

GCSE PE – Revision Booklet

Applied Anatomy and Physiology

Physical Factors Affecting Performance

The Structure and Function of the Skeletal System

Student Book



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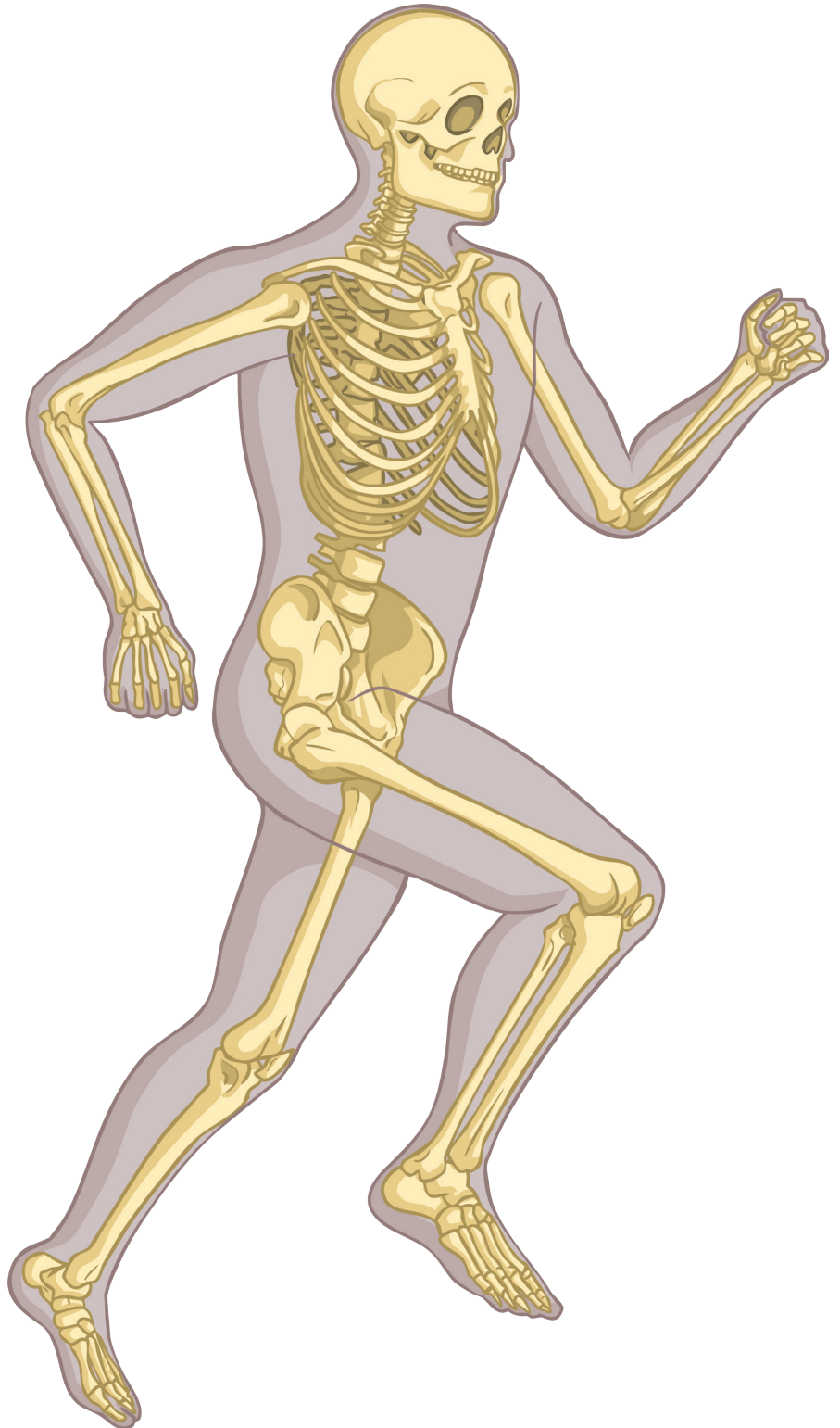
What the Specification Says:

Learners must know the name and location of the major bones in the body.

