



Medical Terminology: Skeletal System

Illinois CTE Endorsement Area:
Health Science Technology & Human Services
Teacher and Student Editions

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Converted to Format by Karen Aldworth
Current Phase of Lesson: Phase 3 of 5



Illinois
State Board of
Education



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Overview:

You will learn and utilize common orthopedic terms and abbreviations. There are several fun activities to guide you on your journey of learning your body's skeletal medical terminology. You can be creative in designing a patient education brochure. Let's learn your skeletal terms!

Classes or Discipline:

- All Health Science Career Pathways

Career Cluster:

- [Health Science](#)

Illinois CTE Endorsement Area:

- [Health Science](#)

Grade Level(s):

- Secondary school grades 9-12
- Postsecondary schools

Suggested Days/Minutes: To complete all of the activities, 4-5 hours will be needed

Learning Objectives:

- Identify the combining forms, prefixes, and suffixes of the skeletal system.
- Identify and define skeletal system signs, symptoms and pathology terms.
- Utilize correct orthopedic terms in oral and written communication.
- Define selective abbreviations related to the skeletal system.

Standards Addressed:

- [National Health Science Standards](#)
 - 2.2 Medical Terminology
 - 2.2.1 Use common roots, prefixes and suffixes to communicate information.
- **Common Core Learning Standards:**
 - CC.K-12.L.R.5: Vocabulary Acquisition and Use: Demonstrate understanding of word relationships and nuances in the word meaning.
- [Common Career Technical Core Standards:](#)
 - Career Ready Practices
 - Page 1 #4 Communicate clearly, effectively and with reason.

Enduring Understandings:

- Correctly use terminology in a healthcare profession related to the skeletal system.
- Communicate effectively with other Healthcare Providers.
- Correctly interpret health care information for the consumer.
- Apply knowledge of medical terminology in new situations.
- Correctly pronounce and spell medical terminology associated with the skeletal system.

Resources and References:

1. Devices with internet access
2. Small prizes for games
3. Music for Engage Skeleton activity
4. Videos:
 - [SKELETON BONES SONG - LEARN IN 3 MINUTES!!! - YouTube](#) (3:23)
 - [Hannah Montana Bone Dance](#) (2:08)
5. Wooden craft sticks
6. Markers, crayons, colored pencils, paint, etc.
7. Writing implements
8. Internet access for brochure research and videos.
9. Textbook
10. Grading rubric for brochure.

Essential Employability Skills:

There are four [essential employability skills](#)

- Personal Ethic: integrity, respect, perseverance, positive attitude
- Work Ethic: dependability, professionalism
- Teamwork: critical thinking, effective and cooperative work
- Communication: active listening, clear communication

The focus of this lesson is on integrity, critical thinking, effective and cooperative work, active listening and clear communication.

Skill	How it is addressed:
Integrity	Cite sources for public service brochures. Elaborate Part I - Step 6
Critical Thinking	Design and create a patient teaching brochure for an orthopedic condition. Must include pertinent content. Elaborate: Step #1
Effective and Cooperative Work	Work cooperatively within pairs and group activities. Explore Part I - Step #1 (complete wooden sticks) Explore Part II - Step 1 (compete with group on Match Game) Elaborate - All steps
Active Listening	In the Engage activity, actively listening to videos in order to remember bones mentioned. Engage: Step #2
Clear Communication	Clear written communication is required to complete the case study. Explore: Part I, Step 2

Suggested Differentiation Strategies:

- Groups include varied skill levels of learning for students.
- Rubric can be modified to accommodate all levels of learners.
- Students partner up on teaching pamphlets. Instructor to consider pairing to accommodate all learners.
- Flexibility in time from students with special needs.
- Individual assistance by the instructor
- Remediation as needed by the instructor

Throughout this lesson the teacher notes and comments are in red.

