

Unit 2: Support and Movement

Content Area: **Science**
Course(s): **Anatomy/Physiology Lab**
Time Period: **2nd Marking Period**
Length: **10 Weeks**
Status: **Published**

Unit Overview

Unit includes the Integumentary system, skeletal system, and the muscular system; identifying organs, their functions and emphasis on the interrelationship among these systems.

Transfer

Students will be able to recognize signs of skin cancer, common skin disorders, factors affecting bone development, how the skeleton is organized, joint movements, where different muscle types are found, how a contraction takes place, and identifying different skeletal muscles.

For more information, read the following article by Grant Wiggins.

http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60

Meaning

Understandings

Students will understand that.....

- Skin is considered an organ and also contains associated organs.
- There are different types of skin cancer, and ways to determine the types.
- Bone is living tissue, and it continues to grow.
- There are different types of bone tissue depending where it is found.

- Changes in Intervertebral discs may cause back problems.
- Relating joint disorders to their own.
- There are 3 types of muscles
- Skeletal muscles are the only voluntary group
- Skeletal muscles work in groups

Essential Questions

Students will keep considering.....

- How does the skin heal itself?
- How does the body regulate body temperature?
- Why is bone considered living tissue? What does it contain?
- How does blood form in bone tissue?
- What other types of tissue is associated with bone tissue?
- How do joints allow movement?
- How does muscle contraction take place?
- How could someone overcome muscle fatigue?
- What special characteristics of smooth muscle make peristalsis possible?
- Why is the heart considered a muscle?
- How are skeletal muscles grouped?

Application of Knowledge and Skill

Students will know...

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- Skin is an organ, it has layers of different types of tissue, and has associated organs.
- Skin is associated with regulation of body temperature.
- Wounds are healed naturally through a series of steps.
- There are different types of skin cancer and how to recognize them.
- How bone tissue develops.
- Bone is a living tissue and also plays a part in blood cell formation.
- How the skeleton is organized and distinguish between the axial and appendicular skeleton.
- Locate and identify bones and major features.
- How are joints classified and movements of joints.
- How muscle contraction/relaxation takes place.
- Identifying the major parts of skeletal muscle fibers.
- How oxygen debt develops and a muscle becomes fatigued.
- Differentiate among the 3 muscle types and their locations.
- Identifying inherited muscle diseases.
- How skeletal muscle groups work together.
- Identifying different muscle groups.

Students will be skilled at...

Students will be skilled at.....

- Using the microscope to differentiate among the layers of skin.
- Using pictures/photos, be able to recognize the different types of skin cancer.
- Using physical models of the skeleton, identify bones of the skeleton.
- Using pictures/photos, differentiate among the bones and markings of the axial and appendicular parts of the skeleton.
- Placing the correct muscles in their corresponding groups using modeling clay.

- Using the microscope to differentiate among the types of muscles.
- Identifying how a muscle contraction takes place.

Academic Vocabulary

Integumentary epidermis dermis subcutaneous keratin melanin melanoma sebaceous eccrine apocrine inflammation

vitiligo mole acne epiphysis diaphysis articular cartilage periosteum compact bone spongy bone medullary cavity marrow

intramembranous bone endochondral bone osteoblasts osteoclasts osteocytes epiphyseal plate hematopoiesis cranium hyoid

vertebral column sacrum coccyx thoracic cage sternum pectoral girdle pelvic girdle scapula clavicle humerus radius ulna

carpals phalanges pelvic girdle femur tibia fibula patella tarsals mandible joints fascia myosin actin myofibrils

sarcomeres neurotransmitters neuromuscular junction sliding filament theory ATP creatine phosphate oxygen debt myoglobin

fatigue motor unit smooth muscle peristalsis cardiac muscle origin insertion prime mover synergists antagonists skeletal muscles

Learning Goal 1

Students will be able to list and describe the structure and functions of the skin and its layers, factors that determine skin color, how the skin helps regulate body temperature and wounds heal.

Proficiency Scale

SCI.9-12.HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
SCI.9-12.HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Target 1

Students will be able to identify the structure of the layers of the skin and various functions of each layer.

Target 2

Students will be able to summarize the factors that determine skin color and how exposure could increase chances of skin cancer.

Target 3

Students will be able to explain how skin regulates body temperature and heals wounds.

Target 1

Students will be able to describe the structure and function of the parts of the long bone.

Target 2

Students will be able to distinguish between intramembranous and endochondral bone development.

Target 3

Students will be able to distinguish between the axial and appendicular skeletons and name the major parts of each.

Target 4

Students will be able to locate and identify the bones of the skull, vertebral column, thoracic cage, pectoral girdle, upper limb, pelvic girdle, and lower limb.

Target 5

Students will be able to classify joints according to the type of tissue binding the bones together, describe the different joint characteristics, and name an example of each joint type.

Learning Goal 3

Students will be able to identify major parts of a skeletal muscle, major events concerning muscle contraction, how oxygen debt develops, naming and identifying major muscles.

Proficiency Scale

SCI.HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
SCI.HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Target 1

Students will be able to identify the major parts of a skeletal muscle fiber and function for each.

Target 2

Students will be able to identify muscle contraction/relaxation and how oxygen debt may develop.

Target 3

Students will be able to distinguish among the three major muscle tissue types and their contraction mechanisms.

Target 4

Students will be able to explain how the attachments, locations, and interactions of skeletal muscles make movements possible.

Target 5

Students will be able to identify and locate the major skeletal muscles of each body region.

Formative Assessment and Performance Opportunities

Labs, coloring worksheets and homework, group projects, practical quizzes

Summative Assessment

Unit assessment will be created collaboratively and used for every student in the course. In addition, there will be other assessments in the form of lab reports, pen and paper tests and quizzes. Common Assessment is administered through LinkIt.

Accommodations/Modifications

- Make use of online review resources
- Provide more opportunities to practice identifying bones and their location on the skeleton
- Provide more opportunities to practice identifying muscle types
- Provide support for struggling readers.

Unit Resources

Hole's Essentials of Human Anatomy and Physiology 11th Edition

21st Century Life and Careers

CAEP.9.2.12.C.1

Review career goals and determine steps necessary for attainment.

CAEP.9.2.12.C.3

Identify transferable career skills and design alternate career plans.

Interdisciplinary Connections

- LA.SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
- LA.WHST.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- LA.WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.