

HIGHAM LANE SCHOOL

GCSE PE COMPONENT 1 PAPER KNOWLEDGE ORGANISER

BOX ONE: KEY VOCABULARY THAT YOU NEED TO KNOW HOW TO SPELL AND DEFINE.

BOX TWO: CORE QUESTIONS THAT YOU NEED TO KNOW THE ANSWERS TO.

BOX THREE: DIFFERENT TYPES OF ACTIVITIES TO CHECK YOUR UNDERSTANDING OF THE TOPIC.

GCSE PE COMPONENT 1: COMPONENTS OF FITNESS

ONE: Key Vocabulary

Word	Definition
Muscular endurance	The ability to move your body and muscles repeatedly without fatiguing. Sit-up test
Cardiovascular endurance	The ability to continue exertion while getting energy from the aerobic system used to supply the body with energy. Also referred to as stamina. Multi-stage fitness test/Cooper Run
Agility	The ability to change direction at speed; nimbleness. Illinois agility test
Flexibility	Range of movement available around a joint. Sit and reach test
Speed	The ability to move quickly across the ground or move limbs rapidly through movements. 30 meter sprint
Strength	The maximum force a muscle/group of muscles can apply against a resistance. Hand grip dynamometer
Coordination	The ability to use different parts of the body together. Wall bounce test.
Balance	The maintenance of the centre of mass over the base of support. Stork stand
Power	The product of strength x speed. Verticle jump test.
Flexibility	The range of movement at a joint
Reaction time	The time taken to initiate a response to a stimulus to starting a response. Ruler drop test

TWO: Core Questions

Question	Answer
Give three reasons for fitness testing	motivate, monitor improvement, set goals, inform training, provide variety to training
Identify the tests for flexibility, speed and muscular strength.	Flexibility – sit and reach Speed – 30m sprint Muscular strength – hand grip dynamometer
Give 5 examples of cardiovascular endurance activities	Long distance running, aerobics, 200m swim, cross-country skiing, treadmill for 20 mins, marathon
The following data is taken from a 20--old male taking the Cooper Run Test. Calculate the percentage increase in his score	4%
September: 2,400 meters December – 2,500 meters	
What is meant by the term validity?	Whether or not the test measures what it claims to measure
What is meant by the term reliability?	The level of which a fitness test produces stable and consistent results

THREE: Three COF for each athlete – why?



GCSE PE COMPONENT 1: PRINCIPLES OF TRAINING

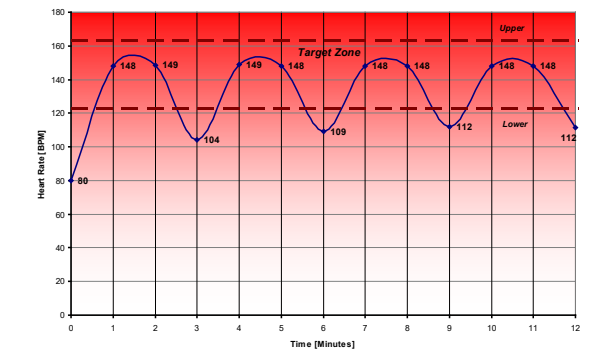
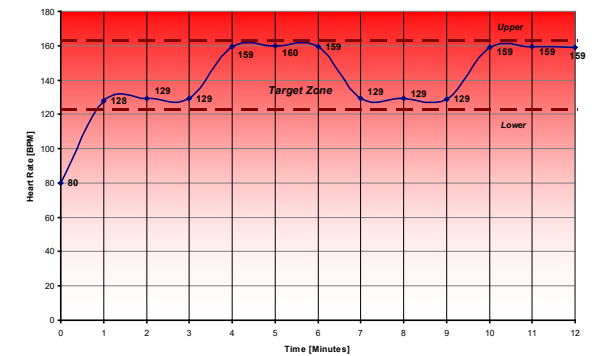
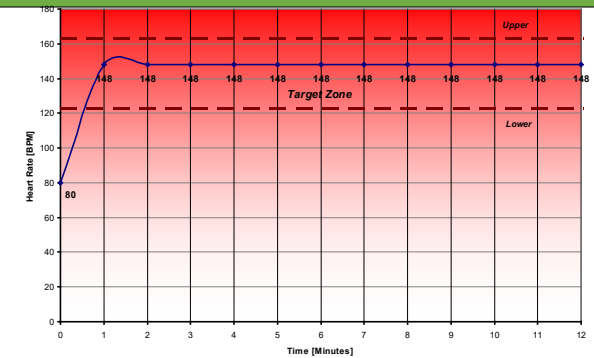
ONE: Key Vocabulary