Learners must know the functions of the skeleton and be able to apply examples.

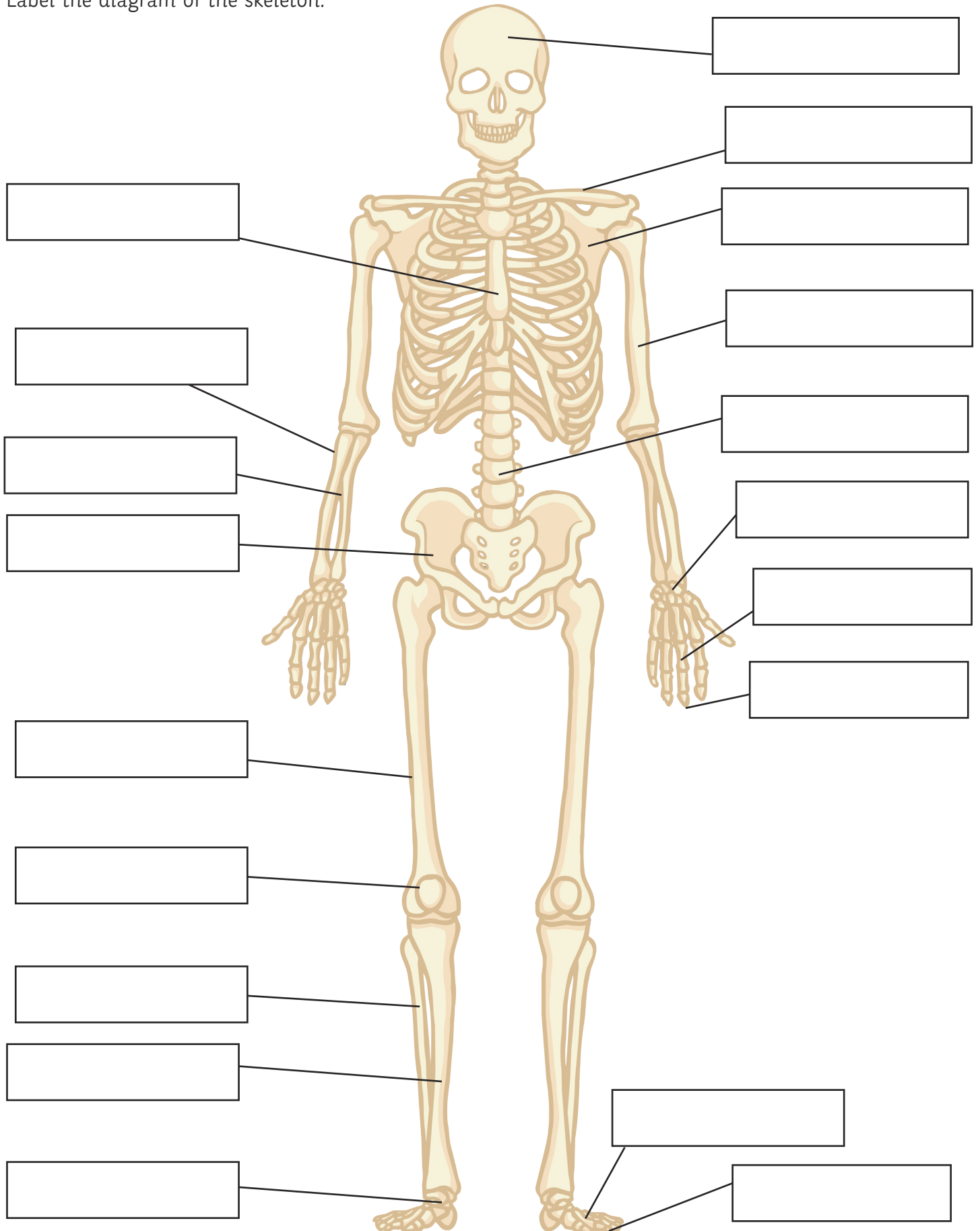
You must be able to name and locate the following bones:

- cranium
- vertebrae
- ribs
- sternum
- clavicle
- scapula
- pelvis
- humerus
- ulna
- radius
- carpals
- metacarpals
- phalanges
- femur
- patella
- tibia
- fibula
- tarsals
- metatarsals



The Major Bones in the Human Body

Label the diagram of the skeleton.



