Unit 2 Movement Analysis

Learning journey

Learning is linked to Unit 1 e.g. muscles and bones of the body						
Intended learning outcomes	Understand the different classes of levers found in the body Understand the mechanical advantages of different lever systems Understand how muscles work to cause movements Understand the planes and axes of different movements Understand the types of movements at different joints Understand the names of muscles causing the movements at different joints					
Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7
1)Muscles in the body and where they are found. 2)The 3 different classifications of levers and how to draw them	1)The mechanical advantages of the different classes of levers. 2) sporting examples of each class of lever.	1) Muscle action, antagonistic muscle action. 2) muscle contraction for movement, Isotonic, concentric, eccentric, isometric.	1)Planes and axes, sagittal, frontal, transverse and longitudinal.	Movement analysis 1) Movements in the sagittal plane along the transverse axis e.g. backstroke arms. 2)Movement in the frontal plane about a sagittal axis e.g. star jumps, butterfly arms.	1)Movements in the transverse plane about the longitudinal axis e.g. Cricket bowling 2)Analysis of selected movements Push up Football throw in Running Kicking Standing vertical jump Squats Shoulder action in cricket bowling	End of Unit test. The test will include questions from Unit 1 and 2. The test will be made up of -multiple choice - 2 mark -3 mark -4 mark - 1x 6mark -1x 9mark

ASSESSMENT

SUMMATIVE	**FORMATIVE**
• Verbal questioning • Check your understanding questions- Exam style • Do now activities- Recap/review • Homework tasks	• Assessed long answer questions • End of Unit exam

Unit 1A Applied anatomy and physiology

learning journey

Learning that is linked to KS3 e.g. Bones and muscles of the body			
Intended learning outcomes	Understand the structure and functions of the skeleton Understand the structure and functions of a synovial joint. Understand the movements involved at different joints.		
Lesson 1	**Lesson 2**	**Lesson 3**	**Lesson 4**
1) The structure of the skeleton, labeling and identifying the bones within the skeleton. 2)The different types of bone and function long, short, flat and irregular. 3)The 6 functions of the skeleton Support, Protection, movement, structural shape and points of attachment, mineral storage and Blood cell production.	1)The synovial joint structure. 2) the functions of the structures, cartilage, synovial membrane, synovial fluid, ligaments, synovial membrane, bursae, tendons. 3)types of synovial joints, ball and socket and hinge	Bones that form the joints 1)head –neck joint vertebrae cranium. 2)the elbow joint – Humerus, Radius and Ulna. 3) the shoulder joint – Clavicle, Humerus and scapula. 4)The hip femur and Pelvis 5)The knee- femur, Patella and Tibia 6)The Ankle-Tibia, Fibula, Talus	Movements at the joints Elbow- flexion and extension Shoulder- abduction, adduction, rotation, flexion and extension Hip – Flexion and extension. Knee – flexion and extension. Ankle joint – plantar flexion and dorsi flexion

ASSESSMENT

SUMMATIVE	**FORMATIVE**
• Verbal questioning • Check your understanding questions- Exam style • Do now activities- Recap/review • Homework tasks	• Assessed long answer questions • End of Unit exam

Unit 1B The structure and function of the cardio-respiratory system

Learning Journey

Learning is linked to unit 1A					
Intended learning outcomes	Understand the pathway of air into and out of the lungs Understand gas exchange at the alveoli and the features that assist in gaseous exchange Understand the structure and function of arteries, capillaries, and veins Understand the structure of the heart Understand the order of the cardiac cycle and pathway of blood through the heart. Understand the terms cardiac output, stroke volume and heart rate and the relationship between them. Understand the mechanics of breathing as the interaction of the intercoastal muscles ribs and diaphragm Understand and interpret lung volumes through spirometer traces. Understand gas exchange at the alveoli and the features that assist in gaseous exchange.				
Lesson 1	**Lesson 2**	**Lesson 3**	**Lesson 4**	**Lesson 5**	**Lesson 6**
1)structure and role of the respiratory system. Nose, mouth, Trachea, Bronchi, Bronchioles, Lungs and Alveoli, Diaphragm.	1)Gaseous exchange. Diffusion and concentration. Hemoglobin and Oxyhemoglobin	1)Breathing, Inspiration and expiration **Inspiration** – chest expands, ribs lift up and out and diaphragm contracts flattening. **Expiration**- chest contracts, ribs move down, and diaphragm relaxes and domes. 2)Lung volumes- **Tidal volume**- amount of air entering the lungs at rest 500ml average. **Inspiratory reserve volume** – the amount of extra air inspired in a deep breath, as high as 3000ml **Expiratory reserve volume** – the amount if extra air expired during a forceful breath out. **Residual volume-** the amount of air left in the lungs following a maximal expiration. Always air remaining in the lungs	Blood vessels 1)**Arteries** – elastic, thick and muscular, blood carried at high pressure, carries oxygenated blood, small lumen. 2)**Veins**- carry blood to heart, has valves, dark red deoxygenated blood, thin walled, large lumen. **3)Capillaries –** huge network of tiny vessels, thin walled, very narrow, one cell thick, rapid diffusion. 4)The structure of the heart- Right atrium, right ventricle, left atrium left ventricle. Right carries deoxygenated and left carries oxygenated blood.	Cardiac cycle 1)D**iastole** relaxation phase of the cardiac cycle. 2)**Systole**- contraction phase of the cardiac cycle 3)**Stroke Volume**- volume of blood that leaves in each contraction. 4)**Cardiac output(Q**) = Heart rate (HR)x Stroke Volume (SR)	Long answer question

