GCSE PE BIBLE

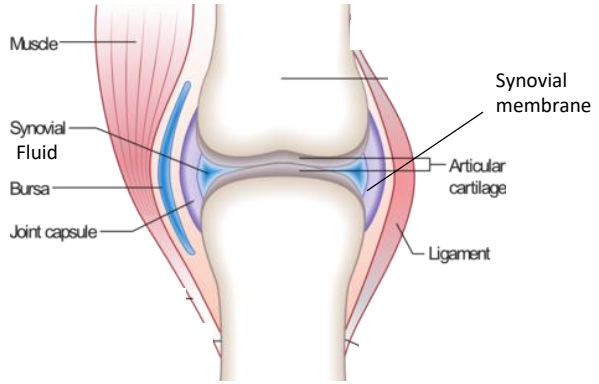
Paper 1: The human body and movement in physical activity in sport

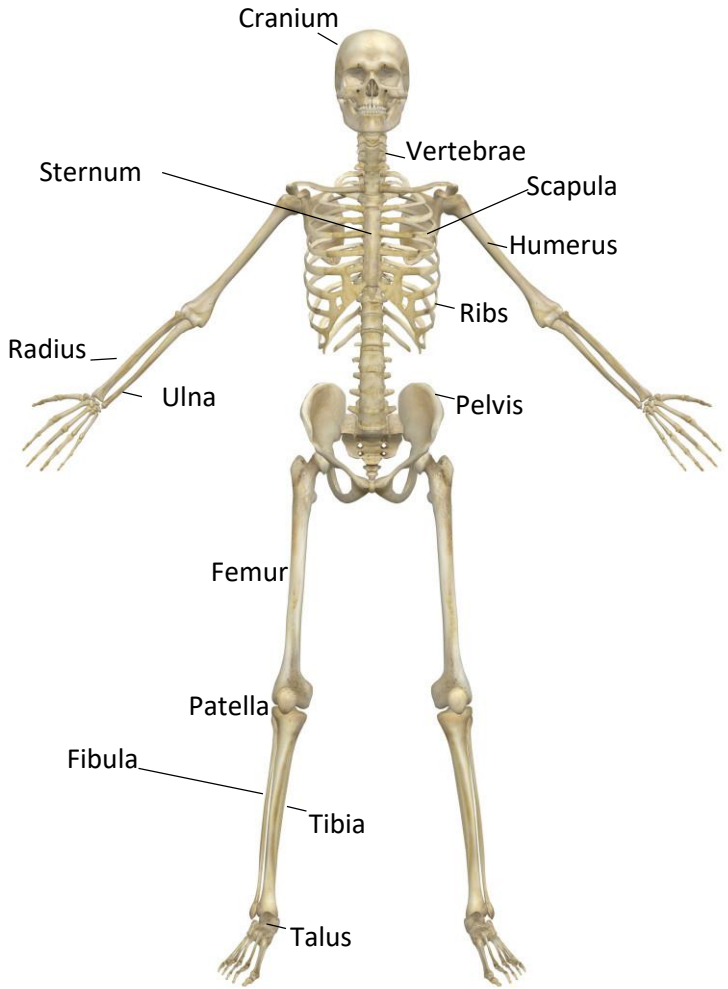
SKELETON

Functions of the skeleton:

Protection – protects vital organs – ribs (heart and lungs) - cranium (brain)
Support/Structure shape – rigid bone frame that gives us our shape. Supports soft tissues like skin and muscle.
Movement – muscles are attached the bones via tendons . Movement happens at joints
Mineral Storage – bones store minerals calcium and phosphorus. Makes bones string.
Blood cell production – blood cells produced in the bone marrow of bones.

Structure of a synovial joint





Types of bone

Long bone – are strong and are used by muscles to assist movement. E.g. humerus or femur

Short bones – support the weight of the body – they are weight bearing. E.g. tarsals in the foot

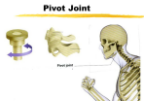
Irregular bones – Suited to protection and muscle attachment.

Flat bones – protect vital organs. E.g. ribs

Types of joint

Ball and socket joint – hip and shoulder – allows flexion, extension, abduction, adduction, rotation and circumduction.

Hinge – elbow, knee, ankle – allows flexion and extension.



Pivot joint - neck – allows rotation

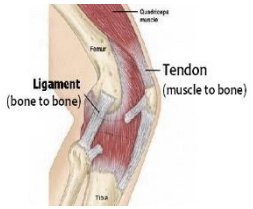
Condyloid – Wrist – flexion and extension, abduction and adduction.

MUSCLES

Connective tissue

Ligaments - attach bone to bone at a joint. They help to stabilise the joint.

Tendons – Attach muscle to bone. They help create movement.



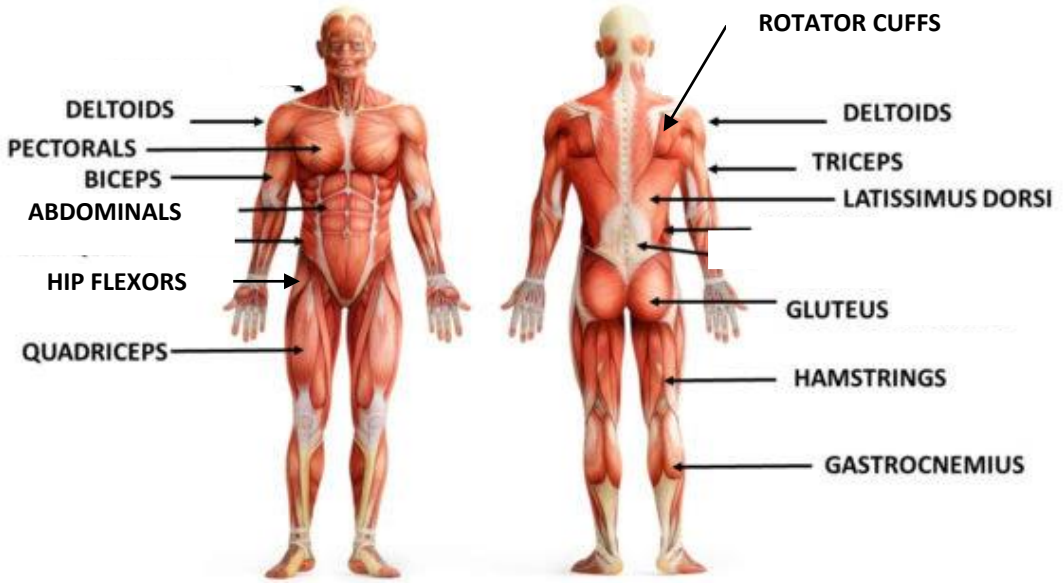
Types of muscle contraction

Isometric – muscle contracts but stays the same length

Isotonic – Muscle changes length. There are two types:

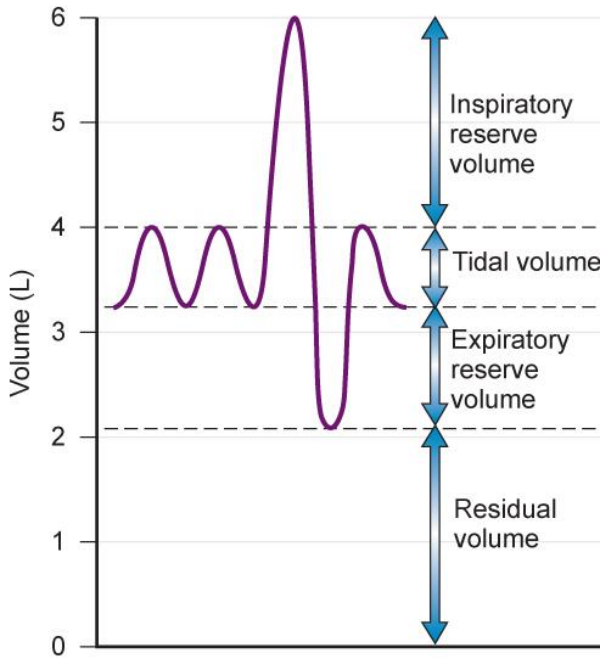
Concentric – the muscles that shortens and pulls.

