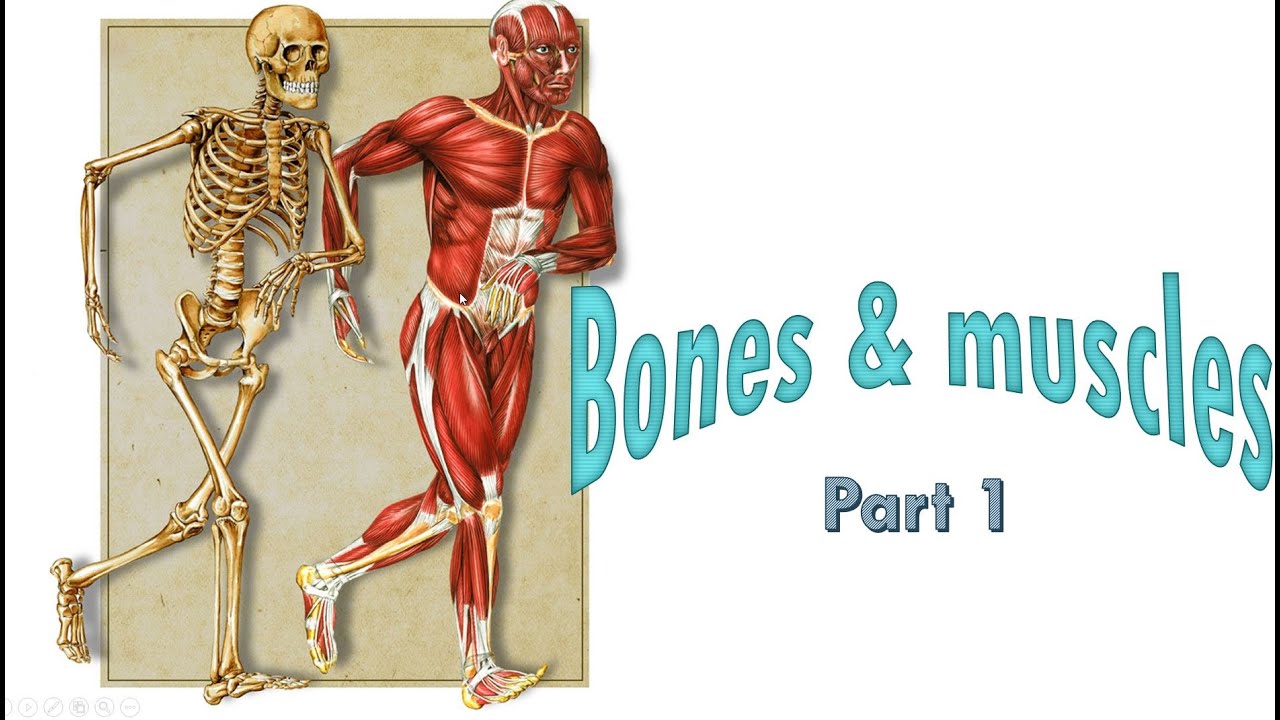
**Muscles and Bones Workbook**

Teacher:

Student:



**Learning Intentions:**

* Identifying anatomical terminology
* Major bones of the body
* Structure and function of bones
* Major muscles of the body
* Structure and function of muscles
* Characteristics of skeletal muscle tissue
* Origin and insertion points
* Agonist and antagonist pairs

**Success Criteria:**

* Name and describe anatomical terms:
  + Flexion and extension
  + Abduction and adduction
  + Rotation
  + Circumduction
  + Pronation and supination
  + Dorsi flexion and plantar flexion
* Label all the major bones in the body:
  + Humerus, Radius, Ulna, Femur, Patella, Tibia, Fibula, Pelvis, Sternum, Ribs, Carpals, metacarpals, phalanges, tarsals, metatarsals
* Explain the 5 functions of the skeletal system
  + Framework, Attachment, Protection, Storing minerals, Red blood cells production
* Label all the major muscles in the body:
  + Sternomastoid, Trapezius, Latissimus Dorsi, Deltoid, Biceps, Triceps, Hand and finger flexors/extensors, Pectoralis, Abdominals, Intercostals, Gluteus Maximus, Hamstring group, Quadriceps group, Gastrocnemius, Tibialis Anterior