1. Engage: (15-20 minutes)

1. You will now take a pre-lesson quiz on the skeletal system. Do your best!
You will find the pre / post quiz at the end of this lesson. The pre-quiz contains 10 questions. The remaining 5 questions are to be added for the post quiz
2. Watch the following videos about the skeletal system.
 - a. [SKELETON BONES SONG - LEARN IN 3 MINUTES!!! - YouTube](#) (3:23)
 - b. [Hannah Montana Bone Dance](#) (2:08)
This is a good review of anatomy and will model pronunciation. These songs go through the bones and some terms associated with the skeletal system.
3. Take out a piece of paper. You have 60 seconds to write down as many bones as you can remember from the videos.
Take time to allow students to share with the class the list of bones they wrote down. You could give a prize to the person who had the most. Use this opportunity to help students with their pronunciation of the medical terms.
4. Take the next 2 minutes to discuss with someone sitting next to you what could happen in healthcare if you don't know proper skeletal system medical terminology, or misspelled or mispronounced these terms.
Have the students share their thoughts with the class.
5. Individually, you will complete a worksheet given to you by your instructor. Use your textbook or computer searches to find the information needed to complete the worksheet
The worksheet can be found at the end of this lesson. If not completed during class time, assign as homework so that students are prepared to start the Explore section.

2. Explore: (90 minutes)

Part I:

1. In groups of 3-4, use your textbook and completed worksheet to write skeletal medical terms on craft sticks. Write root words, prefixes, and suffixes on one side and the definition on the other.
After allowing time to complete, give a definition of a medical term and have the group create the defined medical term using their craft sticks or give a medical term and have them provide a definition.
2. Complete the following Chart Note Transcription replacing the underlined words with the correct medical terminology.

Current Complaint:

An 82 year old female was transported to the Emergency Room via ambulance with severe left hip pain following a fall on the ice.

Past History:

Patient suffered a broken wrist(1) two years earlier that required immobilization by solid material(2). Following this broken bone(3), her physician who specializes in treatment of bone conditions(4) diagnosed her with moderate porous bones(5) on the basis of a low dose x-ray for bone density(6).

Signs and Symptoms: Patient reported severe left hip pain, rating it as 8 on a scale of 1-10. She held her hip in a bent position and could not tolerate movement to a straight position. X-rays(7) of the left hip and leg were taken

Diagnosis: Shattered broken bone(8) of the left thigh bone(9)

Treatment: Implantation of an artificial hip joint(10) of the left extremity.

This could be completed with or without sources. This could also be used individually for grade or as a group.

Answers:

1. carpal fracture
2. casting
3. fracture
4. orthopedic physician
5. osteoporosis
6. dual-energy X-ray absorptiometry
7. radiographs
8. comminuted fracture
9. femur
10. total hip arthroplasty

Part II:

The next activity will be a match game:

1. You will now be playing a "Match Game"
2. You will be divided into 2 teams. Find a partner on your team.
3. Each partnered group will be given a definition. One partner will look at the definition and say it to their partner.
4. The partner will have 10-15 seconds to give the correct medical term.
5. Each partnered group will get 1 point for a correct answer.
6. If the correct answer is not given in 10-15 seconds, anyone on the opposing team can "steal" the point with the correct medical term.
7. Select 1 student in your class to be the "official" timer for the game.

Be sure to alternate teams / pairs with each new definition. Use the completed craft sticks for the definitions. Consider having a small treat for the winning team! You can also consider using the information from your textbook or the pre & post quiz if you want to.

3. Explain: (10 minutes)

Consider these questions as a short quiz or information for an "exit slip."

1. What is the meaning of "oste/o?"
Bone
2. What is the medical term for tailbone?
Coccyx
3. What does the root word in the term arthroscope mean?
Joint
4. The adjective form for the anatomical term radial means?
Pertaining to the radius
5. What is the type of bone fracture in which bone has broken through the skin?
Compound or open fracture

4. Elaborate/Extend: (90 minutes)

Knowing your students, you will need to determine if this can be completed outside of the school day if necessary.

1. Working in pairs, create and design a Patient Teaching brochure. You will be able to pick your topic from a list of the following orthopedic conditions or choose another topic related to the skeletal system that is of interest to you.

Some topic ideas are:

- osteoarthritis (OA)
- rheumatoid arthritis (RA)
- variety of fractures (fx)
- osteoporosis
- joint replacement (THR (hip) or TKR (knee))
- scoliosis,
- herniated nucleus pulposus
- spina bifida

These are suggestions for skeletal pathology. You may need to provide additional pathology from your textbook or an internet search.