Eccentric – muscle that lengthens. Helps control the speed of the movement.



Joint	Movement	Agonist (one that starts movement)	Type of contraction	Antagonist	Type of contraction	Bones
Elbow	Flexion	Bicep	Concentric contraction	Tricep	Eccentric contraction	Radius, ulna and humerus
	Extension	Tricep		Bicep		
Knee	Flexion	Hamstring		Quadriceps		Tibia, Fibula and Femur
	Extension	Quadriceps		Hamstring		
Ankle	Plantar-flexion	Gastrocnemius		Tibialis anterior		Tibia, Fibula and Talus
	Dorsi-flexion	Tibialis Anterior		Gastrocnemius		
Hip	Flexion	Hip flexors		Gluteus Maximus		Pelvis and femur
	Extension	Gluteus Maximus		Hip flexors		
Shoulder	Flexion	Front of deltoid		Back of deltoid		Scapula and humerus
	Extension	Back of deltoid		Front of deltoid		
	Abduction	Latissimus dorsi		Middle of deltoid		
	Adduction	Middle of deltoid		Latissimus dorsi		
	Rotation (arm out)	Infraspinatus and teres minor		Subscapularis		
	Rotation (arm in)	Subscapularis		Infraspinatus and teres minor		

LUNGS



Spirometer Trace

Tidal volume – the amount of air that is breathed in or out in one breath.

Inspiratory reserve volume – is the difference in volume from normal when we breath in as much as we can.

Expiratory reserve volume – the difference in volume after maximum exhalation.

Residual volume – the amount of air left in the lungs after the most forcible exhalation possible.

Changes in exercise

Tidal volume increases – deeper breaths in and out so the 'peaks' are higher and the 'dip' is lower.

Breathing rate increases – more breaths are taken per minute so the 'peaks' are close together.

Gaseous exchange

Gaseous exchange is the exchange of oxygen and carbon dioxide. It takes place in the alveoli in the lungs.

What makes gaseous exchange effective?

Large surface area of alveoli – there are thousands of alveoli in the lungs and they are round. Each of these factors increases the surface area of the alveoli meaning more exchange can take place at any one time.

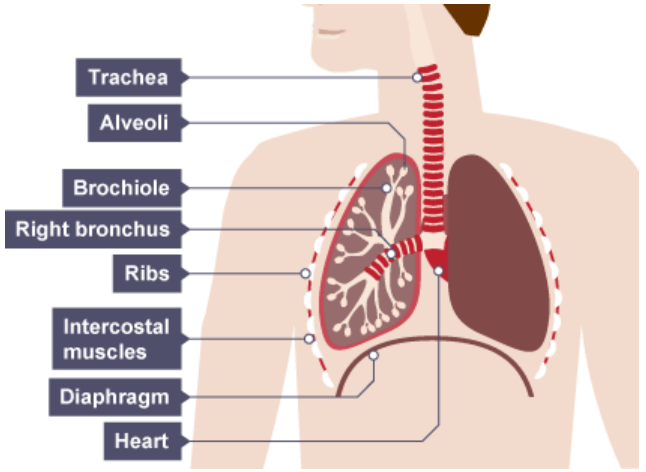
Moist thin walls – Gas can easily pass through the walls the exchange is very quick

Lots of capillaries – Capillaries surround the alveoli to allow exchange to take place as they carry blood.

Large blood supply – More blood means there is more opportunity for gaseous exchange.

Movement of gas from a high to a low concentration - gases move down the concentration gradient – so carbon dioxide is force out and oxygen is forced in.

Short distance for diffusion – happens quickly



Delivery of oxygen

Oxygen is transported from the heart to the working muscles via the blood.

Red blood cells contain haemoglobin. Oxygen combines to this substance to form oxyhaemoglobin.

Carbon dioxide can also be carried by haemoglobin.

Mechanics of breathing

Inhaling – breathing in

- The external intercostal muscles contract – moving the ribcage up and out
- The diaphragm contracts – flattening.

These two movement increase the thoracic cavity forcing air into the lungs.

In exercise lungs can expand more as pectorals and sternocleidomastoid contract – increasing volume further.

Exhaling – breathing out

- External intercostal muscle relax – moving rib cage in and down (internal intercostals contract)
- Diaphragm relaxes – moves into dome shape.

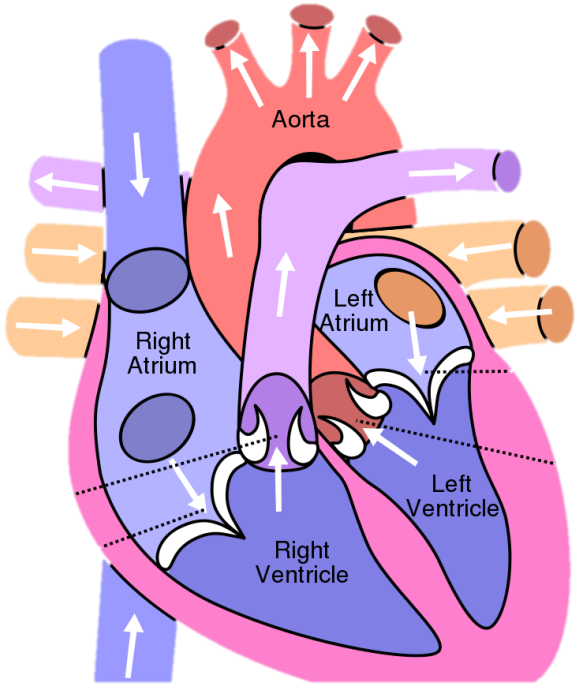
These two movement decrease the thoracic cavity forcing air out of the lungs.

Rib cage can be pulled down quicker in exercise by abdominals forcing air out quicker.

HEART

Heart rate – The number of times the heart beats per minute.
Stoke volume - The volume of blood pumped with each heart beat by each ventricle of the heart .
Cardiac output – the volume of blood pumped by each ventricle in the heart per minute.

Cardiac output = Heart rate x Stroke volume

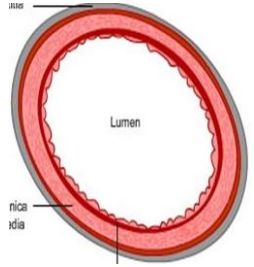


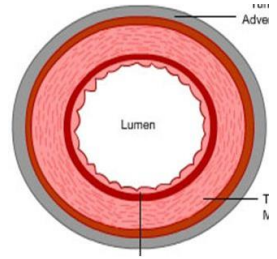
Cardiac cycle and the pathway of blood

Pathway of blood
- Deoxygenated blood into the right atrium
- Then forced into the right ventricle
- Transported to the lungs via the pulmonary artery
- Blood is oxygenised via gaseous exchange
- Blood transported back to the hear via the pulmonary vein.
- Blood re-enters the heart in to the left atrium.
- Moves into the left ventricle.
- Oxygenated blood is ejected and transported to the body via the aorta.

