

5. **inversion**

- turning inward

6. **supination**

- turn the palm up

7. **eversion**

- turning outward

8. **pronation**

- turn the palm down

9. **flexion**

- decreasing the angle of a joint by bending a limb

Activity source: Musculoskeletal System Body Movements by Kimberlee Carter, from *Building a Medical Terminology Foundation* by Kimberlee Carter and Marie Rutherford, licensed under CC BY- 4.0. /Text version added.

Sorting Terms

Sort the terms from the word lists above into the following categories:

- **Disease and Disorder** (terms describing any deviation from normal structure and function)
- **Diagnostic** (terms related to process of identifying a disease, condition, or injury from its signs and symptoms)
- **Therapeutic** (terms related to treatment or curing of diseases)
- **Anatomic** (terms related to body structure)

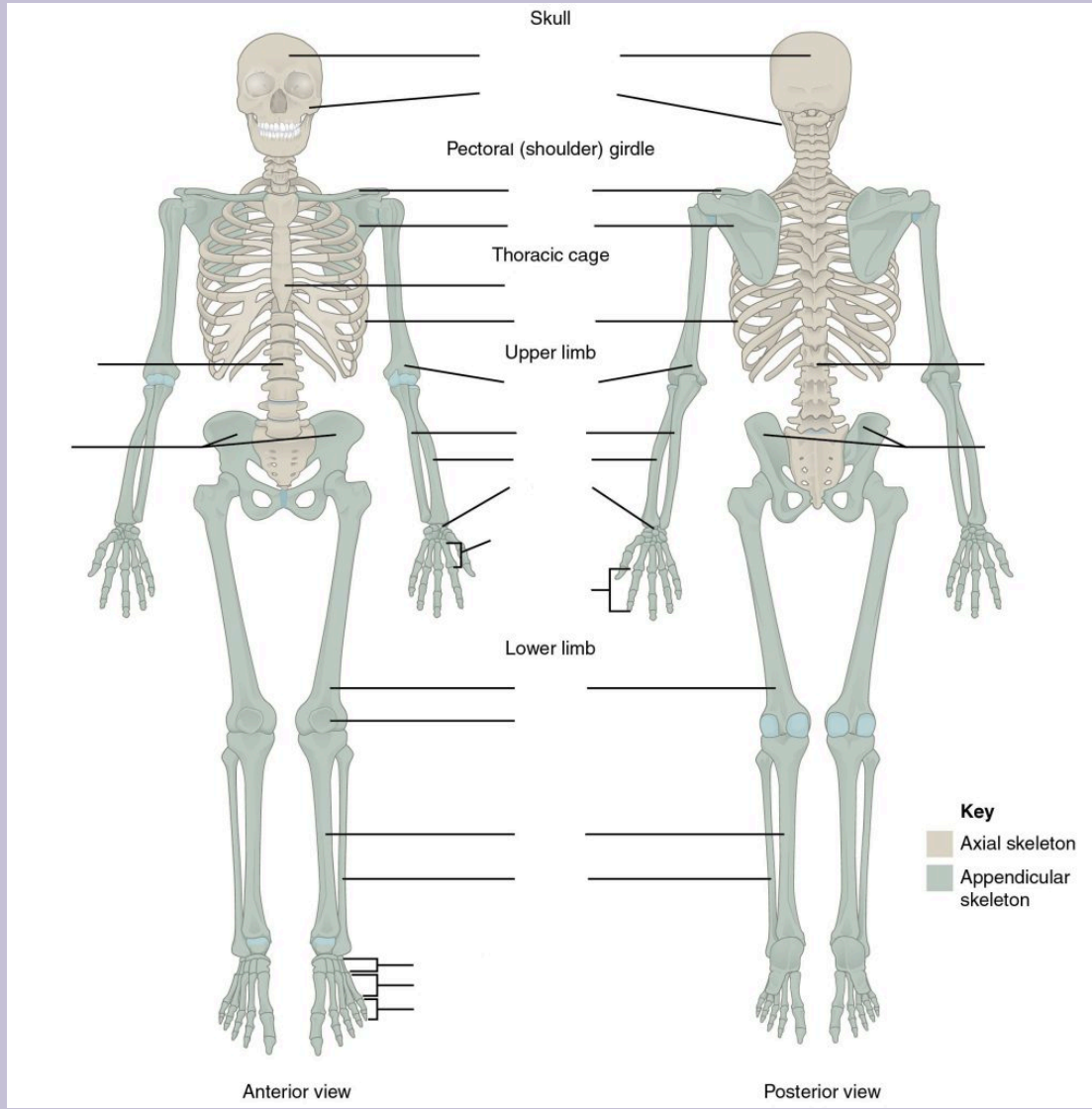
Skeletal System Structures

Label the following skeletal system anatomy:

Musculoskeletal System-Skeleton Anatomy (Text Version)

Label the diagram with the correct words listed below:

- | | | |
|---------------------|---------------------|-----------------|
| 1. Fibula | 9. Vertebral column | 17. Scapula |
| 2. Clavicle | 10. Tibia | 18. Metatarsals |
| 3. Femur | 11. Ulna | 19. Sternum |
| 4. Cranial portion | 12. Phalanges | 20. Metacarpals |
| 5. Radius | 13. Ribs | 21. Patella |
| 6. Facial portion | 14. Tarsals | 22. Humerus |
| 7. Vertebral column | 15. Phalanges | 23. Carpals |
| 8. Pelvic girdle | 16. Pelvic girdle | |



Check your answers¹

Activity source: Musculoskeletal System-Skeleton Anatomy by Gisele Tuzon, from *Building a Medical Terminology Foundation*, illustration from *Anatomy and Physiology (OpenStax)*, licensed under CC BY 4.0./ Text version added.

Medical Terms in Context

Place the following medical terms in context to complete the scenario below:

Musculoskeletal System – OPERATIVE REPORT (Text version)

Using the words below fill in the operative report:

- chondromalacia
- x-rays
- arthritis
- Orthopedic
- arthroscopy
- total hip arthroplasty
- femoral
- tendinitis

PATIENT NAME: Mrs. Karen SMITH

AGE: 72 Sex: Female

DATE OF SURGERY: February 24

PREOPERATIVE DIAGNOSIS: Degenerative arthritis of both hips; more severe on the right side.

POSTOPERATIVE DIAGNOSIS: Severe degenerative arthritis and severe _____[Blank 1] of the right hip.

NAME OF PROCEDURE: Total hip arthroplasty.

HISTORY: Mrs. Karen Smith is a 72-year-old widow who has been living alone and independently since her husband's premature death 15 years ago. Mrs. Smith has worked for 30 years at the production line in a factory and is now retired.

Mrs. Smith has been experiencing discomfort in her hips, especially the right one, over the parts twenty years or so. However, what started as a mild discomfort over time turned into severe pain. Now the pain is so bad that she is afraid that it might soon rob her of her independence. She first sought help for her hip pain many years ago. After physical examination, her family physician ordered _____[Blank 2] for both hip joints. Based on the results, it was concluded that the pain was due to severe _____[Blank 3] mainly due to wear and tear. She was advised to lose weight and to take over-the-counter painkillers as needed. She was also referred to a physiotherapist. However, despite the fact that she has lost 10% of her original body weight of 170 pounds and has been adhering to the exercise regimen recommended by her physiotherapist, the pain has grown worse over the years and now is almost unbearable. She was last visited by an orthopedic surgeon and subsequently was admitted to the General Hospital Outpatient _____[Blank 4] Clinic for _____[Blank 5] of both hips.

OPERATIVE REPORT: The patient was brought to the operating room by anesthesia personnel. She was placed on the operating table. A Foley catheter was inserted. The patient was then placed into the lateral decubitus position with her right side up. The right lower extremity was prepped and draped in standard fashion for a _____[Blank 6]. Dissection was carried sharply down through the soft tissue to the greater trochanter. The greater trochanter was used as a landmark to orient the remainder of the dissection which was continued posteriorly and proximally to expose the iliofemoral joint.

The acetabulum was reamed. A 50 mm acetabular shell was used. Femur was debrided using a _____[Blank 7] canal curette. The length of the femoral stem was then checked with the canal curette in place. Appropriate femoral stem and head were selected and implanted. Intraoperative radiographs were obtained to ensure proper component position.

The hip was then checked for range of motion. The patient reached 90 degrees of flexion and full extension with no instability. No abnormality was detected in the surrounding soft tissue. There was no indication of _____[Blank 8].

The area was then closed in a layered fashion. The subcutaneous tissues were closed using surgical Vicryl 5-0 sutures. An incisional VAC was placed over the wound as well. Sponge and needle counts were correct at the end of the operation. The patient tolerated the procedure well and was returned to the recovery room in good condition.

Michael Porter, MD, Orthopedic Surgery

Note: Report samples (H5P and Pressbooks) are to encourage learners to identify correct medical terminology and do not represent the Association for Health Documentation Integrity (AHDI) formatting standards.

