

Kettlethorpe HIGH SCHOOL

Year 9

Pe, Outdoor Pursuits and Sports Studies Knowledge Organiser Booklet

Name:

Tutor:



PE/ OP/ Sports Studies

THINK PINK!

If you see **PINK** in your books,
make the corrections.

Capital letters

- sentence **starts**
- proper **nouns**
- the word 'I'

Commas

- to separate three or more items in **a list**
- use a **pair of commas** when you are **inserting extra information** in the middle of the sentence
 - use **after an adverbial**

Before sunrise, Zac ate his breakfast.

Apostrophes

- to show that a letter or **letters are missing**: *I'm - haven't - don't*
- to show **something belongs to something else**: *The parents' meeting lasted an hour.*

1. Have you carefully reread your work?
2. Have you checked to see if you accidentally made any mistakes?
3. Are you proud of your work?

Common mistakes

There refers to a place or idea.
Their shows belonging.
They're is short for 'they are'.

use **should have** - not 'should of'
use **could have** - not 'could of'
use **would have** - not 'would of'

Spelling

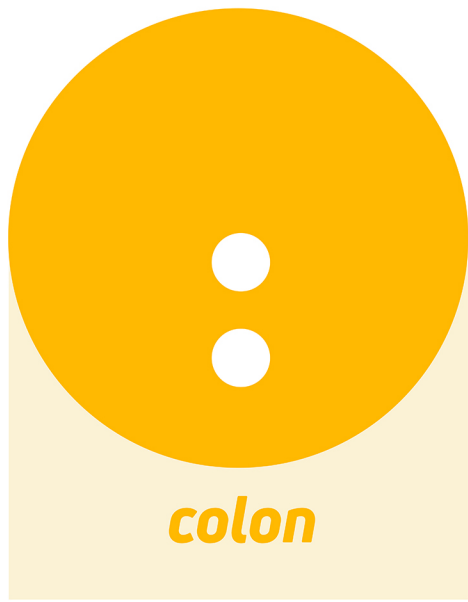
- use **the dictionary**
- make sure to use **subject specific vocabulary**

APPLY THE RULES. **B**E CONSISTENT. **C**HECK FOR ACCURACY.

WWW - Descriptive comment on what went well

EBI - Descriptive comment saying your work would be even better if

Punctuation



to introduce extra info



to link connected sentences



You only need one!



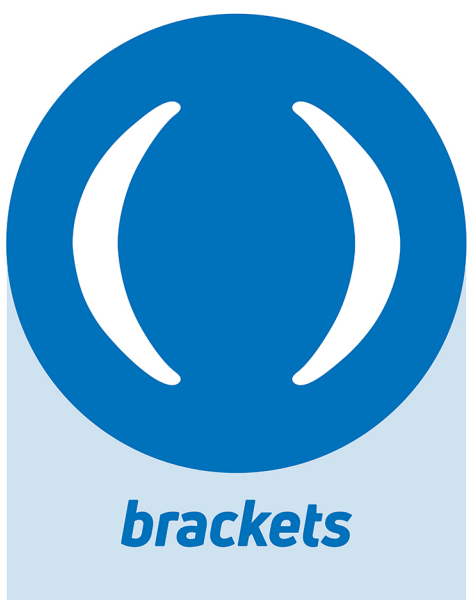
to leave a trailing thought...



to end a sentence



to add/separate information



to add extra information



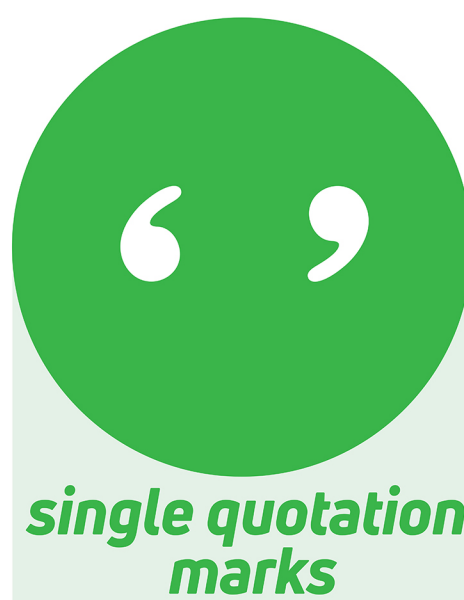
to add/separate information



for omission or possession



“Are you listening?”



to include quotes



at the end of a question

Do you know your roots?