Cardiac cycle
Diastole/diastolic the ventricles are relaxed and are filling with blood from the atrium.
Systole/systolic – the ventricles contract pumping blood out of the heart.

Redistribution of blood flow (vascular shunt mechanism)
Changes in exercise
- Arteries widen to stop blood pressure getting to high in exercise.
- Arteries supplying working muscles vasodilate to increase blood supply to the muscle.
- Arteries supplying inactive organs vasoconstrict to restrict the amount of blood being delivered.
- The amount this occurs depends on the intensity of exercise.





Capillaries
- Carry blood through the body to exchange gases and nutrients
- Very thin walls so substances can easily pass through.
- Narrow so a lot of them can fit into the body, meaning the have a large surface area.
- Blood flows through them slowly to increase time for exchanges to take place.

Veins
- Carry blood towards the heart.
- Have valves to prevent the back flow of blood.
- Carry deoxygenated blood (except pulmonary vein).
- Carry blood at low pressure, so have thinner walls and less muscle. They have a large lumen.
- Muscle in the wall means the artery can widen (vasodilation) or narrow (vasocontriction) to control blood flow.

Arteries
- Carry blood away from the heart
- Blood is oxygenated (except pulmonary artery)
- Thick muscular walls as blood is travelling at a high pressure.
- Muscle in the wall means the artery can widen (vasodilation) or narrow (vasocontriction) to control blood flow.

AEROBIC AND ANAEROBIC EXERCISE

Aerobic exercise

Aerobic respiration occurs in the presence of oxygen.
The oxygen is used to release energy from glucose.

Glucose + Oxygen ⟶ Carbon Dioxide + Water + Energy

This happens when the body is able to meet the demands of the exercise – e.g. marathon. The body is able to get the oxygen to muscles in time.

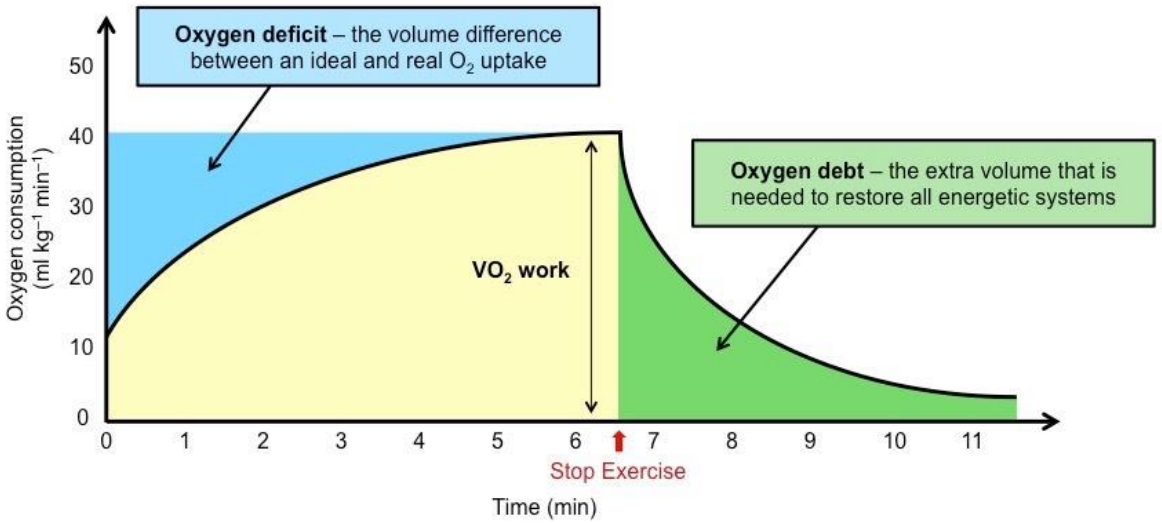
Anaerobic exercise

Anaerobic respiration occurs in the absence of oxygen.

Glucose ➡ **Lactic Acid + (little) Energy**

This happens when the body is not able to meet the demands of the exercise – e.g. sprinting.
The body isn't able to get the oxygen to muscles in time.

Can only do this for a short period of time as lactic acid builds up and causes fatigue in the muscles.



Excess post-exercise oxygen consumption (EPOC) or Oxygen debt.

EPOC – The amount of oxygen the body needs to take in following a period of exercise to remove lactic acid and recover.

How it happens - when we begin exercise the body is not able to perform aerobic respiration straight away to meet the demands of the exercise. The body therefore performs anaerobic respiration, producing lactic acid. In order to convert lactic acid back to pyruvate (a non-harmful substance) the body needs oxygen. Therefore after exercise we take in extra oxygen by maintaining an increased breathing rate to ensure all body systems are ready to be used again, and any harmful substances are removed.

Recovery process from vigorous exercise:

Cool down
- Maintain elevated breathing rate and heart rate – ensure that oxygen is still being delivered to the muscles to aid the removal of lactic acid.
- Stretching – increase flexibility of the muscles.

Manipulation of diet
- Rehydration – increase intake of water to replace any that has been lost through sweating
- Intake carbohydrates – this will replenish energy stores

Ice baths/Massage
- Prevent DOMS (delayed onset of muscle soreness.

Depending on the activity that is performed, a different recovery process would be undertaken. For instance, a marathon runner would need to intake more carbohydrates and water than someone who has ran 100m.

EFFECTS OF EXERCISE

Immediate

These are the things that occur during exercise.

You will become hot/sweaty and may have red skin. This is due to the body trying to cool down.

Increase in depth and frequency of breathing – this will deliver more oxygen to the working muscles to allow them to continue to work.

Increase in heart rate – this will increase the blood flow to the muscles and therefore more oxygen will be delivered to the working muscles.

Short-term

These are the effects that may occur 24-36 hours after exercise.

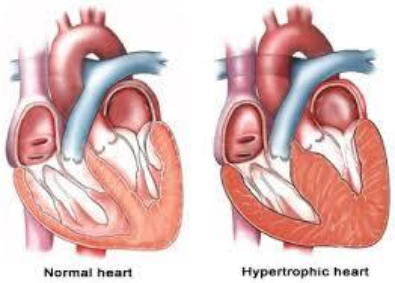
- Tiredness/fatigue
- Light headedness
- Nausea
- Aching/ DOMS/cramp

These are more likely to occur if the recovery process has not been followed.

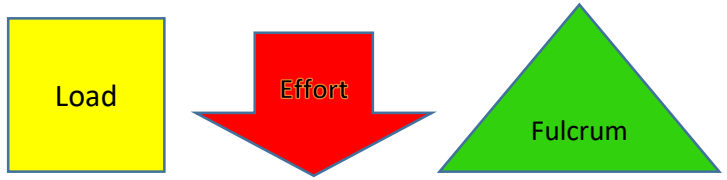
Long-term

These are the effects that may after months-years of exercising.

