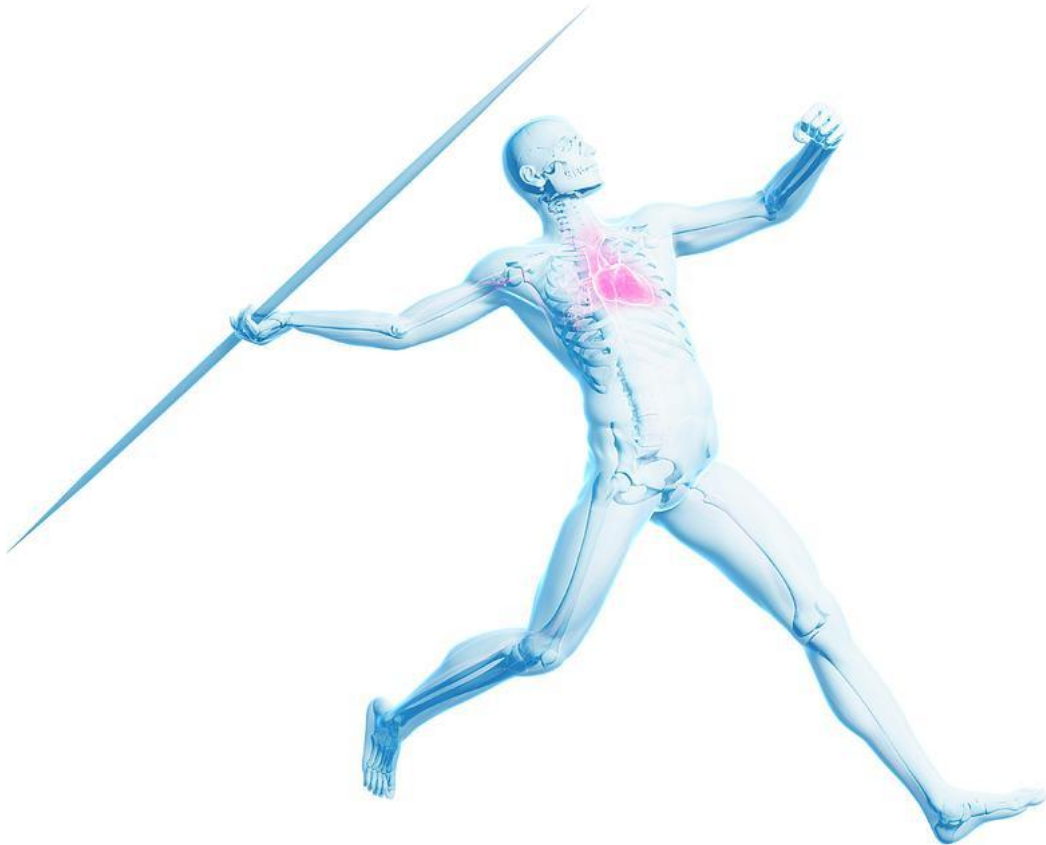


BTEC Level 3 National Extended Certificate in Sport

Unit 1: Anatomy and Physiology Summer Booklet- Skeletal System



Name: _____

Bilton PE Department

Section A – The effects of exercise and sports performance on the skeletal system

A1 - Structure of the Skeletal System

Location of Bones: You need to be able to locate all the major bones in the body.

TASK: Label the bones below on the skeleton.



WORD BANK

<i>Cranium</i>	<i>Clavicle</i>	<i>Ulna</i>	<i>Fibula</i>	<i>Sternum</i>
<i>Scapula</i>	<i>Pelvis</i>	<i>Patella</i>	<i>Ribs</i>	<i>Humerus</i>
<i>Femur</i>	<i>Vertebral column</i>	<i>Carpals</i>	<i>Radius</i>	<i>Tibia</i>
<i>Metacarpals</i>	<i>Phalanges</i>	<i>Tarsals</i>	<i>Metatarsals</i>	

Sections of the Skeleton:

TASK: On the skeleton picture, colour the parts of the body that are the axial skeleton, and in a different colour, highlight the appendicular skeleton

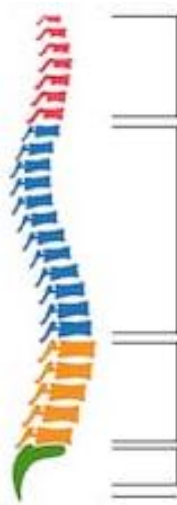
TASK:

Give 3 bones in the axial skeleton:

Give 3 bones in the appendicular skeleton:

Sections of the Vertebral Column:

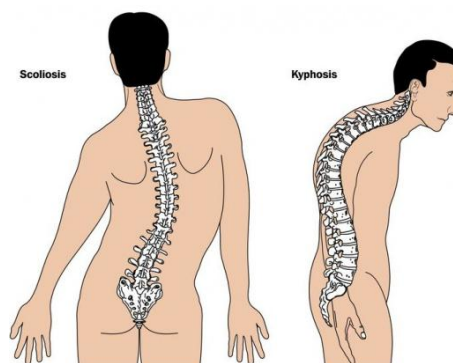
TASK: Identify the; *sections of the vertebral column* on the diagram



AO1: Postural Deviations of the vertebral column

Task: Use the spaces below to describe the normal shape of the vertebrae and the two postural deviations that can sometimes occur.

Neutral Spine Alignment (Normal)	
Kyphosis	Scoliosis



Types of Bone

The different types of bone that make up the skeleton can be categorised into 5 categories, **describe** each one and give an **example**.

- **Long bones**

- **Short bones**

- **Flat bones**

- **Irregular bones**

- **Sesamoid bones**

Process of Bone Growth

Using the following words, **explain** the process of bone growth.

Osteoclasts

Osteoblasts

Epiphyseal plate

A2 – Functions of skeletal system

TASK: Complete the table below with a description of each of the functions of the skeletal system.

Function	Description
Support	
Protection	
Source of blood cell production	
Store of Minerals	
Attachment for skeletal muscle	
Leverage	
Weight Bearing	
Reduce Friction across a joint	

A3 - Joints

Flexibility can be defined as having an adequate range of motion in all joints in the body or the ability to move a joint fluidly through its complete range of movement.

TASK: On the diagram of the skeleton below can you identify the joints of the upper and lower skeleton by circling them...



TASK: List an example of a joint within the different classifications?

- **Fibrous joints** (fixed joints) – these joints are fixed and don't allow any movement
E.g's;
- **Cartilaginous joints** (slightly moveable joints) – these joints can only move a small amount
E.g's:
- **Synovial joints** (freely moveable joints) – these are joints where a greater degree of movement is possible and we will be looking at these types of joints in more detail as there are numerous different types of synovial joints you need to know about, these include;
 - *Hinge*
 - *Ball and socket*
 - *Condylloid*
 - *Pivot*
 - *Saddle*
 - *Gliding*

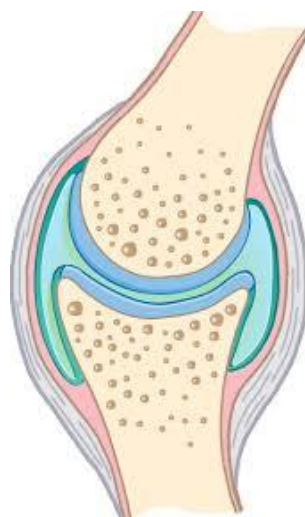
TASK Complete the table on synovial joints

- Remember range of movement = flexion, extension, dorsiflexion, plantarflexion, etc

Joint Type	Where you find it	Bones that form it	Range of movement	Sport example

Structure of Synovial Joints

TASK: Use the headings in the next table below to label the synovial joint



TASK: Describe the structure and function of each part of a synovial joint.

Part of the Joint	Structure	Function
Joint Capsule		
Bursa		
Articular Cartilage		
Synovial Membrane		
Synovial Fluid		
Ligaments		

Movements:

Complete the table on each movement giving a **full** description and **specific** sport example

Movement	Description	Sports Examples
Flexion		
Extension		
Dorsiflexion		
Plantaflexion		
Lateral flexion		

Horizontal flexion		
Horizontal extension		
Hyperextension		
Abduction		
Adduction		
Horizontal abduction		
Horizontal adduction		
Rotation		
Circumduction		

A4 and A5 – The effects of exercise and sports performance on the skeletal system

Responses = short term, so response of the bodies systems to a single sport or exercise session

TASK: Describe each of these responses of the skeletal system to exercise

- **Increase in synovial fluid**
- **Decrease in viscosity of synovial fluid**
- ***The simulated increase of mineral uptake in bones due to weight-bearing exercise***

Adaptations = long term, so the adaptations or long-term effects of exercise on the bodies systems.

TASK: Explain the **adaptations** of the skeletal system **and** their impact on sports performance

1. ***Increased bone strength***
2. ***Increased ligament strength (just remind yourselves what ligaments are...?)***

Additional Factors

TASK: Describe the additional factors that affect the skeletal system

Arthritis	Osteoporosis	Age