Literacy

LASTS...

-scop-

root meaning **'to see'**

sub-

prefix meaning **'under'**

hypo-

prefix meaning **'below'**

ex-

prefix meaning **'out of'**

con-

prefix meaning **'with'**

-logy

suffix meaning **'study of'**

-graph-

root meaning **'writing'**

-bio-

root meaning **'life'**

-techn-

root meaning **'art / skill'**

micro-

prefix meaning **'small'**

-chron-




root meaning **'time'**

-phon-

root meaning **'sound'**

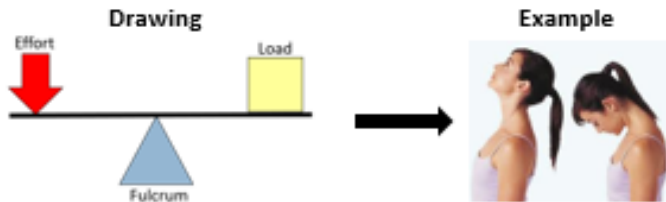
GCSE Physical Education – Movement analysis

Levers – a rigid bar that moves around a pivot point with force applied to it.

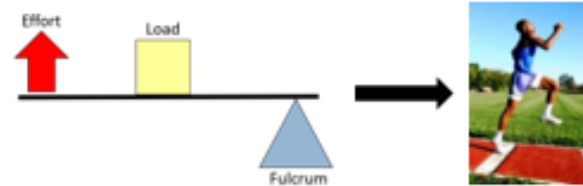
Fulcrum (F)	Effort (E)	Load (L)
A fixed pivot point 	The source of energy that will be applied 	The weight/resistance to be moved 

Classes of lever

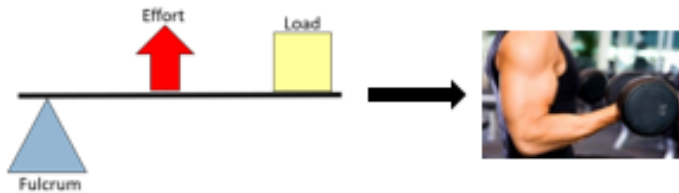
First class lever:



Second class lever:



Third class lever:



Mechanical advantage

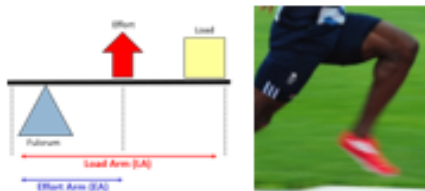
This is where a lever's effort arm is greater than its load arm.




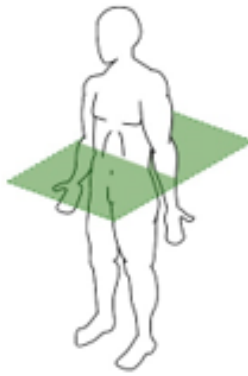

Large loads can be moved with limited effort.

Mechanical disadvantage



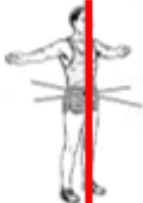



This is where a lever's load arm is longer than its effort arm.



Planes – imaginary lines that divide the body into two.

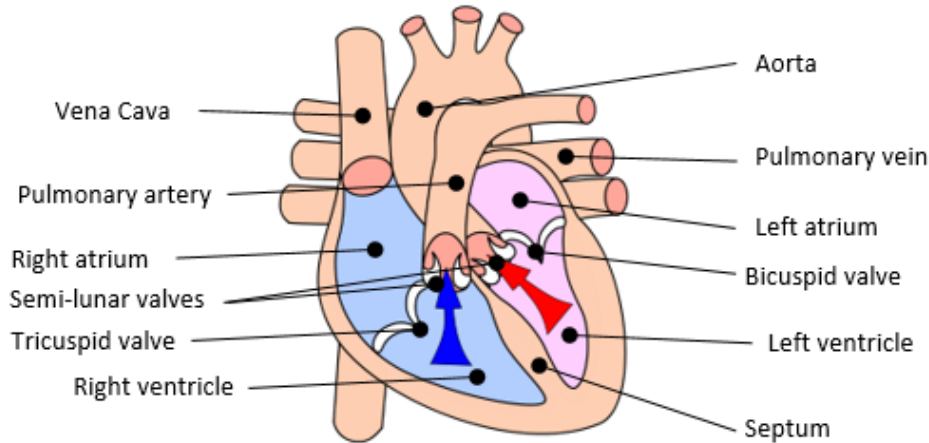
Frontal plane	Transverse plane	Sagittal plane
A vertical plane but this divides the body into front and back. 	A horizontal plane that divides the body into upper and lower halves. 	A vertical plane that divides the body into right and left sides. 