- Change in body shape
- Improvement in specific components of fitness including:
  - Muscular endurance
  - Speed
  - Suppleness
  - Cardiovascular endurance
- Increase in the size of the heart (hypertrophy)
- Lower resting heart rate (bradycardia)

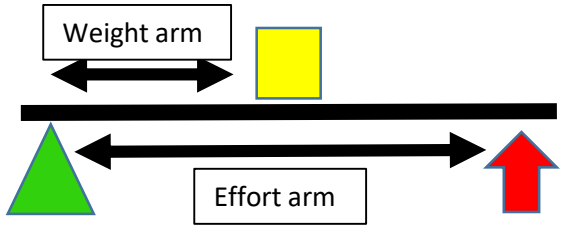


LEVER SYSTEMS

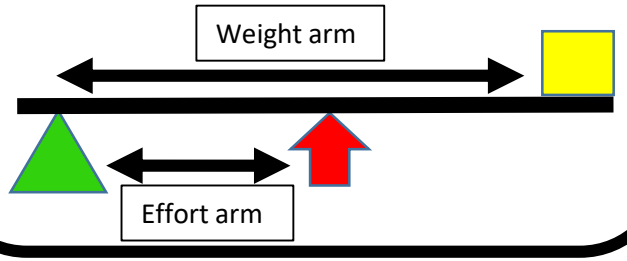


Fulcrum – Joint where movement happens
Effort – force applied by muscle
Load – what is being lifted (resistance)

Mechanical advantage
When the effort arm is longer than the weight arm.
Second class levers have this
Mechanical advantage = effort arm ÷ weight arm



Mechanical disadvantage
When the effort arm is shorter than the weight arm.
Third class levers have this
Large effort for a small load, but it is done quickly through a large range of movement.

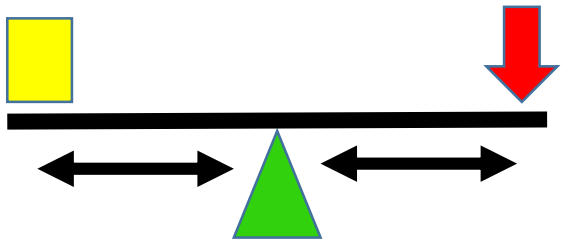


How to remember:

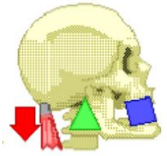
Letter represents the middle component in that particular class of lever.

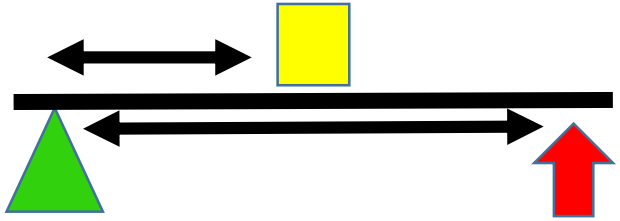
1 2 3

F L E



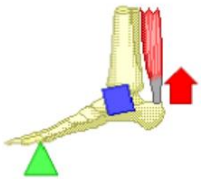
Fulcrum located in between the effort and the load.

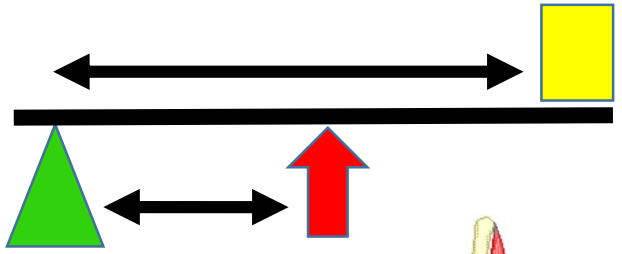




Load is located in between the fulcrum and effort.

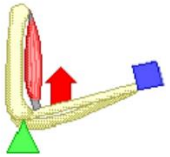
Plantar-flexion and dorsiflexion at the ankle.



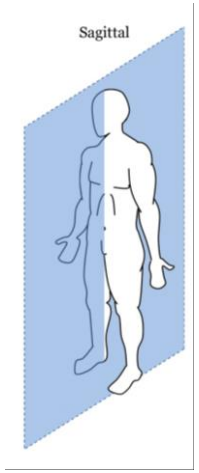


Effort is located in the middle of the fulcrum and the load.

Flexion and extension at the shoulder, hip and knee.
Flexion at the elbow.



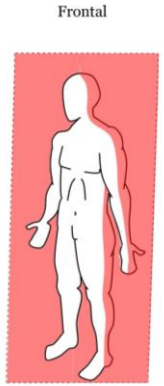
PLANES AND AXIS



Sagittal plane – divides left and right.

Movement here is up and down movements of flexion and extension.

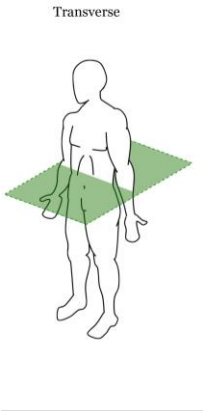
E.g. running action



Frontal plane – divides front and back

Movement here is abduction and adduction.

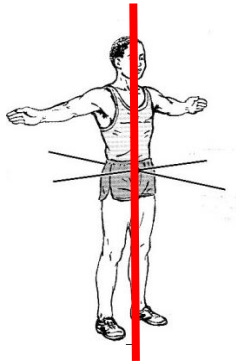
e.g. Cartwheel



Transverse plane – divides upper and lower halves of the body.

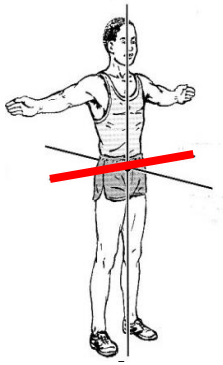
Movement here is rotational.

e.g. hip rotation in a golf swing.



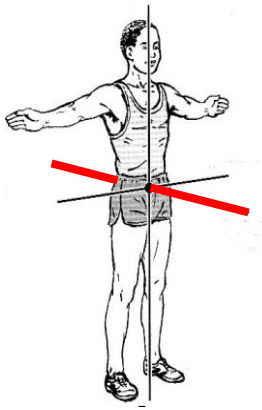
Longitudinal axis – runs through the body from the top to the bottom.

E.g. pirouette or a 360 degree rotation.



Transverse axis – runs horizontal through the body.

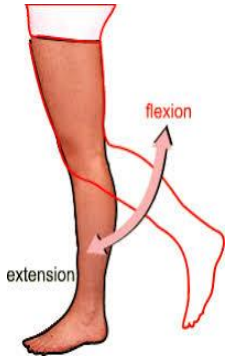
e.g. somersault or forward roll



Frontal axis – horizontal from the back to the front of the body.

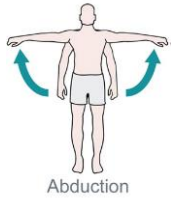
e.g. cartwheel

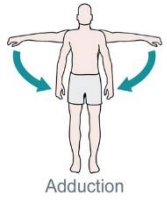
TYPES OF MOVEMENT



Flexion
Decreasing the angle at a joint.
Extension
Increasing the angle at a joint.

Occurs at the knee, elbow, hip and shoulder.



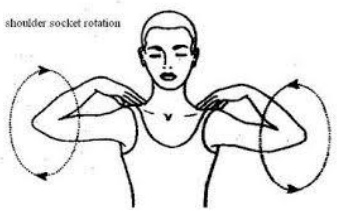


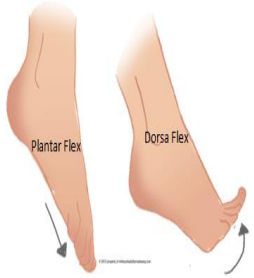
Abduction
Moving a limb away from the midline of the body.
Adduction
Moving a limb towards the midline of the body.