Word	Definition
Warm up	Preparatory exercises done to prepare the body and mind for physical activity. Gradual reduction in intensity, maintain breathing and heart rate, stretching
Cool down	The act of allowing physiological activity to return to normal gradually after strenuous exercise by engaging in less strenuous exercise. Gradual pulse raising activity, stretching, skill activity, mental preparation
FITT	FITT outlines the key components of an effective exercise program: Frequency – the number of times exercise takes place Intensity – how hard and intense the exercise is Time – how long you exercise for Type - the kind of exercise that takes place.
Specificity	The training must be matched to the needs of the sporting activity and individual.
Progression	Gradual increases in exercise in order for the body to adapt through overload.
Overload	A greater than normal stress that is applied on the body for training adaptations to take place.
Reversibility	Any adaptation that takes place as a result of training will be lost if you stop training.

TWO: Core Questions

Question	Answer
Describe continuous training	Training that involves activity without rest intervals. It can be performed at any intensity.
Describe fartlek training	Training which varies in intensity and duration and consists of bursts of intense effort alternating with less strenuous activity.
Describe interval training	Training that incorporates periods of exercise and rest.
Describe circuit training	– Series of alternate exercises performed at stations that focus on different muscle groups.
Describe weight training	A method of training that uses free weights or resistance machines
Describe plyometrics	Involves jumping, bounding, hopping exercise HIIT – exercise that alternates between high intensity and periods of recovery.
High-Intensity Interval Training	Interval training that involves periods of high intensity exercise followed by recovery intervals

THREE: Using the HR graphs, what type of training is taking place in each.



GCSE PE COMPONENT 1: INJURY PREVENTION

ONE: Key Vocabulary

Word	Definition
Hazard	Something that has the potential to cause harm
Risk	The chance that someone will be harmed by the hazard
Injury	Physical harm or damage to someone's body caused by an accident or an attack:
Risk Assessment	Techniques used to measure the chances of an accident happening
Personal protective equipment	Equipment which is intended to be worn or held by a person which protects
Warm up	Preparatory exercises done to prepare the body and mind for physical activity. Gradual reduction in intensity, maintain breathing and heart rate, stretching
Cool down	The act of allowing physiological activity to return to normal gradually after strenuous exercise by engaging in less strenuous exercise. Gradual pulse raising activity, stretching, skill activity, mental preparation

TWO: Core Questions

Question	Answer
How do you prevent injury in sport?	Warm up, correct technique, appropriate clothing, hydration, tping/bracing
Describe the physical benefits of a warm-up	Increased flexibility / elasticity / pliability (of muscles) OR increased range of movement / mobility Increased pliability of tendons / connective tissue Increased / more / faster blood (flow) / oxygen to muscles Increased speed / strength of contractions Reduced risk of injury Delays / reduces (build-up of) lactic acid / delays fatigue
Identify common sports injuries	Head injury, spinal injury, fractures, dislocations, sprains, strain, blister

THREE: Risks assessments...



GCSE PE COMPONENT 1: SKELETAL SYSTEM

ONE: Key Vocabulary

Word	Definition
Abduction	Movement away from the midline of the body.
Adduction	Movement towards the midline of the body.
Extension	A straightening movement around a joint.
Flexion	A bending movement around a joint in a limb.
Rotation	The turning of a body part about its long axis as if on a pivot.
Circumduction	The circular movement of a joint. It is a movement pattern that combines flexion, extension, adduction, and abduction.
Synovial joint	An area where two or more bones meet within a joint capsule and allows a wide range of movement to occur.
Articulating bones	Bones that move relative to each other at a joint.
Cartilage	A tough, elastic, fibrous connective tissue.
Ligament	A short band of tough and flexible tissue connects bone to bone and stabilise the joint.
Tendon	A tendon is a tough yet flexible band of fibrous tissue which joins muscle to bone.

TWO: Core Questions

Question	Answer
Identify four functions of the skeletal system	Blood production, movement, protection, shape, support, mineral storage
Give the function of cartilage	Covers the ends of bones providing smooth, friction free surface
Describe how the skeleton 'protects'	Bones help to protect vital organs
Describe how the skeleton allows 'movement'	Bones provide a surface for muscles / tendons to attach to OR provide lever systems OR muscles pull bones when they contract OR has joints that allow the body to move
Name the articulating bones at the knee and elbow joint.	Knee = femur and tibia Elbow = humerus, radius and ulna
Movement at a hinge joint	Flexion & extension
Movement at a ball and socket joint	Flexion, extension, rotation, abduction, adduction and circumduction

THREE: ...