ASSESSMENT

SUMMATIVE	**FORMATIVE**
• Verbal questioning • Check your understanding questions- Exam style • Do now activities- Recap/review • Homework tasks	• Assessed long answer questions • End of Unit exam

Unit 1C Anaerobic and Aerobic exercise

Learning Journey

Learning is linked to unit 1C Anaerobic and aerobic exercise e.g stroke volume				
Intended learning outcomes	Understand the idea of aerobic and anerobic exercise during differing intensities. Understand the recovery process from vigorous exercise in terms of Excess Post –exercise Oxygen Consumption (EPOC)/oxygen debt. Understand methods to help recover from strenuous exercise Understand the immediate effects of exercise (during exercise) Understand the short-term effects of exercise (24-36hours after exercise) Understand the long-term effects of exercise (months and years of exercising)			
Lesson 1	**Lesson 2**	**Lesson 3**	**Lesson 4**	**Lesson 5**
1) **Aerobic** – with oxygen. Activities that last a long time such as marathon 2)**Anaerobic** – without oxygen, activities that last a short term such as sprinting. 3)**EPOC**- during short burst of intense exercise. Produces lactic acid. Increase rate of oxygen intake. **4)Oxygen debt-** Temporary oxygen shortage in the body due to strenuous exercise.	1) **Immediate effects of exercise (during exercise).** Faster heart rate, heart contracts more powerfully, increased stroke volume, breathing rate increases, increased tidal volume, greater gaseous exchange, increased body temperature, sweating, vasodilation to reduce body temperature. 2) **short term effect of exercise** (24-36hours after) Nausea – blood flow is taken away from the stomach. Headaches from lack of water intake. Delayed onset of muscle soreness (DOMS) caused by eccentric muscle contractions, tiny tears of the muscle fibers.	The recovery process from vigorous exercise. 1) **Cool down** aids clearing of waste products, reduces potential DOMS, reduces chance of dizziness, fainting caused by blood pooling at the extremities, allows breathing rate to return to resting. 2)**rehydration** – replacing the fluids lost through sweating. Not just water, minerals need replacing. 3)r**eplacing glucose**, through carbohydrates 4)**ice baths** – speeds up recovery, ice constricts the blood vessels and flush waste products such as lactic acid out of tissues. Once out the muscles warm up and blood flows through the muscles improving the healing process. **4)Massag**e- rubbing or kneading the muscles with hands, reduces pain. Prevent/ relieve DOMS, reduces the swelling in the muscles.	Long term effects of exercise (months and years of exercising) 1)reduces body weight 2)Builds muscular strength 3)muscular endurance 4) stronger ligaments, muscles, and tendons at joints 5)increase of speed 6) Cardiovascular endurance/stamina Hypertrophy of the heart (stronger heart muscle) 7)Higher stroke volume 8)reduction of resting heart rate bradycardia.	End of Unit test. The test will include questions from Unit 1 and 2. The test will be made up of -multiple choice - 2 mark -3 mark -4 mark - 1x 6mark -1x 9mark

ASSESSMENT

SUMMATIVE	FORMATIVE
• Verbal questioning • Check your understanding questions- Exam style • Do now activities- Recap/review • Homework tasks	• Assessed long answer questions • End of Unit exam