Occurs at the hip and shoulder.

Rotation
Circular movement at a joint.

Occurs at the shoulder and hip.





Plantar Flexion
Pointing the toes downwards
Dorsiflexion
Backward bending of the foot (towards the leg)

Occurs at the ankle.

Movements you need to know:

- Elbow action in push ups/ throw in
- Shoulder action in cricket bowl
- Hip, knee and ankle in running
- Hip, knee and ankle in kicking
- Hip, knee and ankle in standing vertical jump
- Hip, knee and ankle in squats

HEALTH-RELATED COMPONENTS OF FITNESS AND TESTS

Cardiovascular endurance

Definition
Ability of the heart and lungs to supply oxygen to the muscles, so that the whole body can be exercised for a long period of time.

Test - Multistage fitness test (bleep test)
20 metre shuttles have to be run to the sound of the bleep which gets faster with each level.

Strength

Definition
Amount of force that a muscle or muscle group can apply against a resistance.

Test – maximal strength
One Rep Max – the highest weight you can perform a repetition with.
Test – Strength
Hand grip dynamometer – measures grip strength. Grip as hard as you can for 5 seconds and record the score.

Muscular endurance

Definition
The ability to repeated use muscles over a long time, without getting tired.

Test - Sit up bleep test
Perform sit ups to a set pace of 25 per minute. Can last for up to 4 minutes if you manage to keep the pace. Measured by how many you complete.

Flexibility

Definition
The amount of movement possible at a joint.

Test - Sit and reach
Legs are straight out with the feet flat on the box. Reach as far forward as you can recording the result in centimetres.

Speed

Definition
Is the rate at which someone is able to move, or to cover a distance in a given amount of time.

Test
30 metre sprint test – run the 30m as fast as you can and record time in seconds.

What you need to know:

- Definitions of components
- Test for component
- The equipment needed for the test
- How the test is measured (e.g. levels, cms, seconds)
- Who would need this component of fitness

Reasons for fitness testing:

- Identify strengths and weaknesses
- Monitor improvement
- Show fitness levels
- Inform training
- compare to others and averages
- Motivate and set goals

Limitations to testing:

- Not sport specific
- Don't replicate movement of activity
- Don't replicate competitive conditions of sport
- Measurements and reliability are questionable
- Must be carried out correctly to increase reliability

SKILL-RELATED COMPONENTS OF FITNESS AND TESTS

Power

Definition
Is a combination of speed and strength.
Speed x strength

Test - Vertical Jump test
Mark the highest point that you can reach on the wall while standing. Jump and mark the wall at the highest point of jump. Measure the distance between the two marks.

Co-ordination

Definition
Is the ability to use two or more parts of the body together, efficiently and accurately.

Test -Wall toss
Stand 2m away from the wall and throw a ball underarm. Catch the ball with the opposite hand. See how many catches you can do in 30 seconds.

Reaction time

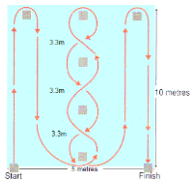
Definition
Is the time taken to move in response to a stimulus.

Test -Ruler drop test
Ruler is held vertically above your hand between your finger and thumb with the 0 being nearest to your hand. The ruler is then let go and you record at which cm you catch it on.

Agility

Definition
Is the ability to change body position or direction quickly and with control.

Test - Illinois agility run
Start lying face down. Complete the course as quickly as you can gaining the shortest possible time.



Balance

Definition
Is the ability to keep the body's centre of mass over a base of support.

Test -Stork test
Stand on the one leg with the other touching your knee and your hands on your hops. Raise your heel so you are on your toes. Hold this position for as long as possible.

What you need to know:

- Definitions of components
- Test for component
- The equipment needed for the test
- How the test is measured (e.g. levels, cms, seconds)
- Who would need this component of fitness

Reasons for fitness testing:

- Identify strengths and weaknesses
- Monitor improvement
- Show fitness levels
- Inform training
- compare to others and averages
- Motivate and set goals

Limitations to testing:

- Not sport specific
- Don't replicate movement of activity
- Don't replicate competitive conditions of sport
- Measurements and reliability are questionable
- Must be carried out correctly to increase reliability

PRINCIPLES OF TRAINING

Specificity

Matching the training to the needs of the sporting activity and individual.

Progressive overload

Gradual increases in exercise to cause a greater than normal stress to the body for training adaptations to take place. Done via **FITT.**

Reversibility

Any adaptation of training will be lost as a result of not training.

Tedium

There needs to be variety in your training to avoid it becoming boring.

FITT Principles

Frequency – number of times one trains

Intensity – how hard you train

Time – how long your train for

Type – What exercises and methods of training you should use.

TRAINING ZONES AND METHODS OF TRAINING

Training zones:
Aerobic target zone – 60-80% of your maximum HR

Anaerobic target zones – 80-90% of your maximum HR.

Calculations
Maximum HR = 220 – age
Aerobic target zone = maximum HR x 0.6 (lower)
= maximum HR x 0.8 (higher)
Anaerobic target zone = maximum HR x 0.8 (lower)
= maximum HR x 0.9 (higher

Continuous training
Training that involves activity without rest intervals
This training involves exercising at a steady, regular pace (eg. jogging). It lasts for at least 20 minutes and is ***aerobic.***
e.g. running, walking, cycling, swimming and rowing

Advantages - Highly effective for long distance athletes and needs only a small amount of equipment.
Disadvantages - It can be very boring. It doesn't improve anaerobic fitness

Interval training
Interval training is *'training that incorporates periods of exercise and rest'*. An example of interval training would be sprinting for 25m and walking back to the start. it is a high intensity activity followed by a low intensity activity.

Advantages Quick and easy to set up. Can mix aerobic and anaerobic exercise to replicate team games.
Disadvantages - It can be boring. It can be hard to keep going when you get fatigued.

Static stretching
Training that is the gradual stretch of a muscle. It is where muscles are held in positions for around 30 seconds to increase flexibility.

Active - you use your own muscles to hold the stretch position.

Passive - you use someone else or a piece of equipment to help you hold the stretch.

Circuit training
Circuit training is *'a series of exercises performed at stations that focus on different muscle groups'*. Each exercise is called a station and should work a different area of the body to avoid fatigue. Circuit training can develop many components and can be specific to sports by using skill stations.

Advantages – Match training to specific needs and components of fitness. Variety within training.
Disadvantages – Takes a lot of time to set up and can require lots of space and equipment.

Fartlek training
Fartlek training is *'training which varies in intensity and duration and consists of bursts of intense effort alternating with less strenuous activity'.* This training involves exercising at different speeds/intensities. For example 1 lap jogging, 1 lap sprinting, 1 lap running. Due to the different speeds it is both ***aerobic*** and ***anaerobic***. It can also be completed over different terrains (hills/roads etc.).

Advantages Good for sports that require changes in speed. Easily adaptable to suit different fitness levels.
Disadvantages It's easy to skip the harder parts. Difficult to know how hard someone is trying.