Axes – imaginary lines that the whole body turns around.

Sagittal axis	Vertical axis	Frontal axis
Runs through the body horizontally from the back to front.  Example: Cartwheel 	Runs through the body vertically from the top to bottom.  Example: Full twist 	Runs through the body horizontally from the left to right.  Example: Somersault 

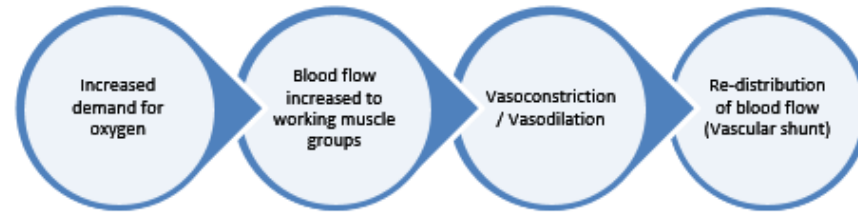
GCSE Physical Education – The structure and functions of the cardiovascular system

Structure of the cardiovascular system

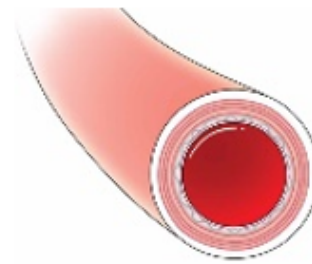


Deoxygenated blood = **BLUE** (Right side)
 Oxygenated = **RED** (Left side)

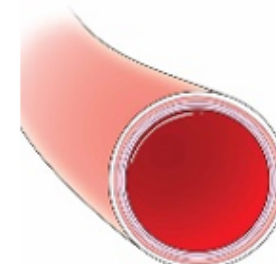
Vascular Shunting



Vasoconstriction – NARROWING



Vasodilation - EXPANDING






Function of the cardiovascular system

- Transport of oxygen, carbon dioxide and nutrients
- Clotting of open wounds
- Regulation of body temperature



Blood vessels

Arteries	Veins	Capillaries
<ol style="list-style-type: none"> 1. Away from the heart 2. Oxygenated blood (except pulmonary artery) 3. Thick/elastic walls 4. High pressure 5. Small lumen 	<ol style="list-style-type: none"> 1. Back to the heart 2. Deoxygenated blood (except pulmonary vein) 3. Thin walls + larger lumen 4. Lower pressure 5. Valves 	<ol style="list-style-type: none"> 1. In the tissue 2. Site of gaseous exchange 3. Very thin walls 

Components of blood - Red blood cells

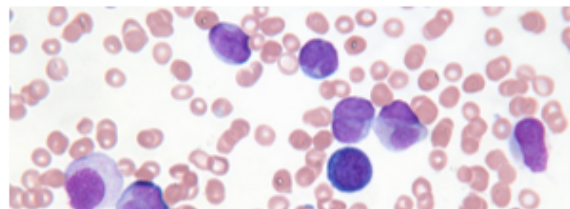
Carry oxygen from the lungs to the working muscles + Removes CO₂.

Haemoglobin binds the oxygen



White blood cells

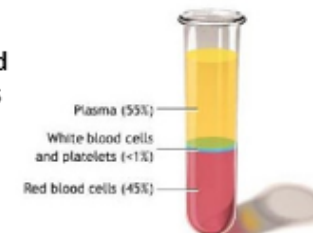
Are part of the immune system and **fight disease** and infection.



Platelets & Plasma

Platelets **clot blood** and form a scab around the site of injury.

Plasma is the **liquid/fluid** part of blood that allows it to flow.

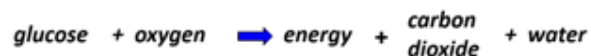


GCSE Physical Education – Aerobic/Anaerobic and long term effects of exercise

Aerobic and Anaerobic exercise – two methods of energy production by the body (Energy: the capacity to do work)

Two factors determine which method is used: **Intensity & duration**

Aerobic energy production – takes place in the presence of oxygen



Exercise intensity is moderate/low for a sustained period of time. *i.e. marathon runner/endurance cycling*



By products are released as sweat and CO₂ exhaled.

Anaerobic energy production – takes place in the absence of oxygen



Intensity of anaerobic activity is high as muscle contractions are powerful & quick *i.e. 100m sprinter/long jump*



By product (lactic acid) builds up and causes fatigue.

Cardiovascular system

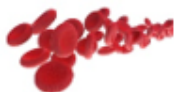
Cardiac equation – Cardiac output (Q) = Stroke Volume (SV) x Heart Rate (HR)

Long term effects of exercise

1. Cardiac hypertrophy – this is the increased size of the heart due to training. This impacts on the cardiac equation above.

Lower resting HR - **Increased maximum Q** - **Increased SV**

2. Increased elasticity in the walls of arteries and veins – more efficient constriction and dilation.
3. Increased number of red blood cells – has capacity to carry more oxygen to working muscles.



Respiratory system

Long term effects of exercise

1. Increased capillarisation – better blood supply around the alveoli.
2. Increased number of alveoli – results in better gaseous exchange (oxygen delivery and waste product removal)
3. Increased strength of diaphragm and intercostal muscles – this increased tidal volume and vital capacity.



Skeletal system

Long term effects of exercise

1. Increased bone density – strong bones reduce the risk of injuries.
2. Increased strength of ligaments and tendons – allows the body to change direction quickly without injury occurring.



Muscular system

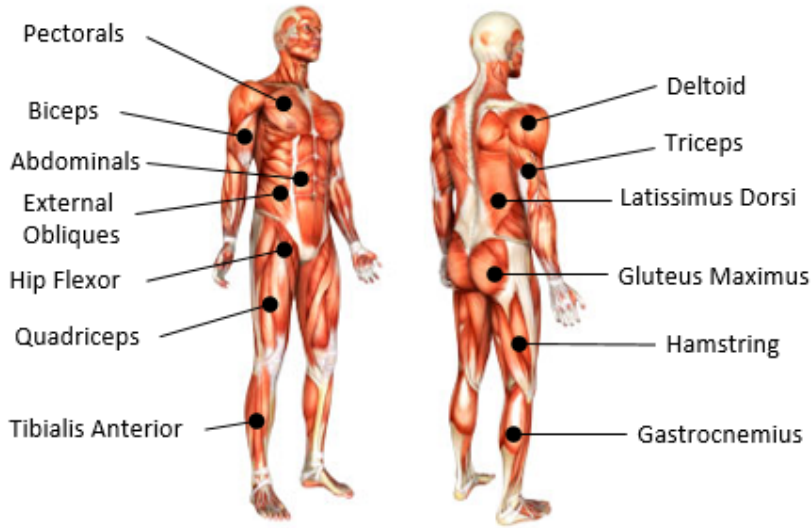
Long term effects of exercise

1. Muscular hypertrophy – increase in muscle size and strength/endurance.
2. Increase size and number of mitochondria – produces more energy aerobically.
3. Increased tolerance to lactic acid – reduces muscle fatigue.

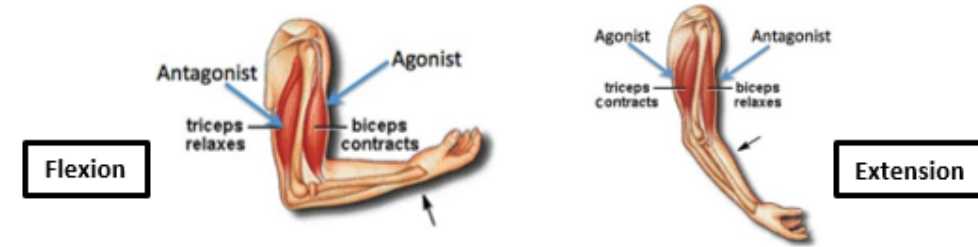


GCSE Physical Education – The structure and functions of the muscular system

Structure of the muscular system



Antagonistic pairs - Muscles are arranged in antagonistic pairs. As one muscle contracts (shortens) its partner relaxes (lengthens) *i.e.* Biceps and Triceps.



Agonist = the muscle that contracts to produce movement.
Antagonist = the muscle that relaxes to allow the movement to occur.

Examples in the body:

- Biceps & Triceps
- Quadriceps & Hamstring
- Hip Flexor & Gluteus Maximus
- Tibialis Anterior & Gastrocnemius

Types of muscle

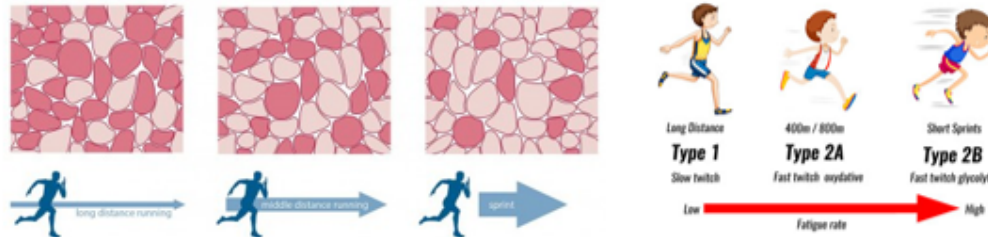
Voluntary muscles enable movement throughout the body.	Involuntary muscles are essential in maintaining healthy body systems.	Cardiac muscle is vital in sport because it makes the heart pump. Fitness training will strengthen cardiac muscle making the heart more efficient at pumping blood around the body.

The short term effects of exercise on the muscles:

1. Working muscles produce heat
2. Increased muscle fatigue due to lactate accumulation
3. Blood is re-distributed to working muscles (Shunting)

Muscle fibre types

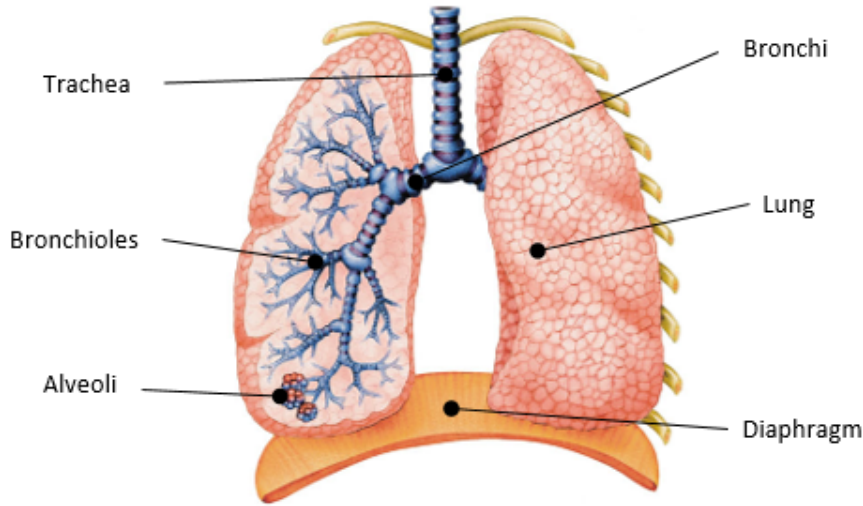
Slow twitch muscle fibres (Type I)	Fast twitch muscle fibres (Type IIa)	Fast twitch muscle fibres (Type IIx/b)
<ol style="list-style-type: none"> 1. Smaller in size. 2. Work aerobically with high fatigue resistance. 3. Have a good oxygen supply = deep red in colour. 4. They contract slowly, but can work for long periods. <p>Marathon runner</p>	<ol style="list-style-type: none"> 1. Larger in size 2. Work anaerobically & linked to high intensity activities. 3. Are paler in colour and have limited oxygen supply. 4. They contract quickly and powerfully, but tire easily. <p>400/800m runner</p>	<ol style="list-style-type: none"> 1. Large in size 2. Work anaerobically & linked to extreme high intensity activities. 3. Very high speed of contraction but low fatigue resistance. <p>100m Sprinter</p>



Link of the muscular and skeletal system – both systems work together to produce movement. *i.e.* a contracting muscle pulls on a bone which changes the angle at a joint.