Label the Skeleton

elbow
vertebrae
patella
mandible
pelvis
radius
clavicle
humerus
ribs
ulna
scapula
skull
metatarsals
carpal
sacrum
metacarpals
phalanges
femur
tarsals
fibula
tibia
phalanges

GCSE PE COMPONENT 1: MUSCULAR SYSTEM

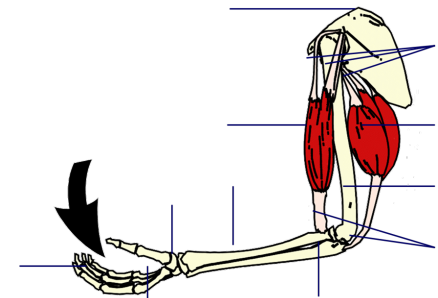
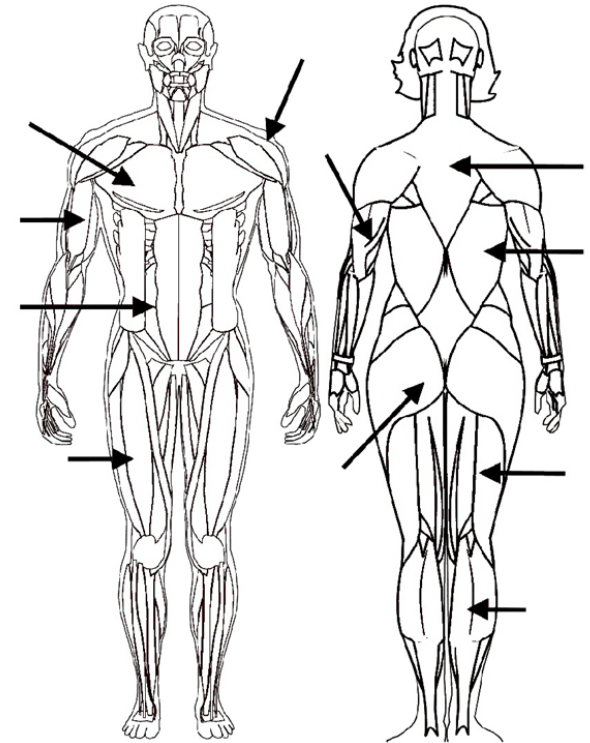
ONE: Key Vocabulary

Word	Definition
Antagonistic muscle action	A pair of muscles that work together to produce movement with one muscle contracting whilst the other muscle relaxes. E.g. the upper arm, as the arm flexes the bicep contracts and the triceps relaxes.
Agonist	The muscle that works to create the movement.
Antagonist	The muscle that works in the opposite way of the agonist.
Fixator	A muscle which acts as the stabilizer and helps the agonist work effectively of one part of the body during movement of another part.
Fatigue	Muscle tiredness when the body has a lack of energy.
Biceps	Acts to cause flexion at the elbow
Triceps	Acts to cause extension at the elbow
Quadriceps	Acts to cause extension at the knee
Hamstrings	Acts to cause flexion at the knee

TWO: Core Questions

Question	Answer
Explain how a pair of muscles work together during exercise to allow movement	Muscles work together as an antagonistic pair Where one muscle contracts (agonist) whilst the other relaxes (antagonist)
Name all 11 muscles in the body	Deltoid, pectorals, biceps, abdominals, quadriceps, trapezius, triceps, latissimus dorsi, gluteals, hamstring, gastrocnemius
What movement is a combination of abduction, adduction, extension or flexion and rotation	Circumduction
Identify the antagonistic muscle pairs acting to cause flexion at the knee.	Agonist = hamstring Antagonist = quadriceps Fixator = Gluteus maximus

