Bottisham Village College

KNOWLEDGE ORGANISER

GCSE PE

YEAR 10 ALL YEAR

KNOWLEDGE ORGANISERS

At Bottisham Village College, we are striving to create a five-year curriculum plan that builds effective revision strategies into homework and lessons, to ensure that students are able to place powerful knowledge into their long-term memories. Additionally, we hope that this will help build effective learning strategies from early in their time here at the college.

Based on evidence, we know that regular recall activities are the best way of achieving this goal and committing powerful knowledge into the students' memories.

At the start of each term, we shall publish all the knowledge organisers that students will require for their studies in each curriculum area. These will cover a range of aspects: facts, dates, characters, quotes, precise definitions and important vocabulary. We are clear: if this fundamental knowledge is secured, students can then develop their higher-level skills of analysis and critical understanding with greater depth.

They will be given an electronic A4 Knowledge Organiser (KO) booklet for each term containing all of the knowledge required. In lessons, Bottisham staff will be regularly testing this fundamental knowledge, using short-quizzes or even more formal "Faculty Knowledge Tests".

The best way to use these organisers at home, is to follow a simple mantra:

1. Look at a certain aspects of a particular knowledge organiser

2. Cover up part of their knowledge organiser

3. Write it out from memory

4. Check and correct any spelling mistakes, missing bits or mistakes

So simple but so effective.

GCSE PE KNOWLEDGE ORGANISER

UNIT 1: Anatomy & Physiology

Key Definitions

Heart rate: number of times the heart beats per minute

Stroke Volume: amount of blood ejected from the heart per beat

Cardiac Output: amount of blood ejected from the heart per minute

Breathing rate: number of breaths per minute

Tidal volume: amount of air inhaled in a normal breath

Minute ventilation: amount of air inhaled in one minute

Agonist: the muscle that contracts (prime mover)

Antagonist: the muscle that relaxes

Fixator: stabilises movement at the point of origin

Antagonistic pair: two muscles working together to produce movement by pulling

Axis of rotation: a point with which we rotate around

Plane of movement: an imaginary slice that we move along

Mechanical advantage: when a lever can lift heavy loads with little effort

Pulmonary circuit: heart to lungs loop

Systemic circuit: heart to working muscles loop

Capillarisation: increase in the number of capillaries

Aerobic: exercise that uses oxygen to produce energy

Anaerobic: exercise that does not use oxygen to produce energy (short time length)

Synovial joint: a joint that allows movement

Need to know **BONES:**

Cranium: skull
Clavicle: collar bone
Sternum: breast bone
Ribs: chest
Scapula: shoulder blade
Humerus: upper arm
Radius & ulna: lower arm
Carpals/metacarpals: hand
Phalanges: fingers & toes
Vertebrae: spine
Pelvis: hips
Femur: upper leg
Patella: knee cap
Tibia: shin
Fibula: back of lower leg
Tarsals/metatarsals: feet

Need to know **MUSCLES:**

Biceps: flexes elbow
Triceps: extends elbow
Pectorals: adducts arm
Abdominals: flexes trunk
Trapezius: pulls head back
Deltoid: Lifts arms
Latissimus Dorsi: abducts arms
Gluteals: extend hip
Quadriceps: extends knee
Hamstrings: flexes knee
Gastrocnemius: plantarflex

Video for the planes & axes >>>>> HERE (made by MrA)

Functions of the skeleton

Protection
Movement
Shape & Support
Posture
Blood production
Mineral Storage

Blood Vessels

Artery

Thick wall
Narrow Lumen
No Valves
High pressure blood
Away from heart

Vein

Thin wall
Wide lumen
Valves
Low pressure blood
Towards heart

Capillaries

1 cell thick wall

Lever Classes >>>>
Remember: 123, FLE

Pathway of blood

R atrium > tricuspic valve > R ventricle > SL valve > Pulmonary artery > Lungs > Pulm vein > L atrium > bicuspic V > L ventricle > SL valve > Aorta > working muscles > vena cava > R atrium

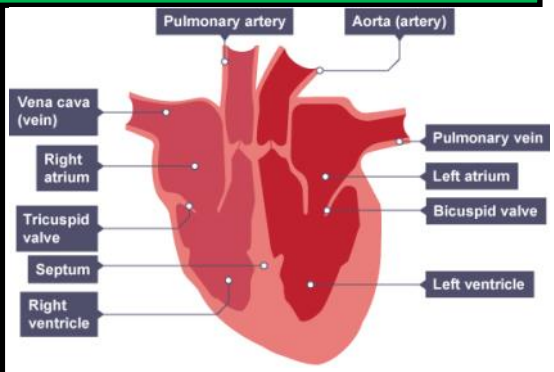


Diagram of the heart

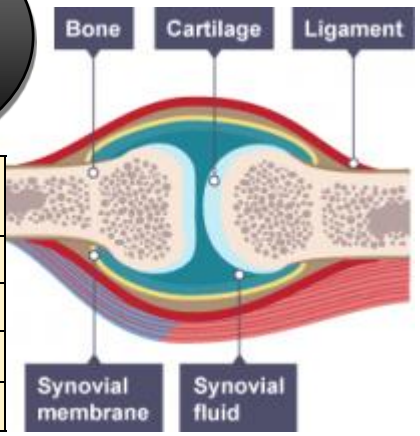
Pathway of air

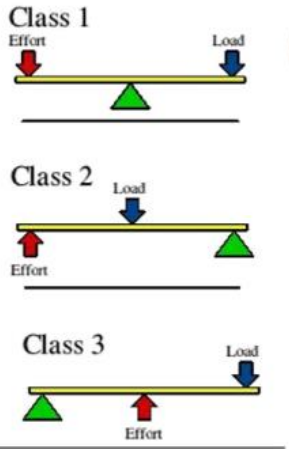
Nose & Mouth
Trachea
Bronchi
Bronchiole
Alveoli

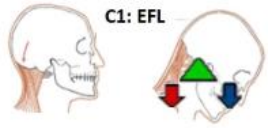
Alveoli Adaptations
large surface area, 1 cell thick wall, moist lining, rich blood supply

Joint	Type	Articulat bones	Movement
Elbow	Hinge	Hum, R Uln	F & E
Knee	Hinge	Femur bia	F & E
Shoulder	B & S	Scapu & Hum	All 6
Hip	B & S	Pelvis & Femur	All 6

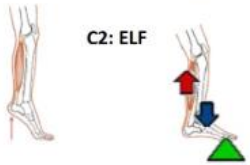
Synovial joint







Action Completed
Flexion & Extension



Action Completed
Plantarflexion & Dorsiflexion

Action Completed
Flexion & Extension

GCSE PE KNOWLEDGE ORGANISER

UNIT 2: Physical Training

Key Definitions

Cardiovascular endurance: the ability to sustain exercise for long periods of time

Muscular endurance: the ability for muscles to repeatedly contract without tiring

Speed: the rate at which you can move the body or a body part

Agility: changing direction at speed

Balance: maintaining centre of mass over a base of support without failing

Coordination: moving two or more body parts at the same time in a smooth, controlled manner

Flexibility: The range of movement at a joint

Strength: The maximum force a muscle can exert

Power: strength x speed

Reaction time: the time it takes to respond to a stimulus

Protocol: The list of instructions to carry out a test

Lactic Acid: a by product of anaerobic exercise

Hazard: something that can cause harm

Risk: the likelihood of someone coming to harm

Personal Protective Equipment (PPE): shinpads, helmets etc

Appropriate competition: same age, gender, weight etc

Specificity: training specific to your sport or ability

Progression: gradually increasing training difficulty

Overload: making your body work harder than it is used to

Reversibility: fitness gains will be lost if training stops

FITT: frequency, intensity, time, type. The 4 ways to progress a training programme

Aerobic: exercise that uses oxygen, long time

Anaerobic: exercise that doesnt use oxygen, short time

5 Stages of a Warm up

Pulse Raise

To increase circulation of blood e.g. a light jog

Mobility

Take the joints through their full range of movement e.g. arm circles

Stretching

Increase pliability of muscles e.g. lunges, hamstring stretch

Dynamic movements

Increase speed of muscle contraction e.g. shuttle runs

Skill specific practice

Prepare the body for the activity e.g. passing in football

Warm up benefits

Reduce chance of injury
Increase O2 to muscles
Increase speed of contraction
Increase muscle pliability
Increase flexibility
Delays fatigue
Increases tendon pliability

