THE STRUCTURE OF OUR BODY

1. INTRODUCTION

This chapter will describe the basic anatomy of the human body, explaining the most important elements of the muscular and skeletal system.

2. THE MUSCULOSKELETAL SYSTEM

Every time you sprint through the halls because you’re late for class, score against your opponents during a game, you’re using your bones, muscles and joints. Without these important body parts, you would be unable to sit, stand, walk, or do any of the activities you do every day.

Movement is only possible thanks to the interaction of Bones, Joints, and Muscles.

From our head to our toes, our bones provide support for our bodies and help form our shape.

- The skull protects the brain and forms the shape of our face.
- The spinal cord protected by the backbone, or vertebral column.
- The ribs form a cage that shelters the heart, lungs, etc.
- The pelvis helps protect the intestines, and in girls, the reproductive organs.

Joints occur where two bones meet. They make the skeleton flexible — without them, movement would be impossible. Muscles are also necessary for movement: They’re the masses of elastic tissue that pull our bones when we move.

Together, our bones, muscles, and joints — along with tendons, ligaments, and cartilage— form our musculoskeletal system and enable us to do every day physical activities.

2.1 THE SKELETON

The skeleton has the following parts:

- Skull
- Thorax
- Spine, vertebral column or backbone
- Lowerlimbs
- Upper limbs.
Now we are going to learn some of the major bones of the body:

- **The skull**

  It is composed by a large group of bones which form a cavity where the brain lies and is protected.

- **The thorax**

  The ribs are elastic arches of bone. They are twelve in number on either side and are connected behind with the vertebral column, and in front with the sternum.

  The sternum is a flattened bone in the anterior wall of the thorax.

- **The spine**

  The spine, vertebral column or backbone is a column usually consisting of 24 articulating vertebrae and 9 or 8 fused vertebrae in the sacrum and the coccyx.

  It houses and protects the spinal cord (a very important group of nerves) in its spinal canal.
• The upper limbs

The Hip bone consists of three bones: Ilium, ischium and pubis. The right and the left hip bones form the pelvis. The pelvis helps protect the intestines, and in girls the reproductive organs.

• The lower limbs

The upper leg is a strong, long and thick bone called the femur. The lower leg has 2 bones: the tibia and the fibula. The tibia is larger and stronger. The foot bones are: the tarsal, the metatarsals and the phalanges.
• The skeleton
### 2.2 JOINTS

Joints occur where **two or more bones meet**. They make the skeleton flexible, without them, movement would be impossible.

Joints **allow our bodies to move in many ways**. Some joints open and close like a hinge (such as knees and elbows); others allow for more complicated movement — a shoulder or hip joint, for example, allows for backward, forward, sideways, and rotating movement; and finally there are joints that don’t move, like the ones we can find in the skull, joints made of bones that must be immovable to protect the brain.

The main joints we move when we exercise are: ankles, knees, hips, wrists, elbows, shoulders and neck.

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**Movements**

There are different types of movement available at different joints (for example the shoulder moves in far more ways than the knee). Here are the main types of movement:

<table>
<thead>
<tr>
<th>JOINT MOVEMENT</th>
<th>DESCRIPTION</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLEXION</td>
<td>Angle at the joint gets smaller – ‘folds up’</td>
<td>![FLEXION Image]</td>
</tr>
<tr>
<td></td>
<td>E.g. Bending the arm</td>
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<tr>
<td>EXTENSION</td>
<td>Angle at the joint increases – ‘opens out’</td>
<td>![EXTENSION Image]</td>
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<tr>
<td></td>
<td>E.g. Straightening the leg</td>
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<tr>
<td>ROTATION</td>
<td>Movement around a central axis</td>
<td>![ROTATION Image]</td>
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<tr>
<td></td>
<td>E.g. Arm circles</td>
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</tbody>
</table>

- **CIRCUMDUCTION**: The circular movement of a limb – one point is anchored the other point moves
- **ABDUCTION**: Any movement away for the midline of the body
- **ADDUCTION**: Any movement towards the midline of the body

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