GCSE Physical Education – The structure and functions of the respiratory system

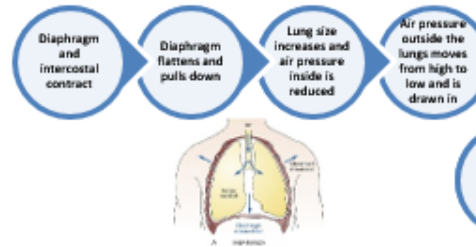
Structure of the respiratory system



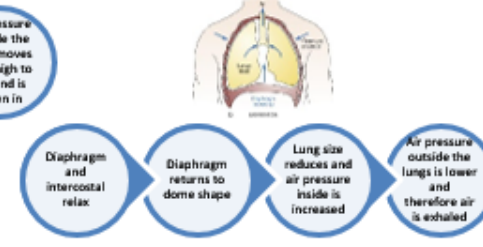
Composition of inhaled and exhaled air

Gas	Inhaled air	Exhaled air
Oxygen	21%	16%
Carbon dioxide	0.04%	4%
Nitrogen	78%	78%

Inhalation/Inspiration



Exhalation/Expiration



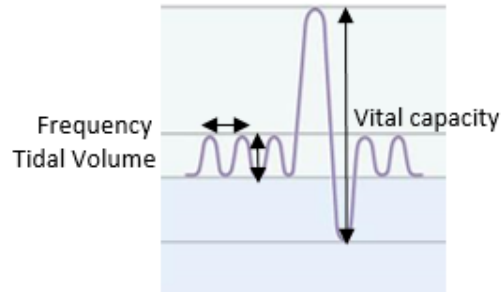
Respiratory values

Tidal Volume – the amount of air inhaled and exhaled per breath. Resting value = 500ml

Vital Capacity – The maximum amount of air exhaled following a maximal breath in.

Frequency – The number of breaths taken per minute. Resting value – 12-20 breaths.

Minute Ventilation – The amount of air inhaled and exhaled per minute. Measured in litres.



Gaseous exchange at the alveoli

- Diffusion is the movement of molecules from an area of high concentration to a low one.
- The alveoli have thin moist walls to allow diffusion to occur.
- Capillaries are closely wrapped around the alveoli to reduce the distance of diffusion and increase efficiency.

During inhalation:

- The concentration of **oxygen** in air is higher than the alveoli.
- The concentration of **carbon dioxide** in the blood is higher than that in the air.



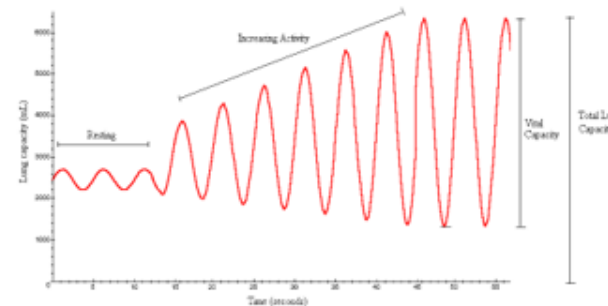
During exercise

Gaseous exchange increases as the intensity of the activity increases to cope with:

- An increase demand for oxygen at working muscles
- An increase in carbon dioxide production and the need to rid this waste product.

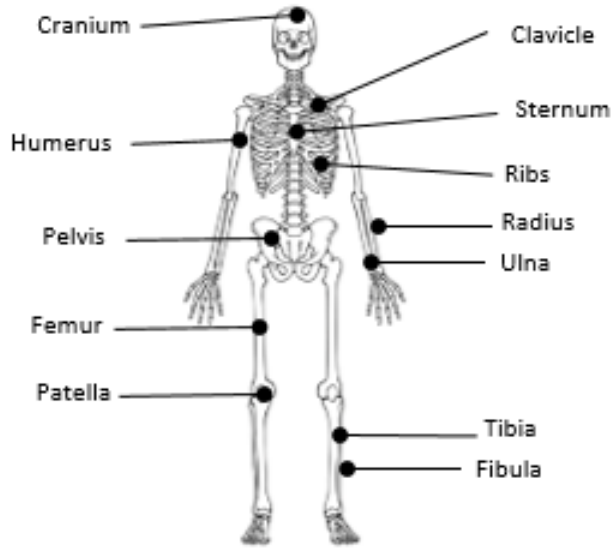
Frequency ↑ + Tidal Volume ↑

Training increases total lung capacity and vital capacity readings.