TRAINING ZONES AND METHODS OF TRAINING

Weight training
Weight training is *'a method of training that uses free weights or resistance machines'.* Weight training can help someone to increase strength (high weights x low reps – 70% of one rep max 3 sets of 4-8 reps) and muscular endurance (low weights x high reps – below 70% of one). It can also help participants to recover from injury.

Advantages - Can be adapted to suit different sports. Can target muscle groups to strengthen.
Disadvantages - Can cause muscle soreness.
Can cause injury if the incorrect technique is used.

Plyometric training
Plyometrics is a *'a method of training that uses jumping, hopping and bounding to increase power'*. Plyometrics exercises involve rapid and repeated stretching and contracting of the muscles. Plyometics increases the speed at which the muscles can contract and therefore also affects power. This can involve jumping on and off of boxes.
Advantages – only form of training that directly improves your power
Disadvantages - Demanding on the muscles so can cause injury.

High altitude training:
Training done at higher than sea level. At a higher altitude pressure is lower, so there is less oxygen in each breath. The body therefore produce more red blood cells, meaning more oxygen can be delivered to the muscles improving cardiovascular and muscular endurance.
Advantages – Improve cardiovascular and muscular endurance
Disadvantages - effects only last for a short time. Can be very expensive. May get altitude sickness and lose training time.
.

SEASONAL TRAINING

Preseason

Preparation – performer makes sure they are ready for season.

Focus on general fitness and developing specific components of fitness and skills.

Competition/playing season

Peak – should be at peak of their fitness and ability.

Maintain current fitness and continue to develop skill.

Too much training may cause fatigue.

Post-season

Transition - performer needs to rest and relax to allow their body to recover.

Light aerobic training is done to maintain general fitness

PREVENTING INJURY DURING/ BEFORE/AFTER TRAINING

Warm up - Complete all stages of a warm up prior to exercise to minimise the chance of injury.
Avoid overtraining –make sure that you don't push the body to far e.g. use the correct weight.
Appropriate clothing and footwear – make sure you are not wearing anything that could get caught. Use protective equipment and make sure footwear is suitable.
Taping/bracing – support joints where needed by restricting the range of movement – particularly for recently injured areas.

Hydration – drink plenty of water during and post exercise to replenish stores.
Stretches – Avoid pushing muscles to far (overstretching) or bouncing.
Technique – Make sure this is done correctly so that muscles are not injured.
Appropriate rest – leave enough time for your body to repair and rebuild muscles after exercise.

WARM UP AND COOL DOWN

Components of a warm up

Pulse raiser – Light exercise that increases your heart rate. Done to increase oxygen flow to muscles, increase body temperature and warm up muscles.
Stretching and mobility – increases the flexibility (therefore range of movement) at a joint. Focus on the muscles and movements you will use.
Skill based practice/ familiarisation – a practice that is related to sport or activity. Helps muscles prepare, but also mental preparation for performance. It gets you in the zone.

Benefits of a warm up

ROM – Increased range of movement at joints and therefore more flexible
Psychological preparation – gets performer in the zone so they can focus on performance.
Practice of movements – activates muscle memory and gets performer prepared to perform
Prevents injury - the body is prepared for exercise.
Body temperature – Raises warming up muscles ready for exercise.

Example warm up

Footballer

Pulse raiser – jog around the pitch for 5minutes.

Stretching/mobility – leg swings, arm swings, hip circles, open and close the gate, Frankenstein walks, walking lunges

Skill based practice – pass and move, shooting drill, corner practice.

Components of a cool down

Pulse lower – this is a gentle exercise to keep the heart and lungs working harder than usual. The intensity of the exercise should gradually be reduced.

Stretching – Should be static or PNF. This is done to increase mobility gains.

Benefits of a cool down

Allows the body to recover - gradually decreases breathing rate and heart rate to resting state. Prevents things such as blood pooling.

Removal of waste products – Cooling down helps the body get rid of waste products such as CO2 and lactic acid

Prevent DOMS – removal of lactic acid prevents the delayed onset of muscle soreness.

Example cool down

Pulse lower – slow jog around the pitch into a walk

Stretches – hamstring stretch, toe raisers (gastrocnemius stretch), quadriceps stretch (heel pulled towards the bum)

USE OF DATA

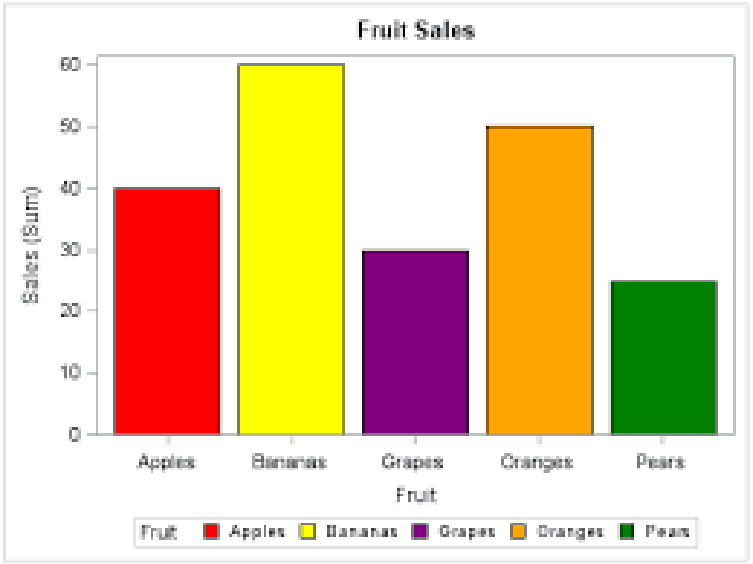
Types of data

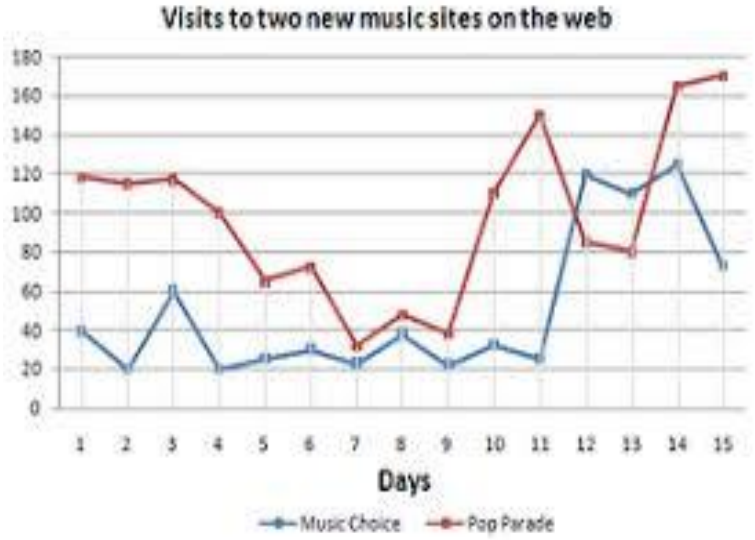
Quantitative data

- Measures something – done in numbers
- Can be collected through questionnaires or surveys.
- Things such as the time taken to finish a race or scores gained in a fitness test.
- Data can be presented in tables and graphs.

Qualitative data –

- Describes something – will be in words.
- Can be collected through interview or observation.





You need to be able to plot a bar chart and a line graph from given data.

