

**Skeletal System Revision Guide**



**Structure of the skeletal system**



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| Type Of Bone | Example Of Bone | Function Of Bone |
| Long | **Femur/Humerus** | **Movement – to generate speed or strength** |
| Short | **Carpals/Tarsal**  | **Shock absorption – spreading body load.** |
| Flat | **Ribs/Cranium** | **Protection of vital organs, attachment of muscles to help movement** |
| Irregular | **Vertebrae**  | **Provide shape, protection** |



**Functions of Bones**





**Functions of Bones**



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| Name  | Function Purpose |
| Movement | The skeleton allows **movement of the body** as a whole and its individual parts. The **bones act as levers** and also form joints that allow muscles to pull on them and produce joint movements. |
| Support | The skeleton **keeps the body upright and provides a framework** for muscle and tissue attachment. |
| Protection | The bones of the skeleton **protect the internal organs** and reduce the risk of injury on impact. For example, the cranium protects the brain, the ribs offer protection to the heart and lungs, the vertebrae protect the spinal cord and the pelvis offers protection to the sensitive reproductive organs. |
| Production Of Blood Cells | Certain bones in the skeleton contain **red bone marrow and the bone marrow produces red blood cells,** white blood cells and platelets. Examples of bones that contain marrow are the pelvis, sternum, vertebrae and clavicle. |
| Mineral Storage | The bones themselves are **made of minerals and act as a mineral** store for calcium and phosphorous, which can be given up if the body requires the minerals for other functions. |
| Structural Shape | The **skeleton provides the human shape** and determines the **height of a person**. |

**Joints**











**In synovial joints, the ends of the bones are covered with cartilage which cushions the joint and prevents friction and wear and tear between the bone ends. Cartilage is a soft, spongy connective tissue it prevents wear and tear on the bones.**

**Synovial joints (freely movable joints) allow us the free movement to perform skills and techniques during physical activity.**

**Synovial joints have synovial fluid in the joint cavity that lubricates or 'oils' the joint so it moves smoothly. Synovial fluid is made by the synovial membrane.**





**The bones in a synovial joint are connected by ligaments, which:**

**1) A type of connective tissue and are tough, fibrous and slightly elastic**

**2) Connect bone to bone and help keep the joint together**

**3) Stabilise the joints during movement and prevent dislocation by restricting actions outside the normal joint range**

**4) Can absorb shock because of their elasticity, which protects the joint**

**5) Help maintain correct posture and movement**

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| Name of Synovial Joint | Location and Function |
| Ball and Socket | Found in the **shoulder** and **hip**. This joint allows for the greatest range of movement. |
| Hinge  | Found at the **elbow** and **knee**. The range of movement is limited to one plane. |
| Condyloid | Found at the **wrist** and **ankle**. Movement in two planes. |
| Pivot | Found in the **neck**. Part of the bone fits into another ring of bone. |
| Saddle | Found at the **base of the thumb**. This joint allows movement in two directions. |
| Gliding | Found in the **wrist** and **veritable column**. Two bones have a small range of movement limited by connected ligaments. |



The different types of movement that are permitted at each joint are described below.





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| Flexion | Bending a joint. This occurs when the angle of a joint decreases. For example, the elbow flexes when performing a biceps curl. |
| Extension | Straightening a joint. This occurs when the angle of a joint increases, for example, at the elbow when putting a shot. |
| Abduction | Movement away from the midline of the body. This occurs at the hip and shoulder joints during a jumping jack movement. |
| Adduction | Movement towards the midline of the body. This occurs at the hip and shoulder, returning the arms and legs back to their original position from a jumping jack movement. |
| Rotation | This is where the limb moves in a circular movement around a fixed joint towards or away from the midline of the body. This occurs in the hip in golf while performing a drive shot. |
| Plantar Flexion | Pointing the toes – this movement only occurs at the ankle, for example, pointing the toes in ballet |
| Dorsiflexion | The foot moves towards the shin as if you are pulling your toes up. This movement only occurs at the ankle. |

**Revision Tasks**





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**Which type of connective tissue helps to stabilise the ankle joint during the dynamic movement of a badminton match?**

**Articular cartilage**

**Synovial fluid**

**Ligaments**



 