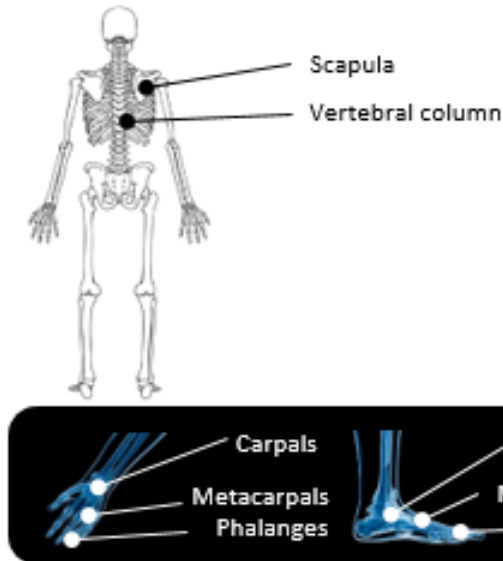


GCSE Physical Education – The structure and functions of the skeletal system

Structure of the skeletal system



Structure of the skeletal system



Vertebral Column

The vertebral column is divided into 5 sections. It is made up of irregularly shaped bones called vertebrae.

Each vertebra is protected with cartilage to prevent friction.

The vertebrae protects the spinal cord.



Function of the skeleton

- Protection of vital organs
- Muscle attachment
- Joints for movement
- Blood cell production (platelets, red and white)
- Storage of calcium and phosphorus

Classification of joint

- Pivot (neck – atlas and axis)
- Hinge (elbow and knee)
- Ball and socket (hip and shoulder)
- Condyloid (wrist)



Connective tissue

Ligaments – attaches bone to bone to add joint stability.

Tendons – attaches muscles to bone and contributes to joint movement as a result of muscle contraction.

Classification of bones

Long (leverage)	Short (weight bearing)	Flat (protection + muscle attachment)	Irregular (protection and muscle attachment)
Clear shaft region to the bone. <i>i.e. femur, humerus & phalanges</i>	Light, small and very strong. <i>i.e. carpals, tarsals</i>	Broad surface area for muscle attachment. <i>i.e. cranium</i>	Assist the functioning of certain joints. <i>i.e. Patella/vertebrae</i>

Joint movements

Flexion	Adduction	Rotation	Dorsi-Flexion (ankle joint)
Decreasing the angle at a joint (bending)	Limbs moving towards the midline of the body.	A twisting/turning action around a joint.	When the toes are turned up to the body.
Extension	Abduction	Circumduction	Planter-Flexion (ankle joint)
Increasing the angle at a joint (straightening)	Limbs moving away from the midline of the body.	A combination of flexion, extension, adduction & abduction.	When the toes are pointed away from the body.

Rock Climbing Skills and techniques

- ◆ **Matching** - A technique in rock climbing in which you bring both feet and hands to the same colour hold.
- ◆ **Switching** - A follow-up technique where you match and then move your foot or hand to a different hold.
- ◆ **Smearing** - The sole of your climbing shoe pressing onto the rock or slab using friction to gain vertical ground.
- ◆ **Knot tying** - You will most certainly need to be confident with a figure of eight knot.
- ◆ **Belaying** - The technique of holding the climbing rope for a climber so that they are safe, the line must always be kept tight to prevent the climber from falling - Always remember **VKNEE123!**
- ◆ **Bridging** - The legs are placed either side of a corner with the centre of gravity evenly distributed between the two. The only thing keeping you in place is the pressure through your feet.
- ◆ **Climb close to wall** - To keep your centre of gravity it is best to climb close to the wall. Try to not have your knees in the walls direction as it is not stable meaning they have no centre of gravity.

Officiating a sporting activity - What you need to know

- ◆ How to apply the rules and regulations in netball and table tennis.
- ◆ Understand the importance of consistency and accuracy.
- ◆ Be able to use the correct signals depending on the decision which you have made.
- ◆ How to communicate decisions (Hand signals or verbal communication)
- ◆ The importance of positioning to ensure you have the best view.