* Explain the 4 functions of the muscular system
  + Movement, Maintain posture, Maintain bodily functions, Generating heat
* Explain the 4 characteristics of muscle tissue
  + Excitability, Extensibility, Contractibility, Elasticity
* Define origin and insertion points and explain their importance in producing movement
* Define agonist and antagonist muscles and explain how they relax and contract to produce movement
* Identify various muscles, agonist pairs and anatomical movements across multiple sporting examples

Functional Anatomy

Bones, Bones, Bones

Functional anatomy is the study of the body parts required to complete a human movement or function.

The human skeleton is comprised of **206 bones!** The bones are held together by tough fibrous bands called **ligaments.**

There are five major functions of bones: In the space provided write a few brief sentences about each function and provide an example where possible.

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Muscles

You have more than 600 muscles in your body. Some muscles help you move, lift, or sit still. Others help you digest food, breathe, or see. Your heart is a muscle that pumps blood through your body.

There are 4 major functions of muscles. In the space provided write a few brief sentences about each function and provide an example where possible.

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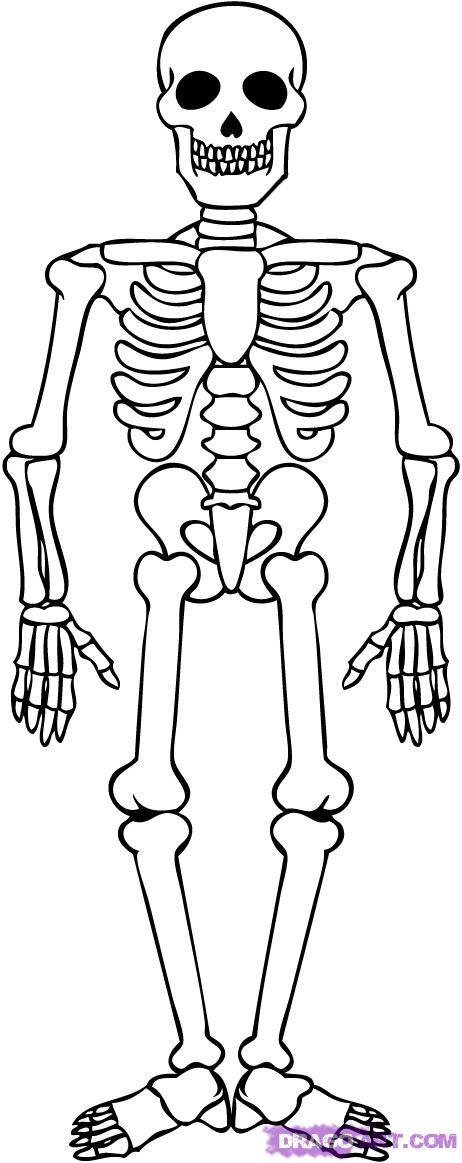
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Functional Anatomy

Practice!

Create a key and colour in the skeleton below.



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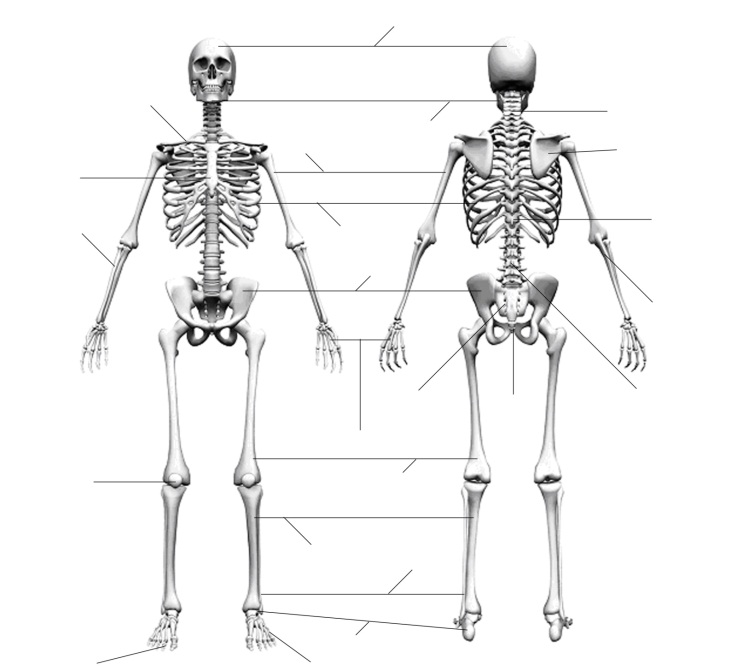
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**Practice labelling all the major bones in the body using the word bank provided.**