2. Your brochure should include:
 - a definition of the condition,
 - signs and symptoms of the condition
 - the name of the specialist who specifically treats this condition
 - incidence or age group which is commonly affected by the condition
 - treatments (medical and/or surgical)
3. Pay attention to grammar & spelling.
4. Use graphics - make your brochure colorful & attention grabbing. Be sure the graphics are appropriate to the orthopedic condition highlighted.
5. On the back page of your brochure, indicate three sources that were used for information.

5. Evaluate:

1. Successful completion of the post quiz (questions 1-15) at the end of the unit.
You will determine your student's successful completion rate.
2. Your teacher may use the following rubric to assess your patient education brochure.
You can assign your students or allow them to pick their topic (listed in the Elaborate section). The Elaborate section has them working in pairs, but it is your choice if you want this completed individually.

Rubric for Patient Education Brochure

Category	10 Points	5 Points	3 Points
<p>Design a Patient Education brochure on a specific orthopedic (bone or joint) condition.</p> <p>Include the definition of the condition.</p> <p>Include common signs & symptoms.</p> <p>Identify specialists involved in the care of this condition.</p>	<p>Brochure includes all the required information.</p> <p>Definition of condition is accurate with 3 additional supporting areas of information.</p> <p>Includes 3-5 common signs and symptoms of the condition.</p> <p>Clearly identified specialist(s) involved in the care of this condition.</p>	<p>Brochure includes most of the required information.</p> <p>Definition of the condition is mostly accurate with 2 additional supporting areas of information.</p> <p>Includes 2 common signs or symptoms of the condition.</p> <p>The specialist(s) involved is not clearly identified and/or the care of this condition.</p>	<p>Brochure includes few of the required information.</p> <p>Definition of the condition is not accurate or is missing vital pieces of information. No additional areas of information provided.</p> <p>Includes less than 2 common signs or symptoms of the condition.</p> <p>Specialist(s) are not mentioned in the brochure.</p>
<p>Brochure to highlight incidence of the orthopedic condition in the U.S.</p> <p>Include treatments (medical or surgical) that are available.</p>	<p>Brochure highlights the incidence of the orthopedic condition.</p> <p>Brochure includes 2 medical and 2 surgical treatment options available.</p>	<p>Brochure highlights most of the incidence of the orthopedic condition.</p> <p>Brochure includes less than 2 medical and 2 surgical options available.</p>	<p>Brochure does not highlight the incidence of the orthopedic condition.</p> <p>Brochure did not include any medical or surgical options available.</p>
<p>Brochure will have graphics that are attention grabbing.</p>	<p>Brochure includes 3 attention grabbing (colorful & informative) graphics appropriate to orthopedic condition.</p>	<p>Brochure includes 2 attention grabbing (colorful & informative) graphics appropriate to orthopedic condition.</p>	<p>Brochure includes 1 or no attention grabbing (colorful & informative) graphics appropriate to orthopedic condition.</p>

<p>Spelling and Grammar in the brochure are correct and appropriate.</p>	<p>There are no spelling or grammatical errors in the brochures.</p>	<p>There are 1-2 spelling or grammatical errors identified in the brochure.</p>	<p>There are 3 or more spelling or grammatical errors identified in the brochure.</p>
<p>Three (3) Sources identified on the back of the brochure.</p> <p>EXAMPLE: Reader's Digest is not a credible source.</p>	<p>3 credible sources are cited on the appropriate back of the brochure.</p>	<p>2 credible sources are cited on the appropriate back of the brochure.</p>	<p>1 or no credible sources are cited or are not placed on the appropriate back of the brochure.</p>

PRE/POST QUIZ SKELETAL SYSTEM

Pre--quiz does not include questions 11, 12, 13, 14 & 15. Please include those questions in the post-quiz.

1. The term calcane/o means:
 - a. Elbow
 - b. Knee
 - c. Heel
 - d. Toes

2. The term cost/o means:
 - a. Rib
 - b. Arm
 - c. Legs
 - d. Neck

3. The term olecran/o means:
 - a. Elbow
 - b. Kneecap
 - c. Heel
 - d. Toes

4. The term patell/o means:
 - a. Elbow
 - b. Kneecap
 - c. Heel
 - d. Toes

5. The term orth/o means:
 - a. Crooked
 - b. Bent
 - c. Straight
 - d. Curved

6. The term oste/o means:
 - a. Organ
 - b. System
 - c. Bone
 - d. Bone marrow

7. The term perone/o means:
 - a. Femur
 - b. Tibia
 - c. Fibula
 - d. Humerus

8. The term mandibul/o means:
 - a. Cheek bone
 - b. Lower jaw bones
 - c. Eye sockets
 - d. Breastbone

9. The term crani/o means:
- a. Skull
 - b. Upper neck
 - c. Facial bones
 - d. Inner ear bones
10. The term carp/o means:
- a. Finger bones
 - b. Toes bones
 - c. Ankle bones
 - d. Wrist bones

Matching section to be included on the student's post quiz.