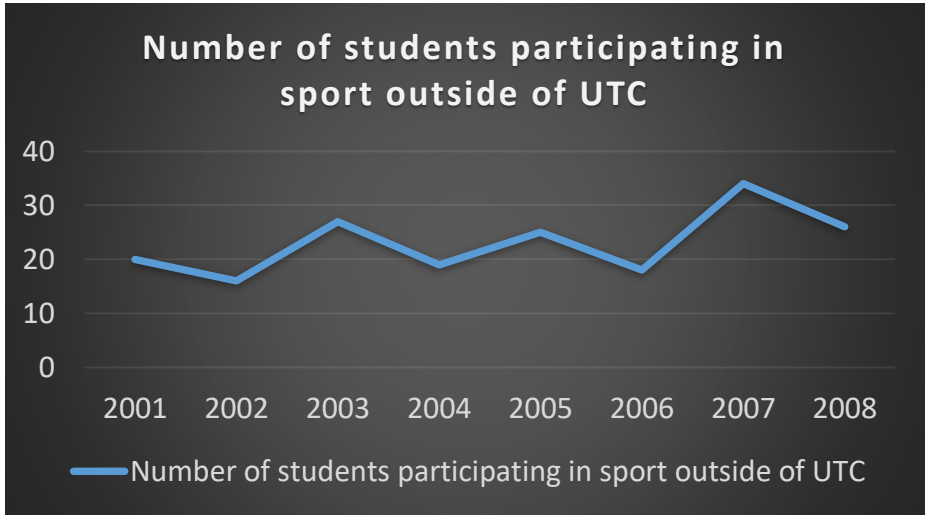
- X axis (one on the bottom) – should be the thing that is controlled such as the day/week or year you took the measurement.
- Y axis (one up the side) – is the thing you are measuring such as time or score achieved.
- Axis should be numbered with the small scale possible for the results.
- Ensure that you label the axis with titles.

Year	2010	2011	2012	2013	2014	2015
No. of yellow cards	6	7	10	11	8	9

Tables

You need to be able to present data that is given into a table.

Highlight in column one what the data is that you are measuring. In each row you should then present the data you have collected that represents each row.



Analysing graphs

You need to be able to analyse tables, bar charts, line graphs and pie charts, and discuss the data that is presented.

E.g. in the graph presented to the left you could discuss how the number of participants increased rapidly from 2006 to 2007, but saw a slight decrease again by 2008.

There has been a slight increase from 2001 with 20 students to 2008 with 28 students participating in sport.

Paper 2: Socio-cultural influences and well-being in physical activity and sport

CLASSIFICATION OF SKILLS AND INFORMATION PROCESSING

Open / Closed

Open – performed in a changing environment where a performer has to react and adapt to external factors. E.g. position of players during a football tackle.

Closed – Performed in the same predictable environment and is not affected by external factors. E.g. a break in snooker.

Basic / Complex

Basic – this is a simple skill and doesn't need much concentration. E.g. running

Complex – a skill that requires a lot of concentration e.g. volley in football.

Self-paced / Externally paced

Self paced – Starts when the player decides. E.g. corner kick in football.

Externally paced – starts because of external factors. E.g. opponents closing you down in football may dictate when you make a pass.

Gross / fine

Gross – involves powerful movements performed by large muscles groups e.g. long jumps

Fine – uses smaller muscles groups to carry out precise movements that require accuracy and coordination. E.g. throwing a dart.

Input – the information you receive through your senses.

Decision making – deciding how to respond to the input. Will compare to what is happening at the time and past experiences.

Output – muscles react to the messages from the brain telling them what to do to perform the skill.

Feedback – receive extrinsic or intrinsic feedback which helps to improve the skill next time.

GOALS AND SMART TARGETS

Types of goals

Outcome – focused on performing better than other people e.g. winning. These are focused on the end result.

Performance – improving personal performance e.g. distance you can hit a golf ball.

FEEDBACK

Intrinsic/ Extrinsic

Intrinsic – feedback that comes from you based on how it felt. Works best for experienced performers.

Extrinsic – Someone tells you or shows you what happened and how to improve. Can be good for beginners as they can't assess their own performance.

Knowledge of performance/ results.

Knowledge of performance – whether you did the correct movement or skill. Works well for experienced performers as they can fine tune skills. Can be extrinsic or intrinsic.

Knowledge of results – Looking at the outcome. This is extrinsic and can include data. Useful for inexperienced performers as they need to be told whether or not they achieved the right result.

Positive / negative

Positive – Focus on what you did well. Helps you remember which bits of the movement you should try to repeat.

Negative – feedback focuses on what you didn't do well. This can be useful with experienced performers as it can motivate them to reach a goal. But this should be avoided too much with beginners as it can demotivate them and not want them to learn a new skill.

TYPES OF GUIDANCE

Verbal – an explanation in words.

Advantages
- Can be combined with other types of guidance
- Helpful for experienced performers
- Can give guidance during a performance

Disadvantages
- Difficult to teach high organisation and complex skills
- Can be confusing for beginners who don't understand the language

Visual – Visual clues to help perform a technique

Advantages
- Works well for beginners as they can copy the skill
- Used to teach low organisations skills – can show each part of the skill

Disadvantages
Less useful for teaching complex, high organisation skills as they are difficult to copy.

Manual – When a coach physically moves your body through a technique.

Advantages
- Get to feel the movement of the skill
- Can be used for all skill levels

Disadvantages
- Performer could rely on the coach and not be able to perform the skill without them.
- Difficult to use with big groups of learners.

Mechanical – guidance given using sporting equipment.

Advantages
- Useful for teaching beginners as they are safe while practicing skills
- Helpful to teach complex skills

Disadvantages
- May be unable to perform the skill without the equipment.
- Difficult to use for large groups of performers.

AROUSAL

The inverted U theory describes the relationship between arousal and performance. This theory states the there is an optimum point or arousal where the athlete will perform at their best. As arousal increases so does performance until after this point where arousal then has a negative impact on performance.

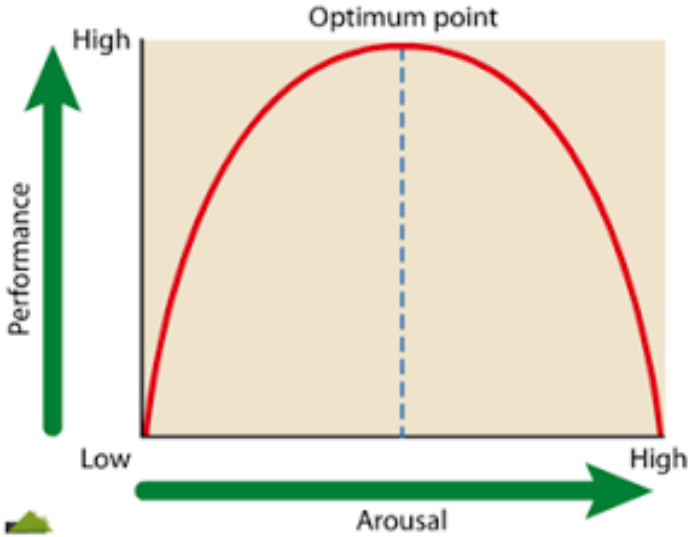


Fig 8.1.2 Inverted U hypothesis theory of arousal

Arousal: a physical and mental (physiological and psychological) state of alertness/readiness.