Check your answers: ²

Activity source: Musculoskeletal System – Operative Report by Saeedah Akram and Heather Scudder, from *Building a Medical Terminology Foundation* by Kimberlee Carter and Marie Rutherford, licensed under CC BY-4.0. /Text version added.

Medical Terms in Context

Place the following medical terms in context to complete the scenario below:

Musculoskeletal System – Operative Report (Text version)

Use the words below to fill in the operative report:

- orthopedic
- supination
- colles
- carpal
- tenomyoplasty
- sterilized
- aligned
- fluoroscopy
- tenorrhaphy
- sutured
- splint
- arthralgia
- akinesia
- atrophy

PATIENT NAME: Liam PALMER

AGE: 22

SEX: Male

DOB: December 4

DATE OF ADMISSION: May 5

DATE OF PROCEDURE: May 5

ATTENDING PHYSICIAN: Michael Porter, MD, Orthopedic Surgery

PREOPERATIVE DIAGNOSIS: Fx of the distal end of radius.

POSTOPERATIVE DIAGNOSIS: Fx of the distal end of radius.

ANESTHESIA: General.

INDICATION: This 22-year-old male had been skating earlier today when he lost his balance and fell. Trying to break the fall with an outstretched arm, he landed on his right arm, breaking his wrist. Mr. Palmer was brought to the _____[Blank 1] clinic in Toronto General Hospital. The wrist has been kept in a neutral position since even a slight movement was painful. The injured area is edematous and any attempt for active or passive flexion, extension, _____[Blank 2], or pronation caused a sharp pain that shoots all the way to the right shoulder. Posterior-Anterior and lateral x-rays of the wrist and forearm confirmed _____[Blank 3] fracture of the distal end of radius with the broken piece displaced posteriorly. The _____[Blank 4] bones were intact. The patient required surgery to fix the broken bone. Although not certain at that point, there was a possibility that the patient also required _____[Blank 5].

PROCEDURE: The surgery was done under general anesthesia. The patient's arm was placed in a proper position to allow for an easy and unobstructed access to the surgical area. The surgical area was _____[Blank 6]. A longitudinal incision was made to access the fracture. The fractured bone was realigned, and a metal plate was used to secure the _____[Blank 7] bone and restore stability. Throughout the surgery _____[Blank 8] was used to ensure proper reduction of the bone. The surrounding muscles, tendons, and ligaments were examined to ensure their integrity. There was no need for tenomyoplasty or _____[Blank 9]. Once the surgery was completed, the surgical incision was _____[Blank 10], the wrist was bandaged, and the arm was placed in a long cast to immobilize the wrist and elbow joints. The patient left the operation room in good and stable condition.

The patient was discharged from the hospital on the following day. He was scheduled for his first follow up visit in 3 weeks. At that time, the cast will be replaced with a removable wrist _____[Blank 11] and the patient will be referred to a physiotherapy clinic. Timely rehabilitation is extremely important in these types of fractures to reduce _____[Blank 12] and prevent from _____[Blank 13] and muscle _____[Blank 14].

Michael Porter, MD, Orthopedic Surgery

Note: Report samples (H5P and Pressbooks) are to encourage learners to identify correct medical terminology and do not represent the Association for Health Documentation Integrity (AHDI) formatting standards.

Check your answers: ³

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Test Your Knowledge

Test your knowledge by answering the questions below:

Skeletal System Glossary Reinforcement Activity (Text version)

1. Joints with some movement are called _____[Blank 1].
 - a. Amphiarthrosis
 - b. Diarthrosis
 - c. Synarthrosis
2. The skeleton that consists of all the bones in the upper and lower limbs is called _____[Blank 2].
 - a. Appendicular Skeleton
 - b. Articulations
 - c. Axial Skeleton
3. A condition that lasts a long time with periods of remission and exacerbation is called _____[Blank 3].
 - a. Chronic
 - b. Edema
 - c. Hematopoiesis
4. Forward curvature of the lower lumbar spine is called _____[Blank 4].
 - a. Scoliosis
 - b. Lordosis
 - c. Kyphosis
5. Comminuted fractures are _____[Blank 5].
 - a. bones that are broken but do not protrude the skin
 - b. bones that are broken and crushed into pieces
 - c. bones that are broken and pierce through the skin

Check your answers: ⁴

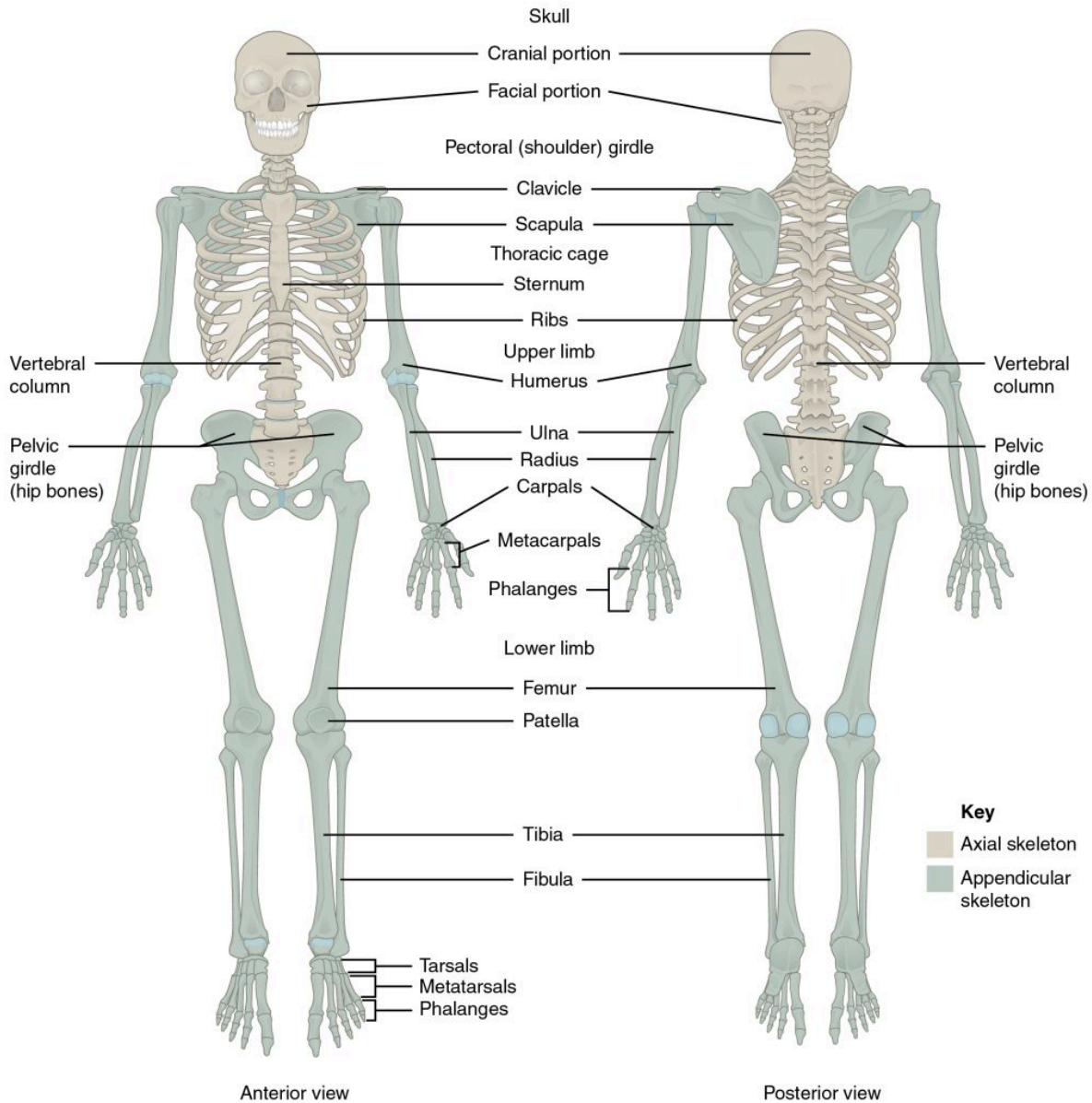
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Notes



- 1.
2. 1.chondromalacia, 2.x-rays, 3.arthritis, 4.Orthopedic, 5.arthroscopy, 6. total hip arthroplasty, 7.femoral, 8.tendinitis
3. 1.orthopedic, 2.supination, 3.Colles, 4.carpal, 5.tenomyoplasty, 5.sterilized, 6.aligned, 7.fluoroscopy, 8.tenorrhaphy, 9.sutured, 10.splint, 11.arthralgia, 12.akinesia, 13.atrophy
4. 1. a) Amphiarthrosis, 2. a) Appendicular Skeleton, 3. a) Chronic, 4. b) Lordosis, 5. b) bones that are broken and crushed into pieces.