Functions of the Skeleton

Function	Examples
Protection	
	<ul style="list-style-type: none">• Skeleton gives the body its shape.• Skeleton provides a framework.
Movement	
Blood Formation	
	<ul style="list-style-type: none">• Such as calcium which is needed to build and repair bones.



Extension Task:

Write the names of all the major bones on separate sticky notes and try sticking them in the correct location on your own body!

What the Specification Says:

Learners must know the definition of a synovial joint.

Learners must know and be able to locate two different types of synovial joint and identify the articulating bones.

1. Hinge joints – knee and elbow.
2. Ball and socket – shoulder and hip.

Types of Synovial Joint

Definitions:

Synovial joint: a freely moveable joint that allows a wide range of movement.

Articulating bones: the bones that move within a joint.

Hinge Joint

The knees and elbows are examples of a hinge joint.

Hinge joints are used frequently in sport.

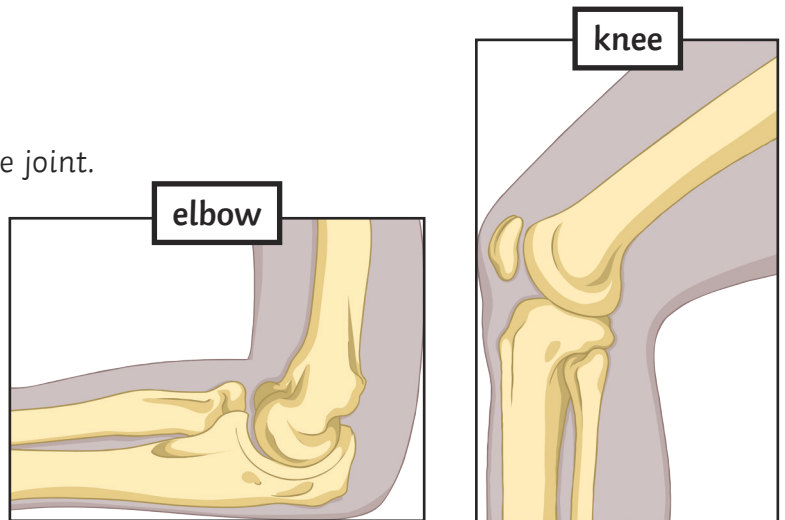
The articulating bones in these joints are:

- **knee:** femur, tibia
- **elbow:** humerus, radius, ulna

Sporting examples:

knee = sprinting

elbow = bicep curl



Extension Task:

Can you think of another sporting example for this joint?

Ball and Socket Joint

The shoulders and hips are examples of ball and socket joints. These joints allow a wide range of movement in the human body and are used in a variety of sporting movements.

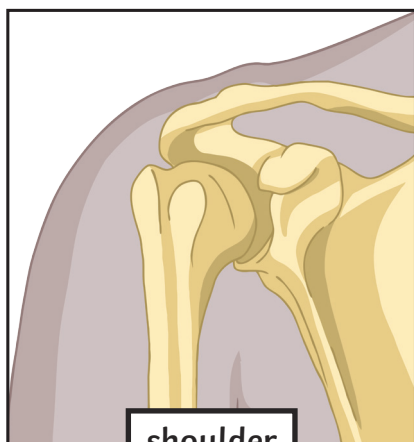
The articulating bones in these joints are:

- **shoulder:** humerus, scapula
- **hip:** pelvis, femur

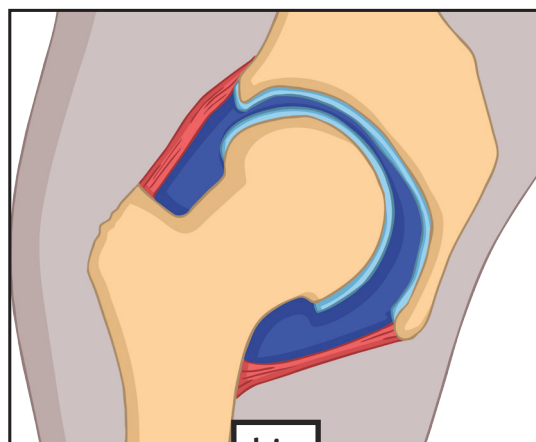
Sporting examples:

shoulder = javelin throw

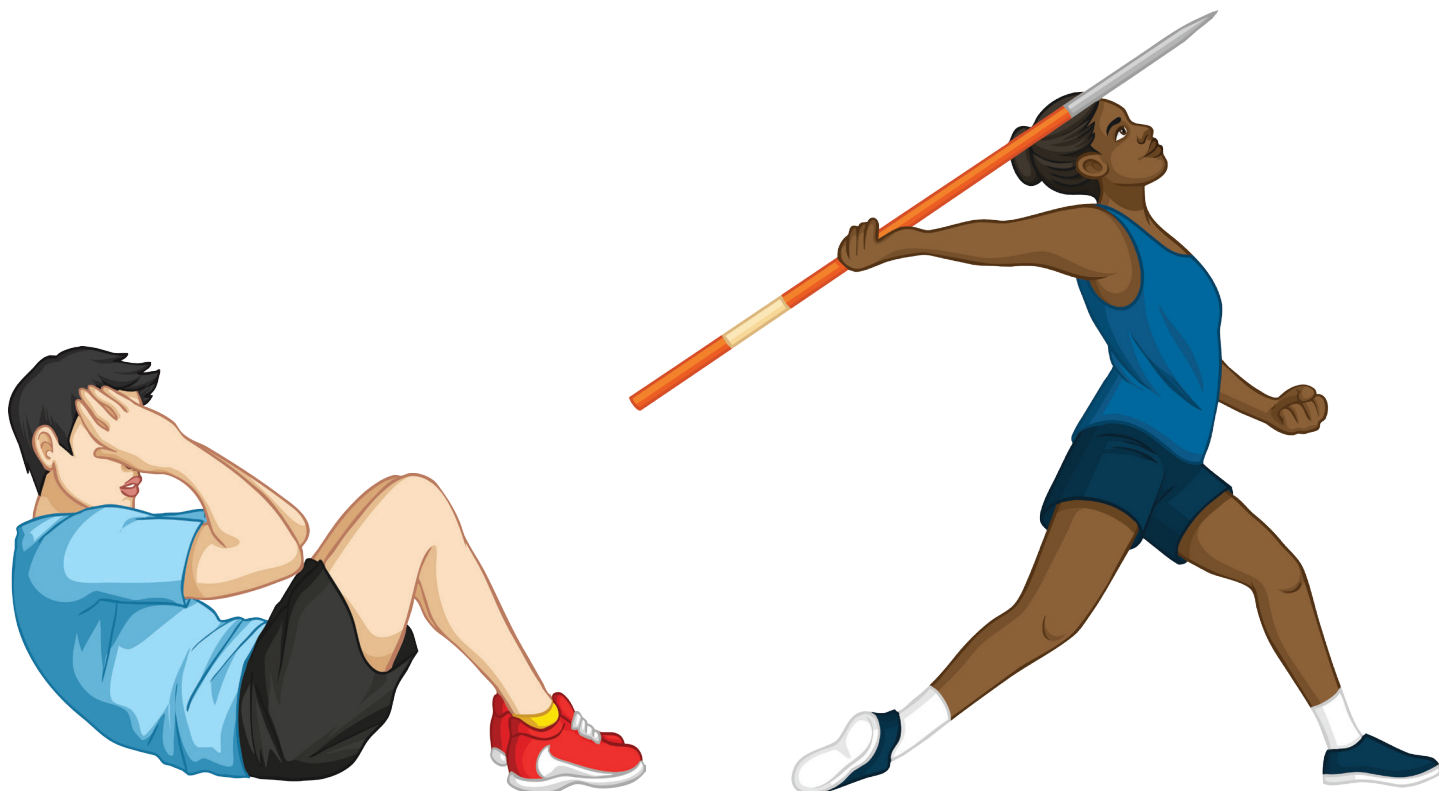
hip = a sit-up



shoulder



hip



Extension Task:

Can you think of another sporting example for this joint?

Type of Synovial Joint

Complete the table by filling in the missing information.

Joint	Type of Joint	Articulating Bones	Sporting Example
knee		femur and tibia	
elbow		humerus, radius and ulna	bicep curl
shoulder			javelin throw
	ball and socket	pelvis and femur	

What the Specification Says:

Learners must know the types of movement and be able to apply them to examples from sport and or physical activity at hinge joints and ball and socket joints.

Types of Movement at Hinge Joints and Ball and Socket Joints

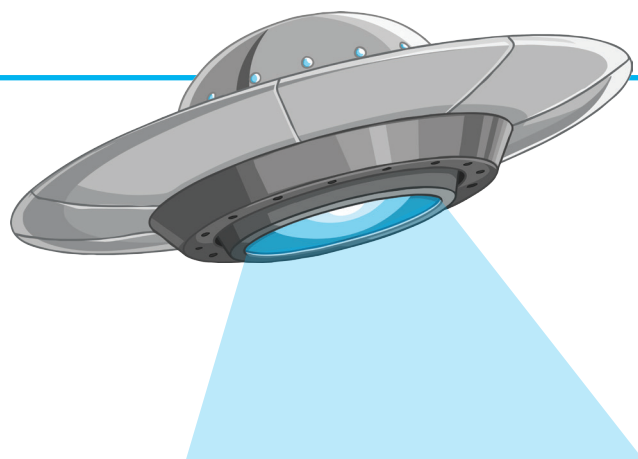
Types of movement:

- **Flexion** – a decrease in joint angle.
- **Extension** – an increase in joint angle.
- **Abduction** – movement away from the body.
- **Adduction** – movement towards the body.
- **Rotation** – movement around a limb's long axis.
- **Circumduction** – a combination of all the movements listed above. Allowing a continuous circular movement around a joint.

Top Tip!

Adduction is **adding** something to the body.

Abduction is taking something away.



Using the information you've just read (without looking!), complete the table below by adding the type of movement or the definition into the boxes below.

Movement	Definition
flexion	a decrease in joint angle
	an increase in joint angle
abduction	
adduction	
	movement around a limb's long axis
	a continuous circular movement of a limb around a joint

Movements at Hinge Joint	Movements at Ball and Socket Joint
flexion extension	flexion extension abduction adduction rotation circumduction



Examples of Movements from Sport and Physical Activity

Fill in the missing sections to develop your understanding.

Hinge Joint

Joint	Flexion	Extension
elbow		downward movement of a bicep curl
knee	bending at the knee when preparing to kick a football	

Ball and Socket Joint

Joint	shoulder	hip
Flexion		executing a place kick in rugby
Extension	during the execution of a tennis serve. When the player takes their arm back just before throwing the ball up	
Abduction		when a dancer moves their leg to the side of their body
Adduction	the inward movement of the arms in a star jump	
Rotation		a ballet dancer moving into first position
Circumduction	front crawl arm action of a swimmer. Taking the arm out, round and back into the water	

What the Specification Says:

Learners must know the roles of:

- ligament
- cartilage
- tendons



Other Components of Joints

Component	Function
ligament	help join bones together and keep joints stable during movement
cartilage	reduce friction and act as a shock absorber for the joint
tendons	attach muscles to bones and help transmit power needed to move bones

Top Tip!

Ligaments join **bone to bone**.

Tendons join **muscle to bone**.