Methods to control arousal:
Deep breathing – Helps to slow heart rate, increase the supply of oxygen to the brain, limiting the impact of arousal.
Mental rehearsal - helps a performer to relax and focus by rehearsing a successful performance in your mind before doing it.
Positive self talk – developing positive thoughts about your performance.

MOTIVATION

Intrinsic motivation – where something is done for the enjoyment and good feelings. This is seen as the best type of motivation as you are more likely to continue participating and try hard. Not reliant on anything or anyone.

Extrinsic – gathered through rewards from other people or sources. Can be tangible (where you can touch it) or intangible (can't touch it). Less likely to maintain motivation with this type as it is less likely to heighten enjoyment and you may become reliant on the rewards.

PERSONALITY TYPES AND AGRESSION

Direct aggression

Involves physical contact with another person.
e.g. tackle in rugby to get possession of the ball.

Indirect aggression

This is aggression towards an object to gain an advantage.
e.g. hitting the shuttle very powerfully to the floor to win the point.

Introverts

- Like being on their own and participate in individual sports.
- Tend to be shy and quiet.
- Like sports that use fine skills, high concentration and low arousal.
- E.g. snooker or archery

Extroverts

- Sociable individuals and prefer team sports.
- Like fast pace sports that consist of gross skills and low concentration.
- E.g. Rugby and football.

SOCIAL GROUPS AND ENGAGEMENT

Gender

- Boys are more likely to participate in sport
- Women's events have less coverage and lower profile
- Less role models for women
- Less sponsorship in women's sport
- Stereotypical ideas about which sport to participate in
- Women may have to look after children.

Ethnicity and religion

- Religious beliefs can influence activity
- People may stick to sports that are 'associated' with their ethnic group.
- Religious festivals can stop participation (e.g. fasting can make individuals physically weak)
- Racism can stop it
- Lack of role models

Disability

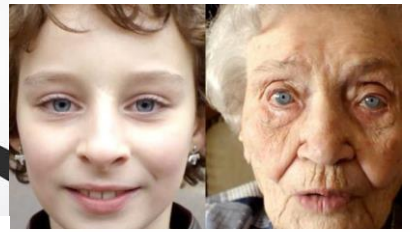
- Lack of opportunity
- Lack of facilities
- Limited number of coaches and teachers.
- Schemes set up to develop disability sports
- Gaining more media coverage e.g. Paralympics

Age

- Depending on age some sports are more popular
- Over 50s are physically limited/suffer from ill health
- Strength doesn't reach maximal level until 25 and decreases again at 40
- Age divisions in sport are there to combat this factor
- Skill levels can improve with age and experience
- Adults who work have less free time and disposable income

Family, friends and peers

- Family attitude to sport can either support or hinder participation
- Family will need to provide equipment and transport which they may not be able to afford.
- Peers can impact whether or not an individual participates. If your friends do it your more likely to.



COMMERCIALISATION

Is defined as the management or exploitation of a person, organisation or activity in a way designed to make profit.

The media

Covers a diverse range of technologies that act as a means of mass communication e.g. television, radio, internet, newspapers and billboards.

Sponsorship

Provision of funds or other forms of support to an event, activity, person or organisation in return for some kind of commercial return

Impacts on the audience/spectator

Positive

- Events scheduled so people can watch them
- Commentary educates the viewers at home
- Information from the media on results, fixtures and standings
- Improved viewing due to advanced technology
- More competitions means more opportunity to watch
- Can follow their role models through the media.

Negative

- More people watch sport at home on TV or internet
- Subscription and pay per view make sport expensive to watch
- Scheduling changes to make it easier to watch at home can make it harder to watch live
- More popular the sport the harder it is to get a ticket
- Sponsors can limit the choice of food and drink available at the event.

Impacts on the official

Positive

- Can become role models
- More likely to develop careers if there is money in the sport

Negative

- Pressure to make correct decisions can reduce enjoyment
- Mistakes are made very public.

Impacts on the sport

Positive

- Increased interest and more participation
- More money for grass-roots
- More money for coaches, kit, equipment, facilities and coaches
- Prize funds are bigger
- Technological developments due to money
- More role models are created.

Negative

- Rules may be changed to meet requirements of media and sponsors
- Over exposure can make people less interested
- Minority sports and women get less coverage
- Sport can become dependent on the money from sponsors.
- Sponsors may sell products/services that promote poor lifestyle choices.

Impacts on the performer

Positive

- Higher wages
- Become role models
- More money for technology, kits, equipment and facilities.
- Better coaching programmes due to money
- Increased number of competitions.

Negative

- Pressure to perform
- Mistakes are public knowledge
- Sponsor make demands and players have to maintain appeal to sponsors.
- Invasion on players private lives.
- More competitions and training can result in injury

TECHNOLOGY

Key terms

Hawkeye – tracks the flight and trajectory of the balls. Used regularly in cricket and tennis.

Performance analysis aids – wearable technology that can monitor performance or software such as Dartfish that use cameras to capture movement.

Television match officials – video referees are used in rugby football and cricket to check and review the decisions made on the pitch.

Impact of technology on the performer

Positive

- Performance analysis can help improve performance
- Use technology to ask officials to review decisions made against them

Negative

- Expensive to buy and install technology

Impact of technology on the sport

Positive

- Makes competition fairer because poor decisions can be reviewed.
- Makes sure correct decisions are made.

Negative

- Can disrupt play reviewing decisions.
- Makes sport slower which can annoy performers and spectators.

Impact of technology on the officials

Positive

- Provides additional help with decisions
- Can communicate via microphone with other officials
- Reinforces correct decisions.

Negative

- Undermine officials if decision is poor
- May become too reliant on technology and make less on field decisions.

Impact of technology on the audience/spectators

Positive

- Can see how decisions are made
- Provides confidence in that decisions are fair
- Can add tension and excitement.

Negative

- Cause unrest or poor behaviour if decision is not reviewed.
- Can cause problems if people online can access technology that officials do not have.

Sponsor/company

Positive

- Ensures fair play and helps project a good image which reflects well on the sponsor

Negative

- Not available at all levels of sport.

CONDUCT

Etiquette

- Is a convention or unwritten rule in an activity which is not enforced
- Performer displaying etiquette demonstrate respect for sport and opponents.
- E.g. kicking the ball out of play in football when someone is injured.

Gamesmanship

- Attempting to gain an advantage by stretching the rules to their limit.
- E.g. time wasting

Contract to complete

- Unwritten agreement between opponents to follow and abide by the written and unwritten rules of the sport.
- E.g. not arguing with officials or taking PEDs.

Sportsmanship

- Is conforming to the rules, spirit and etiquette of a sport.
- E.g. in cricket a batsman will be expected to walk when they know they have hit a ball that is caught, when the umpire doesn't indicate that they are out because they didn't hear the contact.

SPECTATORS AND BEHAVIOUR

Spectators

An individual or group of individuals who attend a sporting event.

Positive influences

- Create an energetic atmosphere
- A source of revenue for the club
- Give performers a home field advantage
- Increase the profile of the sport

Negative influences

- Can impact the performers due to increased pressure.
- Can scare aware younger performers due to big crowds and a lot of pressure.
- Can cause crowd trouble and/or hooliganism.
- Cost a lot of money to manage large rowdy crowds and ensure events are safe.

Hooliganism

The disorderly, aggressive and often violent behaviour by spectators at an event.

Reasons for hooliganism

- Rivalries between opposing groups of supporters
- