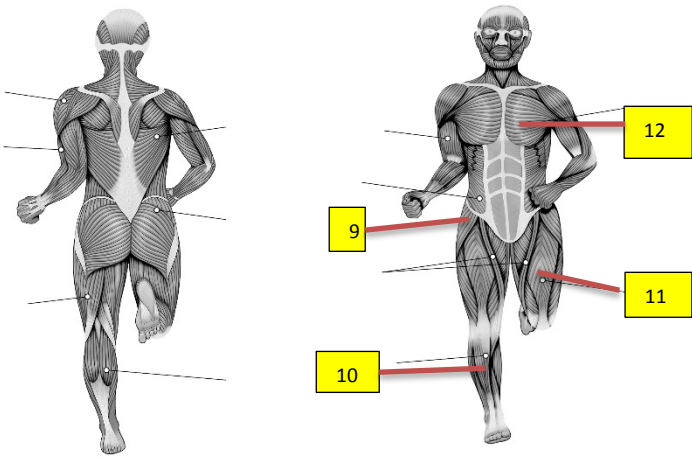


PHYSICAL EDUCATION – Year 7, Term 1 – MUSCLES OF THE BODY

Muscles and types of movement	Four muscles of the body	Four muscles of the body
<p style="text-align: center;">Antagonistic Muscles</p> <p>The diagram illustrates two states of an arm: Flexion and Extension. In the Flexion state, the biceps contract (1) and the triceps relax (2). In the Extension state, the triceps contract (4) and the biceps relax (5). The diagram also shows the triceps relaxing (3) and biceps contracting (6) during the transition between these states.</p>	<p>The left diagram shows the back and leg muscles with labels 1, 2, 3, and 4. The right diagram shows the front of the body with labels 6, 7, and 8.</p>	<p>The left diagram shows the back and leg muscles with labels 5, 6, and 7. The right diagram shows the front of the body with labels 8 and 9.</p>
<p>Antagonistic pairs – Muscles can only pull bones, therefore they have to work in pairs to move a joint. One muscle pulls the bone in one direction and the other bone pulls it back.</p> <ol style="list-style-type: none"> 1. Biceps contract (tenses and shortens). 2. Triceps relax (lengthens). 3. This causes flexion (bending) of the arm at the elbow. 4. Triceps contract. 5. Biceps relax. 6 This causes extension (straightening) of the arm at the elbow. <p>Types of movement at a joint (where 2 or more bones meet):</p> <p>Flexion = bending Extension = straightening Abduction = away from the body Adduction = towards the body Rotation = in a circular direction</p>	<ol style="list-style-type: none"> 1. Deltoid – Rounded, triangular muscle on the uppermost part of the arm and at the top of the shoulder. Moves the arm in all directions at the shoulder. Eg: Serving in tennis 2. Triceps – Back of the upper arm. Extends the arm at the elbow. Eg: Press up, throwing the javelin 3. Hamstrings – Found at the back of the leg. Flexes the leg at the knee. Eg: Bending the knee before kicking a football. 4. Gastrocnemius – At the back of the lower leg. Points the toes (plantar flexes the ankle). Eg: Running 	<ol style="list-style-type: none"> 5. Gluteals – Form the buttocks. Gluteus maximus (the largest) lies just underneath the skin and is attached to the femur. Adducts & extends the leg at hips, pulls leg backwards. Eg: Pulling back the leg before kicking a ball 6. Latissimus Dorsi – Broad sheet of muscle that extends from the lower region of the spine to the bone in the upper arm (humerus). Adduct & extend arm at the shoulder. Eg: Butterfly stroke in swimming. 7. Biceps – Front of the upper arm. Flexes the arm at the elbow. Pull up, pulling the bow in archery. 8. External Obliques – To the side of the abdomen, running from the lower half of the ribs down to the pelvis. Pulls the chest down, flexes & rotates the spinal column, 1 side contracting creates a side bend. Crunches in the gym.

PHYSICAL EDUCATION – Year 7, Term 1 – MUSCLES OF THE BODY

Four muscles of the body	Muscle types and muscle fibres	QUESTIONS/ACTIVITIES
	<p>Muscle types and muscle fibres</p> <p>The 3 types of muscle in the human body:</p> <p>Voluntary – these are under your control, you can choose when to contract or relax them. All these muscles are attached to the skeleton by tendons, also known as skeletal muscles.</p> <p>Involuntary – not under your control. They contract and relax automatically, controlled by the involuntary nervous system, working all the time to keep you alive. Found in the organs in the digestive, circulatory & urinary systems.</p> <p>Cardiac – only found in the wall of the heart, not under your control and never tires.</p>	<p>QUESTIONS/ACTIVITIES</p> <p>1. Which muscle operates as the antagonistic pair in combination with the hip flexors? a) Gluteus maximus b) Quadriceps c) Hamstrings d) Gastrocnemius</p> <p>2. Which muscle group is responsible for flexion at the knee when a footballer prepares to kick a football: a) Gluteus maximus b) Quadriceps c) Hamstrings d) Gastrocnemius</p>
<p>9. Hip Flexors – Deep in front of the hip and connect the leg, pelvis and abdomen. Flexes the hip, helps move the leg & knee up towards the body. Eg: Lifting knees high in sprinting.</p> <p>10. Tibialis anterior – Runs down the shin. Pulls toes up towards the shin (dorsi-flexes ankle). Eg: Ski jumping.</p> <p>11. Quadriceps – Four muscles found at the front of the leg. Extends the leg at the knee. Eg: Kicking a ball, jumping upwards.</p> <p>12. Pectoralis major – Covering the chest. Adducts the arm at the shoulder. Eg: Forehand in tennis.</p>	<p>The voluntary muscular system: The muscular system works with the skeletal system to allow us to move, which happens as a result of muscles contracting and lengthening. Muscles also define body shape and help you to maintain posture. The voluntary muscular system is crucial to exercising and sport. You can train muscles to become stronger and to work for longer without getting tired.</p> <p>Fast and slow twitch muscle fibres: Voluntary muscles are made up of bundles of individual fibres, these muscle fibres can be of 2 main types:</p> <ul style="list-style-type: none"> • Slow twitch • Fast twitch <p>Slow twitch fibres are good for endurance activities, they contract slowly but can work for long periods of time. Fast twitch fibres are good for power/speed activities, they work much more quickly and with greater force, but they also tire much quicker.</p>	<p>3. Explain what is meant by an antagonistic pair and an example in the body:</p> <p>4. Which one of the following physical activities might benefit the pectoral muscles the most: a) Sit-ups b) Straight leg stretches c) Press-ups d) Continuous running</p>

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