YEAR 10 Sport Science

Autumn Term 1 and 2: R182 – The body's response to physical activity and how technology this

Key Vocabulary for lessons – Cardiorespiratory system structure and function, musculoskeletal system structure and function, short term effects of exercise on these systems, long term effects of exercise on these systems, the use of technology to support the effects of exercise intensity and movement

Chambers	Sections of the heart that allow blood to flow through.
Atria	Upper chambers of the heart that collect blood from veins.
Ventricles	Lower chambers of the heart that pump blood out through arteries.
Valves	Prevent the backflow of blood.
Deoxygenated	Venous blood (in veins) that does not carry oxygen.
Oxygenated	Arterial blood (in arteries) that carries oxygen.
Arteries	Blood vessels that mainly carry oxygenated blood away from the heart.
Capillaries	Tiny, thin-walled blood vessels that join arteries (which carry blood away from the heart) and veins (which carry blood back to the heart).
Alveoli	Tiny air sacs in the lungs.
Carbon dioxide	Gas that is produced as a waste product during internal respiration.
Veins	Blood vessels that mainly carry deoxygenated blood back to the heart.
Trachea	Tube connecting the mouth and nose to the lungs.
Lungs	Large spongy organs in chest; used for gas exchange.
Bronchi	Airways that lead from the trachea into the lungs.
Bronchioles	Air passages inside the lungs that connect the bronchi to the alveoli.
Diaphragm	Dome-shaped muscle causing inhalation and exhalation.
Heart/pulse rate	The number of times the heart beats per minute.
Radial pulse	Heart rate that can be felt at the wrist.
Carotid pulse	Heart rate that can be felt at the neck.
Vasoconstriction	Reduction in the diameter of a blood vessel to reduce blood flow through that vessel.
Vasodilation	Widening in the diameter of a blood vessel to increase blood flow through that vessel.
Vascular shunt mechanism	How the body directs blood to where it is needed by widening or reducing the diameter of arteries.
Cardiac output	The volume of blood that the heart is able to pump out in one minute.
Stroke volume	The volume of blood that leaves the heart during each contraction.
Systolic blood pressure	Blood pressure when the heart is contracting.
Diastolic blood pressure	Blood pressure when the heart is relaxed.
Inhalation	Breathing in.
Exhalation	Breathing out.
Intercostal muscles	Muscles located between the ribs.
Internal respiration	The exchange of gases between the cells of the body and the blood.

Diffusion	The movement of a gas from an area of high concentration to an area of low concentration.
Technology	Putting scientific knowledge into practical use to solve problems or invent useful tools.
Wearable technology	Technology worn on the body during exercise to provide data.
Laboratory-based technology	The use of technology inside a laboratory to provide data.
Field-based technology	Technology that can be used to provide data outside of a laboratory in the setting where sports take place, for example a football pitch.
Sphygmamonometer	Blood pressure reader.
Spirometry traces	Measurement of breathing volumes.
Spirometer	Machine that produces a spirometry trace of breathing volumes.
Vital capacity	Amount of air expelled from your lungs when you take a deep breath and then exhale fully.
Pulse oximeter	Device used to measure how efficiently oxygen is being carried to the extremities by the heart (blood oxygen level).
Cranium	Skull bone, which surrounds the brain.
Ribs	Bones surrounding the heart and lungs, forming the chest cavity.
Sternum	Flat bone at the front of the chest, sometimes called the breastbone.
Vertebrae	Many single bones joined together to form the backbone.
Ribcage	Comprised of the ribs and sternum.
Clavicle	The collarbone.
Scapula	The shoulder blade.
Humerus	Bone in the upper arm.
Radius	Bone of the forearm; attaches to the thumb side of the wrist.
Ulna	Bone of the forearm; forms the point of the elbow.
Femur	Long bone of the thigh or upper leg, which extends from the hip to the knee.
Tibia	The shin bone; forms knee joint with the femur.
Fibula	Bone in the lower leg that forms the ankle.
Patella	The kneecap; covers the knee joint.
Deltoids	Muscles on shoulder joint that move the upper arm.
Trapezius	Muscle at the top of the back that moves the scapula and head.
Latissimus dorsi	Muscle at the side of back that moves the upper arm.
Pectorals	Muscles in the chest that move the upper arm.
Biceps	Muscles at the front of the upper arm that cause bending at the elbow joint.
Triceps	Muscles at the back of the upper arm that cause straightening at the elbow joint.
Abdominals	Stomach muscles that protect internal organs.
Gluteals	Buttock muscles, which are used when running.
Hamstrings	Muscles at the back of the upper leg; they bend the knee.
Quadriceps	Muscles at the front of the upper leg; they straighten the leg.
Gastrocnemius	One of the calf muscles; used in walking.
Soleus	One of the calf muscles; used in walking.
Synovial joint	A freely moveable joint.
Ball and socket joint	Ball-shaped end of bone fits into the socket of another, for example the hip

Hinge joint	End of bone fits against another bone allowing movement in only one direction, for example the knee.
Gliding joint	One bone can slide over another, for example the carpals in the wrist.
Pivot joint	Rounded end of one bone fits into a ring formed by the other bone, for example the vertebrae of the neck, which allow head rotation.
Connective tissue	White tissue providing support.
Cartilage	Elastic tissue; forms padding at the ends of long bones; forms the ears.
Tendons	Joins muscles to bone to cause movement.
Flexion	Angle between bones decreases (bending).
Extension	Angle between bones increases (straightening).
Abduction	Taking a limb away from the midline of the body.
Adduction	Bringing a limb towards the midline of the body.
Rotation	Turning part of the body around its axis.
Circumduction	Conical movement of an extended limb.
Electromyography (EMG)	A technique used to monitor the electrical activity within skeletal muscles.
Anticipatory rise	Slight increase in heart rate before exercise.
ROM	Range of movement.
Fast twitch fibres	Muscle fibres that contract quickly and/or with high force; used during high-intensity work.
Slow twitch fibres	Muscle fibres that contract with a low force but do not fatigue quickly.
Bradycardia	Decrease in the resting heart rate because of training.
Goniometer	Device used to measure flexibility (range of movement at a joint)
Lung capacity	The amount of air the lungs can hold.
Tidal volume	The amount of air breathed in and out at rest.
Bone density	The amount of bone mineral in bone tissue.
Capillarisation	An increase in the number of capillaries as a result of endurance training.
Osteoporosis	Medical condition that results in weak and fragile bones.
Heart disease	When the heart's blood supply is blocked or interrupted by a build-up of fatty substances in the coronary arteries that supply the heart with blood.
Heart attack	Medical emergency in which the supply of blood to the heart is suddenly blocked.

Homework

- Will be set every two weeks
- Task set will be a range of questions on retrieval practice of prior knowledge and longer written questions focused on GCSE style questions
- All tasks will be focused on reinforcing the learning to date in Key Stage 4

Additional opportunities

If you wish to further develop your knowledge for Sports Science, you can use the following links:

CNAT Sport Science 2022: R182 The body's response to physical activity and how technology informs this — TheEverLearner

Sports science revision Flashcards | Quizlet