Unit 03: Support and Movement

Content Area: **Science**
Course(s): **Anatomy/Physiology**
Time Period: **November**
Length: **56 periods**
Status: **Published**

Unit Overview

- The skeletal system supports, protects, stores, aids in movement, and forms red blood cells. Joints are functional junctions between bones that allow growth and movement. Muscles aid in movement and body heat production.

Enduring Understandings

- Bone is a living tissue that constantly undergoes proliferation of various cell types.
- Muscles increase in mass by adding mass to each fiber, and not by increasing the number of fibers.
- Muscles provide movement and bones provide support.
- Muscles pull and work with opposing muscles.

Essential Questions

- How do the structures within the skeletal and musclar systems coordinate to allow for successful and useful controlled movement?
- How will my bones and muscles be different as I age?
- What do our bones do when we stop growing?
- What is the best way to make my muscles strong?

Lesson Titles

- Structure of a skeletal muscle (2 periods)
- Bone development and growth (1 period)
- Bone function (1 period)
- Bone structure (2 periods)
- Cardiac muscle (1 period)
- Classification of joints (3 periods)
- Joint motion (1 period)
- Lab-Dissection of the bull frog (4 periods)
- Lab-Muscles of the back and abdominal wall (2 periods)
- Lab-Muscles of the chest, shoulder, and upper limb (2 periods)
- Lab-Muscles of the face, head, and neck (2 periods)
- Lab-Muscles of the hip and lower limb (2 periods)

- Lab-Organization of the skeleton (2 periods)
- Lab-Pectoral girdle and upper limb (2 periods)
- Lab-Pelvic girdle and lower limb (2 periods)
- Lab-Skeletal muscle structure (2 periods)
- Lab-Structure and classification of bone (2 periods)
- Lab-The joints (2 periods)
- Lab-The skull (2 periods)
- Lab-Vertebral column and thoracic cage (2 periods)
- Life span changes/diseases/disorders (1 period)
- Life span changes/diseases/disorders (1 period)
- Life span changes/diseases/disorders (1 period)
- Major skeletal muscles (3 periods)
- Pectoral girdle/upper limb (1 period)
- Pelvic girdle/lower limb (1 period)
- Skeletal muscle contraction (2 periods)
- Skeletal organization (1 period)
- Skull (1 period)
- Smooth muscle (1 period)
- Synovial joints (3 periods)
- Vertebral column/thoracic cage (1 period)

Standards/Indicators/Student Learning Objectives (SLOs):

- Describe how exercise affects skeletal muscles
- Describe life-span changes in the skeletal system
- Describe the effects of sunlight, nutrition, hormonal secretions, and exercise on bone development
- Describe the general structure of a bone and list the functions of its parts
- Describe the general structure of a synovial joint
- Describe the life-span changes in joints
- Discuss the major functions of bones
- Distinguish between fast and slow twitch muscle fibers
- Distinguish between the axial and appendicular skeletons and name the major parts of each
- Explain how joints can be classified according to the type of tissue that binds the bones together
- Explain how skeletal muscles produce movements at joints, and identify several types of joint movements
- Explain how the locations of skeletal muscles help produce movements and how muscles interact
- Explain the major events that occur during muscle fiber contraction
- Locate and identify the bones and the major features of the bones that comprise the skull, vertebral column, thoracic cage, pectoral girdle, upper limb, pelvic girdle, and lower limb
- Name the major parts of a skeletal muscle fiber and describe the function of each

9-12.HS-LS1-1.LS1.A	Structure and Function
9-12.HS-LS1-1.LS1.A.1	Systems of specialized cells within organisms help them perform the essential functions of life.

Career Readiness, Life Literacies & Key Skills

WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.

Inter-Disciplinary Connections

LA.RH.11-12.4	Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
LA.RST.11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LA.RST.11-12.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LA.RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
LA.RST.11-12.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
LA.WHST.11-12.2.E	Provide a concluding paragraph or section that supports the argument presented.
HPE.2.1.12.C	Diseases and Health Conditions
HPE.2.1.12.C.1	Determine diseases and health conditions that may occur during one's lifespan and identify prevention and treatment strategies.

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK

- Group Work
- Lab
- Lab-Dissection of the bull frog
- Lab-Muscles of the back and abdominal wall
- Lab-Muscles of the chest, shoulder, and upper limb
- Lab-Muscles of the face, head, and neck
- Lab-Muscles of the hip and lower limb
- Lab-Pectoral girdle and upper limb

- Lab-Pelvic girdle and lower limb
- Lab-Skeletal muscle structure
- Lab-Structure and classification of bone
- Lab-The joints
- Lab-The skull
- Lab-Vertebral column and thoracic cage
- Note Taking/Discussion
- Powerpoint
- Skeleton webquest
- Student Presentation
- Webquest
- You Tube

Modifications:

ELL Modifications:

- Be flexible with time frames and deadlines
- Focus on domain specific vocabulary and keywords
- Group students
- Hands on/Labs: Bullfrog Dissection
- Intentional scheduling/grouping with student/teacher who speaks the same language if possible
- Repeat, reword, clarify
- Use real objects when possible

IEP & 504 Modifications:

- allowing student to take notes in class for reinforcement but also providing a copy of notes to study from
- providing study guides
- reducing homework length to just those most important for review
- teaching the main ideas/concepts (limiting not needed details)to be taught and repeating them in several different ways over several different days

G&T Modifications:

- Encourage students to explore concepts in depth and encourage independent studies or investigations
- Inquiry based learning
- Journal article analysis
- Provide additional rigorous challenge problems for advanced students

At Risk Modifications:

- Additional help during tutoring/Delsea One/Academic Enrichment
- Non-verbal redirection of behaviors
- Study guides

Alternative Assessments

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Portfolios

Benchmark Assessment

Skills-based assessment

Reading response

Writing prompt

Lab practical

Formative Assessment

- Closure Activity

- Homework
- Lab Report
- Question of the Day
- Skeleton Model
- Teacher Observation of Student Activity
- Worksheet

Summative Assessment

- Fracture Quiz
- Joints Test
- Marking Period 2 Test
- Muscle Quiz
- Muscular System Test
- Presentations
- Skeletal System Test
- Skeleton Project

Resources & Materials:

- Articulated Human Skeleton
- Bone Lab-Prepared Bone Slides
- Compound Microscope
- Computer with Internet Access for Muscle Program
- Dissection Lab-Bull Frog/Dissection Materials
- Google classroom
- Skeletal Muscle Lab- Prepared Slide of Skeletal Muscle Tissue
- Textbook

Technology:

- Chromebook
- Ed Puzzle fast and slow twitch muscle fibers
- Ed Puzzle muscle contraction
- http://www.lemonbayhigh.com/docs/uploads/GreenA/SkeletalSystemWebquestSTUDENT.pdf
- Internet
- Microscope

TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

TECH.8.1.12.A.CS1	Understand and use technology systems.
TECH.8.1.12.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.1.12.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.1.12.E.CS4	Process data and report results.