patella phalanges

cranium/skull mandible

pelvic girdle/pelvis scapula

thoracic vertebrae lumbar vertebrae

cervical vertebrae ribs

coccyx humerus

radius ulna

tarsals carpals

metatarsals metacarpals

fibula tibia

sacrum femur

clavicle

**Practice labelling all the major muscles in the body using the word bank provided.**

(NOTE: Some muscles are labelled twice):

triceps gastrocnemius sternomastoid

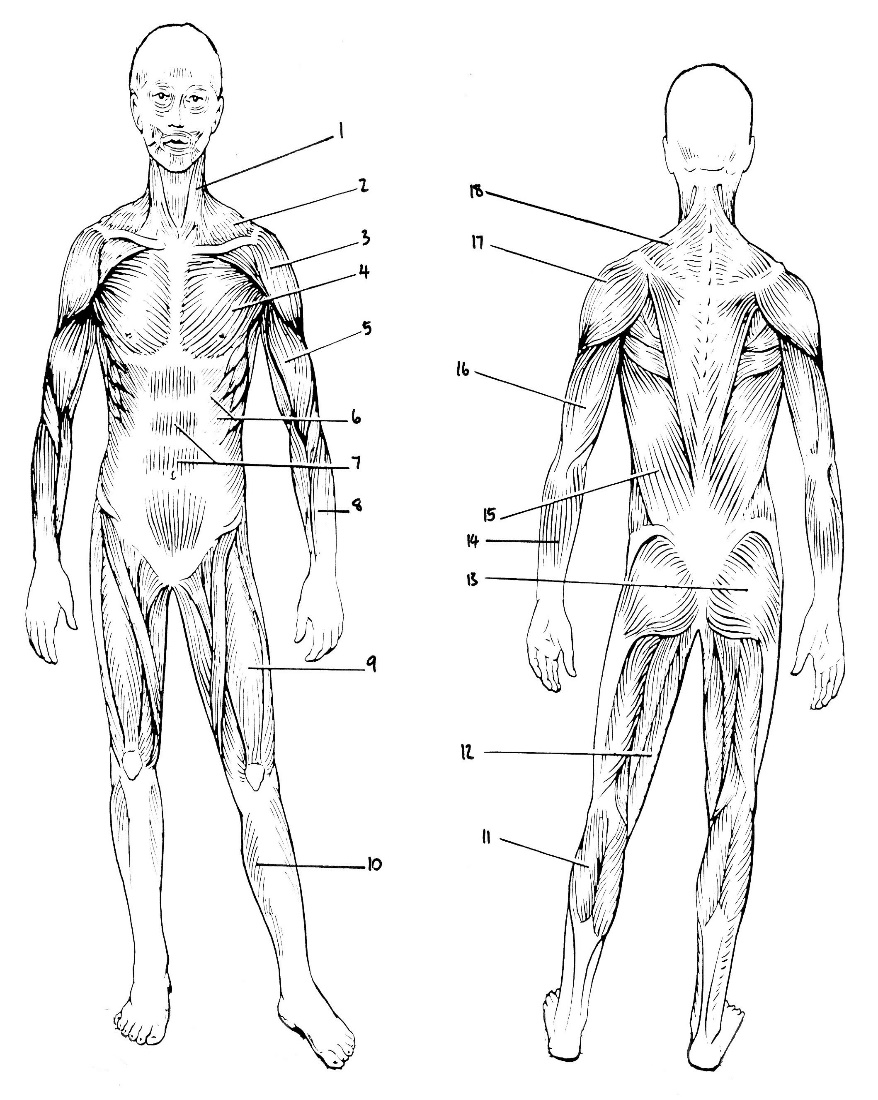
trapezius latissimus dorsi hand and finger flexors

abdominals hand and finger extensors deltoid

pectorials hamstring group quadriceps group

tibialis anterior intercostals biceps

gluteus maximus



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2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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17. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

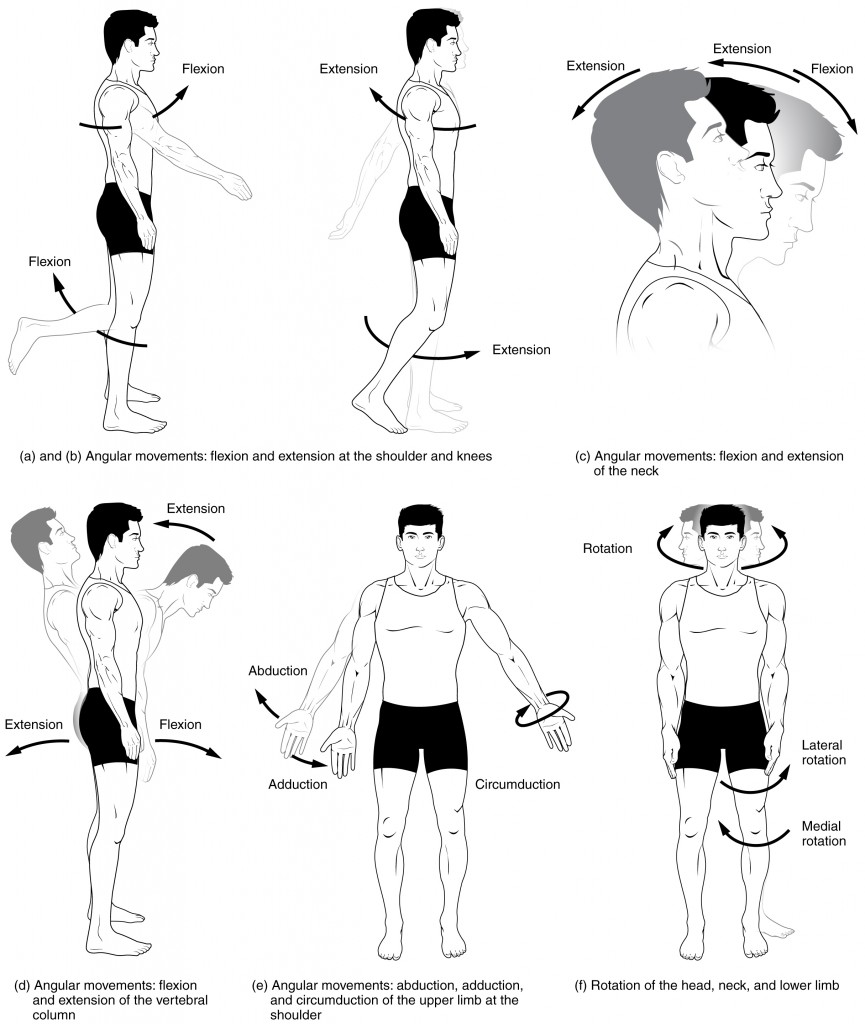
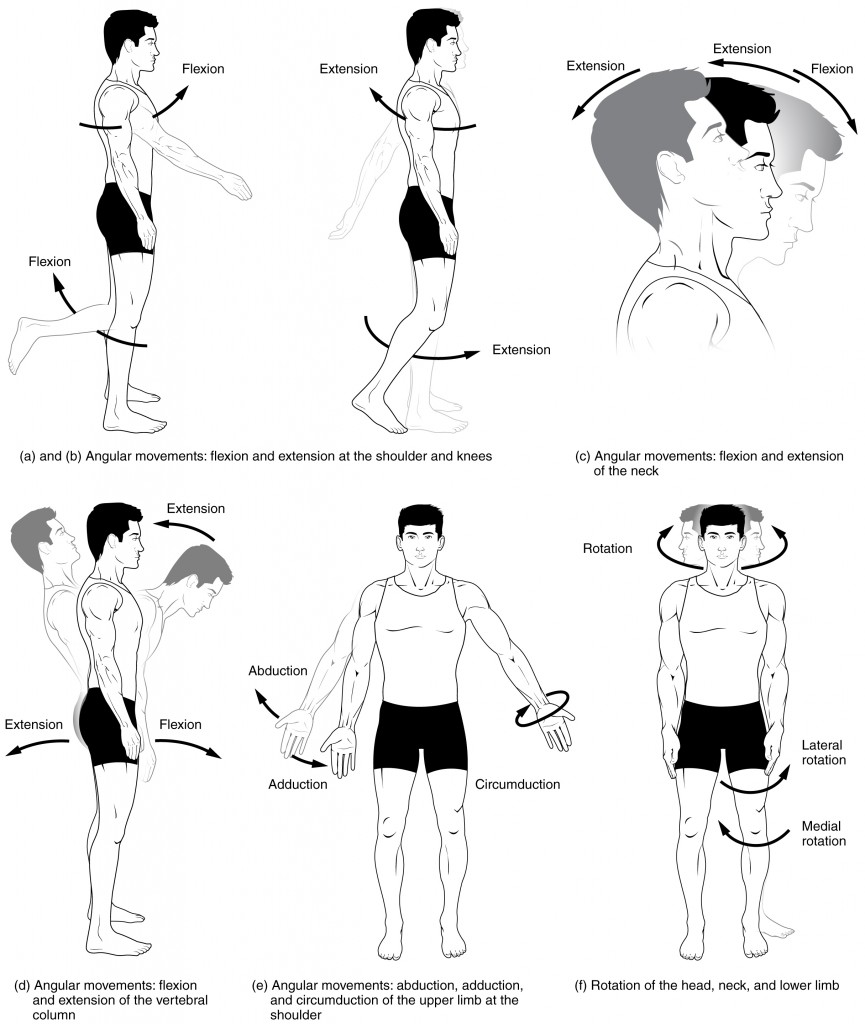
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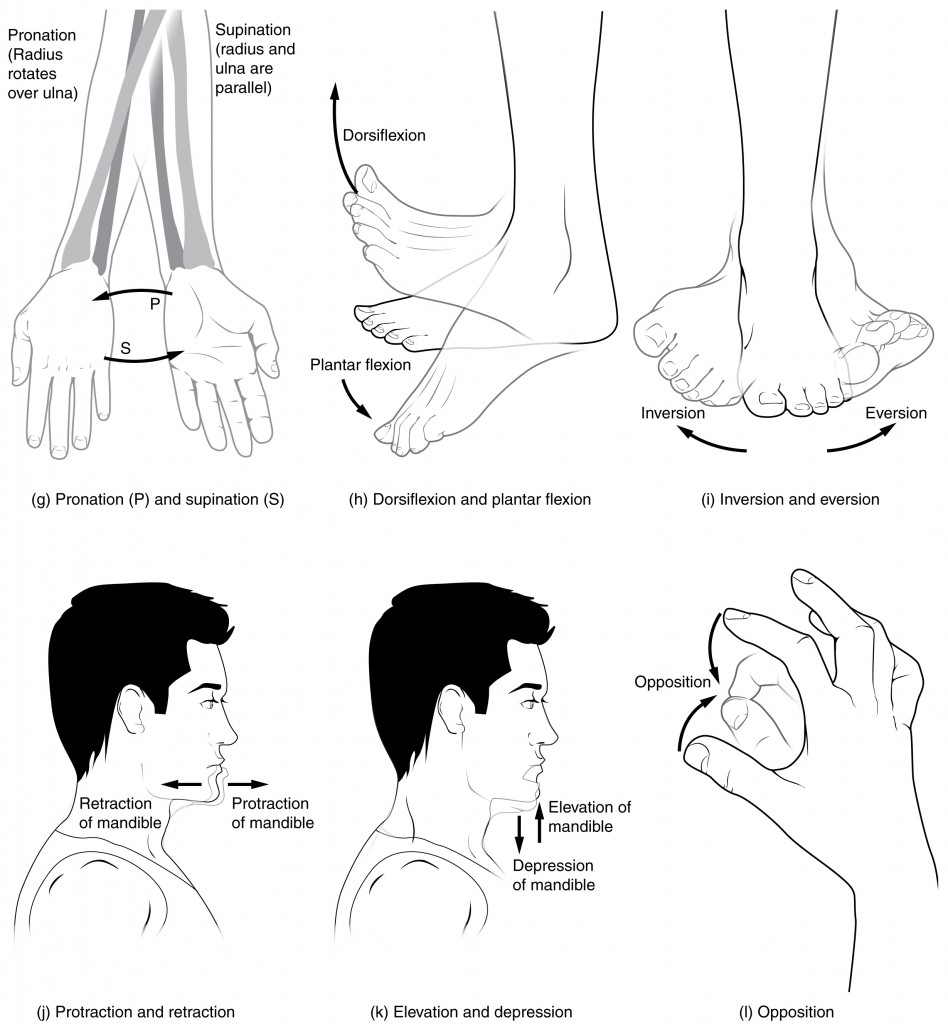
1. What is the correct name for the calf muscle?
   1. Calf
   2. Tibialis Anterior
   3. Achilles Tendon
   4. Gastrocnemius
2. The muscle group on the back, upper leg is:
   1. Deltoid
   2. Gluteal group
   3. Hamstrings
   4. Gastrocnemius

Functional Anatomy

Anatomical terms

**Name all the anatomical terms by placing the words into the correct boxes.**





|  |  |
| --- | --- |
| **Movement** | **Definition** |
| **Flexion** |  |
| **Adduction** |  |
| **Supination** |  |
| **Plantarflexion** |  |
| **Depression** |  |
| **Circumduction** |  |
| **Inversion** |  |
| **Dorsiflexion** |  |
| **Horizontal abduction** |  |
| **Protraction** |  |
| **Opposition** |  |

Functional Anatomy

Anatomical terms

**Write a definition of all the anatomical movement terms, some of the terms might be unfamiliar, use a computer to find the answers.**

Functional Anatomy

Applying anatomical terms

**List all the anatomical movement terms in the pictures below. Be mindful to explain where the movement is occurring in the body. A hint has been provided for you.**

|  |  |
| --- | --- |
| https://upload.wikimedia.org/wikipedia/commons/thumb/8/82/Squats.svg/1280px-Squats.svg.png | Flexion of the elbow |
| Green Bay Packers QB Aaron Rodgers talks the art of the deep ball | Rotation of the neck |
| The Laws of Physics in Tennis - EE Times Europe |  |
| Pinch The Knee Pitching Drill - Baseball Tutorials |  |

Functional Anatomy

Short answer questions

**Question 1**

List 4 examples of extension in the body.

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**Question 2**

List 3 examples of adduction in the body.

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**Question 3**

Describe the action of flexion of the knee, with clear reference to the muscles involved in each of these actions.

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**Question 4**

Muscles often work in pairs. Discuss what is meant by the agonist-antagonist relationship and use the hamstrings and quadriceps in your discussion to show applied understanding.

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**Question 5**

Define the roles of agonist, antagonist, stabiliser and synergist muscles in the production of movement.

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**Question 6**

Explain the role of origin and insertion points on producing movement.

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**Question 7**

Select a skill movement sequence. Determine each of the discrete movements required to complete the skill successfully (E.g., Volleyball serve, extension of the arm)

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**Question 8**

Describe the term reciprocal inhibition. Explain why it is important, using a sporting example to support your answer.

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**Question 9**

Explain the 4 characteristics/properties of skeletal muscle tissue.

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**Question 10**

1. Choose any 3 bones that allow us to walk. Label the bones in the diagram below.
2. Name one muscle that is attached to each of the bones you have chosen.

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1. List the antagonists of the muscles you have chosen your response above.

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1. List the type of joint action the agonist pair produce.

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