THREE: Label the diagrams



GCSE PE COMPONENT 1: MOVEMENT ANALYSIS

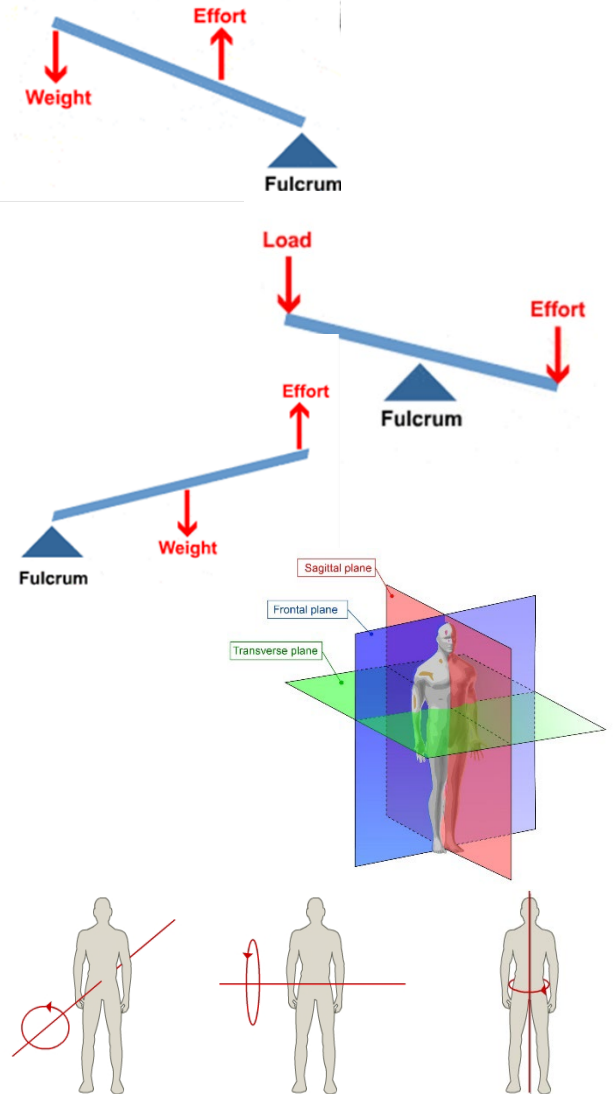
ONE: Key Vocabulary

Word	Definition
Frontal plane	An imaginary surface which divides the body into front and back.
Sagittal plane	An imaginary surface which divides the body into left and right sides.
Transverse plane	An imaginary surface which divides the body into top and bottom parts.
Frontal axis of rotation	An imaginary line which passes through the body from front to back.
Longitudinal axis of rotation	An imaginary line which passes through the body from top to bottom.
Transverse axis of rotation	An imaginary line which passes through the body from left to right.
1st Class Levers	A lever in which the fulcrum is positioned between the load and the effort.
2nd Class Lever	A class 2 lever has the load and the effort on the same side of the fulcrum, with the load nearer the fulcrum.
3rd Class Lever	The effort is placed between the load and the fulcrum, and the effort must travel a shorter distance and be greater than the load.
Mechanical advantage	A second class lever allows a large load to be moved with a small amount of effort.

TWO: Core Questions

Question	Answer
What is a plane of movement?	All movements performed by the body are carried out across three dimensions. These dimensions are the planes of movement and divide the body using imaginary lines (flat planes).
What is an axis of rotation?	Movements of the body can occur around three axes. Every joint movement is carried out in a plane about an axis which is imaginary straight lines that rotate the body.
What class of lever is most common in body?	3 rd class lever
What are the four parts to a lever?	Lever arm (bone) Fulcrum (joints) Effort (muscle) Load (action)
Identify a practical example for each type of lever	1 st class – neck; 2 nd class – ankle; 3 rd class – elbow, shoulder, knee, hip

THREE: Label and give sporting examples.



GCSE PE COMPONENT 1: CARDIO-RESPIRATORY

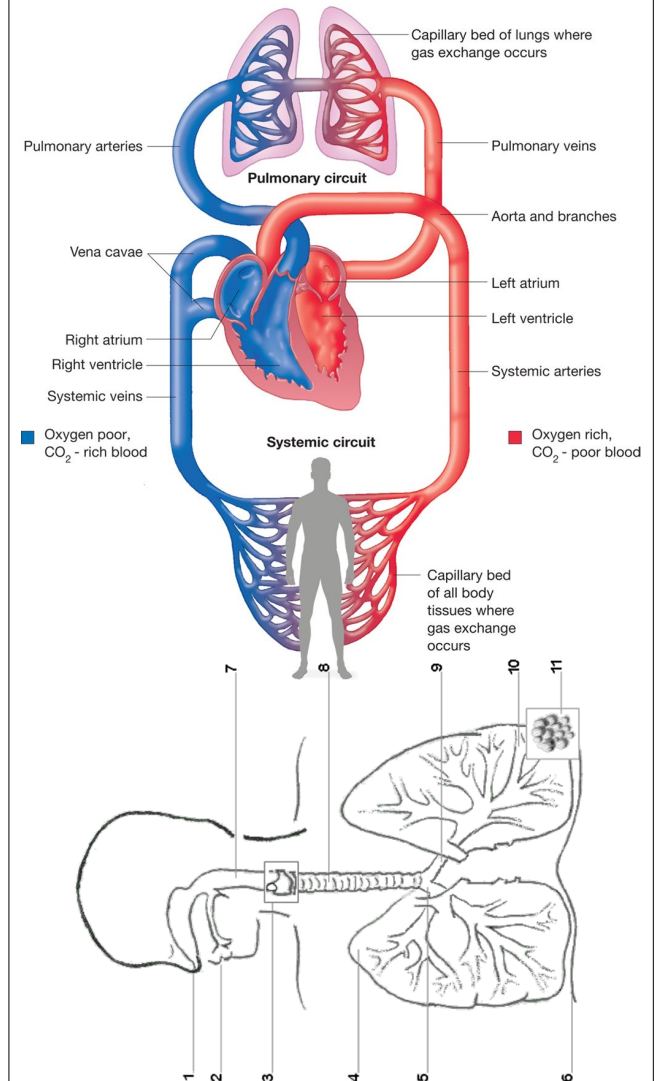
ONE: Key Vocabulary

Word	Definition
Aerobic exercise	Use of oxygen for the duration of the exercise. Usually at moderate intensity at a continuous rate e.g. long distance running.
Anaerobic exercise	Exercise which does not allow for the predominant usage of oxygen. Usually high or very high intensity for a short period of time. E.g. sprinting up a hill.
Blood vessels	Tubular structures that carry blood around our bodies.
Heart rate	Number of heart beats per minute.
Stroke volume	The amount of blood pumped out of the heart (left ventricle - to the body) during each contraction.
Cardiac output	Cardiac output = stroke volume x heart rate. The volume of blood pumped per minute by each ventricle of the heart.
Breathing rate	The number of breaths taken in a minute.
Tidal volume	The amount of air which enters the lungs during normal inhalation at rest.
Minute ventilation	The volume of gas inhaled or exhaled from the lungs per minute.
Gas exchange	The movement of gases taking place at the alveoli and capillaries.

TWO: Core Questions

Question	Answer
Identify the order of the pathway of air.	Nose/mouth, trachea, bronchi, bronchioles, alveoli
Double circulatory system	The human body has two circulatory loops in which blood circulates. One is oxygenated, and the other is deoxygenated. Systemic – the circulatory loop that controls blood flow from the heart to the rest of the working muscles and organs. Pulmonary - the circulatory loop that controls blood flow from the heart to the lungs.
Identify three characteristics of veins	Carry blood back to the heart (away from body or away from lungs), thinner and less elastic walls, have valves to prevent backflow of blood
Identify three characteristics of arteries	Have thick walls, carry blood at high pressure away from heart (to body or to lungs), have no valves, have more elastic walls, arterioles
Identify three characteristics of capillaries	Small, allow carbon dioxide, water & waste products to pass through, thin walls

THREE: Describe the pathway of blood/air through the systems.



GCSE PE COMPONENT 1: EFFECTS OF EXERCISE

ONE: Key Vocabulary

Word	Definition
Capillarisation	The development of blood capillaries in the body which increases through long term effects of exercise.
Hypertrophy	The increase in size of skeletal or cardiac muscle.
Lactic acid	A waste product produced in the muscle tissues during strenuous exercise where the anaerobic energy system is in use.
Rate of recovery	The speed at which the body returns back to normal after exercise.
Redistribution of blood flow / Vascular shunt	When you exercise the blood is diverted from inactive areas to the muscles that are being used. This action is completed through vasodilation and vasoconstriction
Vasodilation	Widening of the diameter of a blood vessel to increase blood flow
Vasoconstriction	Narrowing of the diameter of a blood vessel to decrease blood flow
Anticipatory rise	Raising of the heart rate before exercise begins. Caused by adrenaline

TWO: Core Questions

Question	Answer
Identify three long term effects of exercise	Change in body shape, muscle/cardiac hypertrophy, increase muscular strength, increase muscular endurance, lower resting heart rate, improved flexibility, improved muscular endurance
Identify three short term effects of exercise	Increased heart rate, increase stroke volume, increased cardiac output, sweaty, red face, increase in breathing rate, increased tidal volume, increased minute ventilation, fatigue,
What is Bradycardia?	A resting heart rate of fewer than 60 beats per minute (BPM)
Increased heart rate and increased stroke volume leads to...	Increased cardiac output
What is adrenaline?	Is a hormone that is released to prepare the body for 'fight or flight'

THREE: Explain the vascular shunt mechanism

