



# Human Body Systems

Virtual Learning

**9-12th PLTW<sup>®</sup> HBS**

**PLTW<sup>®</sup> 4.2.3 Maniken Muscles**

**April 10, 2020**



# Human Body Systems

9-12th PLTW HBS

Lesson: April 10, 2020

## Objective/Learning Target:

Students will be able to identify the six muscle rules, and locate and identify the function of the major muscle groups in the body. (*Reference: PLTW<sup>®</sup> 4.2.3 Maniken Muscles*)



# Human Body Systems

**Let's Get Started / Warm Up Activities:**

Watch Videos:

- [Intro: Major Muscles of the Body](#)
- [Major Muscle Groups Animation](#)

# Lesson/Activity:

Website: [Six Muscle Anatomy Rules](#)

Activity #1: On a piece of paper or in your notebook, write down the six (6) muscle anatomy rules.

Watch Video: [Origins, Insertions, Actions, and Innervation Explained](#)

Activity #2: Answer the following questions:

- What is the difference between a muscle origin and insertion?
- Why is the “action” so unnecessarily complicated?
- What is innervation, and where should we begin with innervation methods?

## Activity #1 Answer:

- Muscles must have at least 2 attachments and must cross at least one joint.
- Muscles always pull and get shorter.
- The attachment that moves is known as insertion and the stationary attachment is known as origin.
- Muscles that decrease the angle between ventral surfaces of the body are known as flexors. Muscles that increase the angle between ventral surfaces of the body are known as extensors.
- Muscles work in opposing pairs.
- Muscle striations point to the attachments and show the direction of pull.

## Activity #2 Answer:

- The attachment that moves is known as insertion and the stationary attachment is known as origin.
- The word innervate sounds like what it is – it means to “put the nerves into” something. When nerves go into muscle fiber, they innervate the muscle fiber. Innervate is to supply nerves to something, but it can also mean to energize.

# Lesson/Activity continued:

Watch Video: [Major Muscle Groups of the Human Body](#)

## Activity #3:

- Watch the video above about major muscle groups of the body. Draw a diagram showing the location of the major muscle groups (3:47 in the video). By each group in your diagram, explain the function and/or movement of this group.
  - delts/shoulders
  - Traps
  - Triceps
  - Lats
  - Erector spinae
  - Glutes
  - Hamstrings
  - pecs/chest
  - Biceps
  - Abdominals
  - obliques

# Activity #3 Answer:

## major muscle groups in the body

delts/shoulders

pecs/chest

biceps

abdominals

obliques



delts/shoulders

traps

triceps

lats

erector spinae

glutes

hamstrings



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3:00 / 3:47



# Practice:

Watch Video: [Four Simple Exercises that Work Every Major Muscle Group](#)

## Practice Activity:

- Click on the link above to view four exercises that work your major muscle groups.
- As you go through the video, try performing the exercises yourself. Even invite a sibling or parent/guardian to join in!
- Afterwards, in your notebook or on your piece of paper, describe each of the exercises. What muscle groups are being used in each of the following exercises?
  - Side lunges exercise
  - Row exercise
  - Push-up exercise
  - Plank exercise



## Practice Answers:

Note: The following are the main muscle groups used in each exercise:

- Side lunges exercise
  - Gluts, quads, hamstrings, inner thighs
- Row exercise
  - Biceps, delts/shoulders
- Push-up exercise
  - Triceps
- Plank exercise
  - Biceps, triceps, delts/shoulders

## Additional Practice and/or Resources:

Go to these websites:

[Major Muscle Groups Flashcards](#)

Test your knowledge of the major muscle groups by clicking on the link above.

[3D Animation: Leg Muscles During Walking](#)

This cool 3D animation helps us visualize the complex interaction of muscles in the leg during walking!

[The Physiology of a "Six Pack"](#)

Here's what it really takes to get chiseled abs - and why it's easier for some people than others!