Cool Down benefits

Reduce chance of injury

Speeds up removal of lactic acid
reduce chance of DOMS

Reduce fatigue/pain
Increase flexibility
speed up recover

2 Stages of a Cool Down

Light exercise

Gradually lower the heart rate, breathing rate & body temperature back to normal

Stretching

Increase flexibility of joints and pliability of muscles

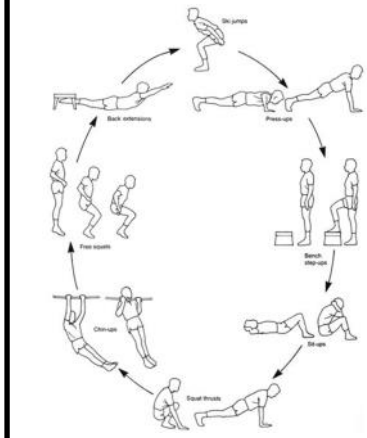
Name of Test	Fitness Component	Protocol
Multistage fitness test	Cardiovascular endurance	Run on beeps 20m shuttles
12 minute cooper run	Cardiovascular endurance	Continuous run for 12 minutes
Sit up test	Muscular endurance	Sit up bleep test CD
Press up test	Muscular endurance	How many press ups in 30s
30 sprint test	Speed	10m run up, 30m sprint timed
Illinois agility run	Agility	Timed slalom around 8 cones
Stork Stand	Balance	Stand on tiptoes, heel up
Ball toss test	Coordination	Alternate hands, catch ball In 30s
Sit & reach	Flexibility	Straight arms, reach as far as you can
Hand grip test	Muscular Strength	Grip 1 hand as hard as you can
1 Rep Max (bench press)	Muscular Strength	Max rep you can lift once (KG)
Standing long jump/broad jump	Power	2 foot to 2 foot jump
Vertical Jump/ Sergeant Jump	Power	Touch highest mark on wall
Ruler drop	Reaction time	Pinch ruler as soon as it drops

GCSE PE KNOWLEDGE ORGANISER

UNIT 2: Physical Training

Key Definitions

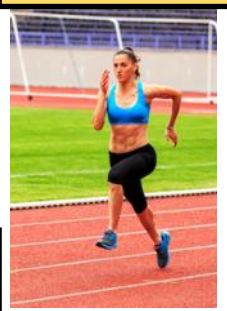
Cardiovascular endurance: the ability to sustain exercise for long periods of time
Muscular endurance: the ability for muscles to repeatedly contract without tiring
Speed: the rate at which you can move the body or a body part
Agility: changing direction at speed
Balance: maintaining centre of mass over a base of support without failing
Coordination: moving two or more body parts at the same time in a smooth, controlled manner
Flexibility: The range of movement at a joint
Strength: The maximum force a muscle can exert
Power: strength x speed
Reaction time: the time it takes to respond to a stimulus
Protocol: The list of instructions to carry out a test
Lactic Acid: a by product of anaerobic exercise
Hazard: something that can cause harm
Risk: the likelihood of someone coming to harm
Personal Protective Equipment (PPE): shinpads, helmets etc
Appropriate competition: same age, gender, weight etc
Specificity: training specific to your sport or ability
Progression: gradually increasing training difficulty
Overload: making your body work harder than it is used to
Reversibility: fitness gains will be lost if training stops
FITT: frequency, intensity, time, type. The 4 ways to progress a training programme
Aerobic: exercise that uses oxygen, long time
Anaerobic: exercise that doesnt use oxygen, short time



Training methods

AEROBIC
Continuous: 30+ mins, no breaks, low to medium intensity
Fartlek: changing speed & terrain, no breaks

ANAEROBIC
Circuit: stations, breaks, set reps or time per station
Weight: reps and sets, breaks, strength or endurance
Plyometrics: jumping, hopping, bounding, power
HIIT: high intensity, short time, little equipment, on spot
Interval: speed intervals, short rest



Ways to reduce injury

Warm up & cool down: 5 stages/2 stages

PPE: shinpads, helmets, gum guards

Clothing & equipment: football studs, long sleeves in cycling

Appropriate competition: age, weight, gender, ability

Lifting equipment safely: bend knees, straight back, close to body

Hazards in sport spaces

Sports Hall: uneven floor, equipment left out

Swimming pool: slippery tiles, shallow water

Fitness gym: weights left out, faulty equipment

Playing field: litter, frozen ground, potholes

Artificial astro: faulty fences/lighting, equipment left out