Matching: Record the letter of the definition on the line in front of the condition.

- | | |
|--------------------------|--|
| 11. _____ Chondromalacia | A. braces and splitting |
| 12. _____ Comminuted | B. a congenital anomaly where spine failed to fully form |
| 13. _____ Orthotics | C. inflammation of the joint |
| 14. _____ Spina Bifida | D. softening of the cartilage |
| 15. _____ Arthritis | E. shattered fracture |

Answer Key:

1. c
2. a
3. a
4. b
5. c
6. c
7. c
8. b
9. a
10. d

11. d
12. e
13. a
14. b
15. c

This worksheet needs to be completed before starting the Explore section

Medical term	Meaning	Use in a medical word
Arthr/o		
Articul/o		
Burs/o		
Calcane/o		
Carp/o		
Chondr/o		
Cost/o		
Crani/o		
Lumb/o		
Mandibul/o		
Maxill/o		
Myel/o		
Olecran/o		
Perone/o		
Radi/o		
Stern/o		
Tars/o		
Vertebr/o		

Suffix	Meaning	Use in a medical word
-ectomy		
-itis		
-malacia		
-oma		
-plasty		
-stenosis		
Abbreviation	Meaning	Name an affected body part
Fx		
OA		
RA		
THR		
TKR		
TMJ		

Notes:

All ILCTE lessons are vetted by Curriculum Leader, Dr. Brad Christensen.

To see a review of this lesson by previous users, [click here](#).

We invite users of this lesson to [click here](#) to leave follow up information and rating.

We would like to publish pictures / videos of your students using this lesson. Please send to Rod McQuality at: rdmcquality@ilstu.edu. By sending pictures, you have met all the picture / video release for your school.

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Student Edition

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Include the definition of the condition.	Definition of condition is accurate with 3 additional supporting areas of information.	Definition of the condition is mostly accurate with 2 additional supporting areas of information.	Definition of the condition is not accurate or is missing vital pieces of information. No additional areas of information provided.
Include common signs & symptoms.	Includes 3-5 common signs and symptoms of the condition.	Includes 2 common signs or symptoms of the condition.	Includes less than 2 common signs or symptoms of the condition.

Identify specialists involved in the care of this condition.	Clearly identified specialist(s) involved in the care of this condition.	The specialist(s) involved is not clearly identified and/or the care of this condition.	Specialist(s) are not mentioned in the brochure.
Brochure to highlight incidence of the orthopedic condition in the U.S. Include treatments (medical or surgical) that are available.	Brochure highlights the incidence of the orthopedic condition. Brochure includes 2 medical and 2 surgical treatment options available.	Brochure highlights most of the incidence of the orthopedic condition. Brochure includes less than 2 medical and 2 surgical options available.	Brochure does not highlight the incidence of the orthopedic condition. Brochure did not include any medical or surgical options available.
Brochure will have graphics that are attention grabbing.	Brochure includes 3 attention grabbing (colorful & informative) graphics appropriate to orthopedic condition.	Brochure includes 2 attention grabbing (colorful & informative) graphics appropriate to orthopedic condition.	Brochure includes 1 or no attention grabbing (colorful & informative) graphics appropriate to orthopedic condition.
Spelling and Grammar in the brochure are correct and appropriate.	There are no spelling or grammatical errors in the brochures.	There are 1-2 spelling or grammatical errors identified in the brochure.	There are 3 or more spelling or grammatical errors identified in the brochure.
Three (3) Sources identified on the back of the brochure. EXAMPLE: Reader's Digest is not a credible source.	3 credible sources are cited on the appropriate back of the brochure.	2 credible sources are cited on the appropriate back of the brochure.	1 or no credible sources are cited or are not placed on the appropriate back of the brochure.