Creating your own session to improve your performance

<u>Things to consider</u>	<u>Break down of things to consider</u>	<u>Completed & Identified</u>
Have you identified your areas of improvement in your own sporting performance?	Which key skills are a strength? Which key skills are a weakness?	
What type of skill you're aiming to improve?	Simple skill? Complex skill? Skills which are specific to a sport. Open skill? Skills which are adaptable depending on the environment. Closed skill? Performed in a stable environment	
Which methods you're going to use to improve your performance	Different types of practice, altering context of performance or use of tools to aid evaluation.	
How you're going to measure your improvements.	Keep a log of performance? Peer observations?	

Learning Outcome 1

- ◆ **Different leadership roles and opportunities in sport**—e.g captain, manager, teacher, coach, expedition leader, role model
- ◆ **Role-related responsibilities**—e.g. knowledge of activity, enthusiasm for activity, knowledge of safety, knowledge of child protection issues, knowledge of basic first aid
- ◆ **Personal qualities which relate to leadership roles** e.g. reliability, punctuality, confidence, communication, creativity
- ◆ **Leadership Styles** - Laissez Faire, Autocratic, Democratic
- ◆ **Compare 2 leaders** - Pick 2 leaders and compare how good they are, based on their role related responsibilities and personal qualities.

Learning Outcome 3—Delivering your session

Things to consider:

- How will you make your session safe?
- What communication skills will you need?
- Will you use technical language?
- How will you motivate your group?
- How might you adapt your session if you need to?



Learning Outcome 2—Session Plan

- ◆ Use the sheet provided to complete a session plan

It must include:

- A skill to improve
- Progression practices
- Details on how to perform the skill (teaching points)
- Fun activities
- Warm up and Cool Down

Learning Outcome 2—Risk Assessment

- ◆ Use the sheet provided to complete a risk assessment

It must include:

- Potential Risks
- Corrective Actions
- Emergency Procedures

Learning Outcome 4—Evaluating your session

You will need to evaluate how effective your session was:

- What went well with the planning (effective activities / activities in correct order etc.)
- What went well with the delivery (was everyone motivated / did you stick to your timings)
- What could be improved with the planning (did you plan enough activities)
- What could be improved with the delivery (was everyone listening to you?)
- What could be improved if you did it again for the planning (did everyone meet the objectives that you set)
- What could be improved if you did it again for the delivery (could you position yourself better when talking to the group)

LO1/2: Tactics and strategies

Tactic

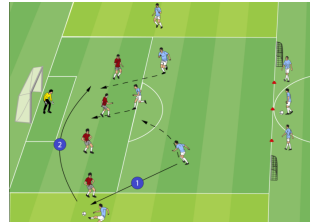
“A short term action carefully planned and designed to bring about a specific aim”



E.g. hitting a drop shot in badminton against an opponent standing too far back

Strategy

“A long term plan implemented over time and designed to achieve a long term aim”



E.g. attacking the wide areas in a football match

LO3: Officiating

“Maintaining a game or performance, enforcing the rules and ensure it is performed in the correct manner”

Football referee

Netball umpire

Dance judge



Table tennis umpire

Hockey umpire

Rugby referee

- Consistency
- Accuracy
- Positioning
- Use of signals
- Communicating decisions
- Applying rules and regulations

LO1/2: Skills and techniques

Skill

“The aspects of a performance that allow it to be done well”



Examples of skills

- Chest pass in netball
- Instep pass in football
- Drop shot in badminton
- Putting in golf
- Push pass in hockey
- Slice serve in tennis
- Flop tackle in rugby
- Lay up in basketball
- Forehand topspin shot in table tennis

Technique

“The way in which a skill is performed”



Example of a technique

- Instep pass in football:**
- Step alongside the ball with the non-striking foot to make a ‘number 10’ with your non-striking foot and the ball
- Turn the striking foot sideways and use the middle of the ‘instep’, striking where the foot curves inward between the heel and the toes
- Swing through the ball and follow through with the foot

LO4: Practice methods

Types of skill

- Simple—Simple skills transferrable between a number of sports (e.g. running)
- Complex—Sports specific skills unique to that sport
- Open—Adaptable depending on the environment
- Closed—Skills that will always be performed the same in a stable, non-changing environment

Types of practice

- Whole—i.e. the whole skill is performed at once
- Part—i.e. the skill is broken down into parts that are practiced separately
- Variable—The skill is practiced in a range of different situations that could affect the performance
- Fixed—A specific skill is repeatedly practiced in the same way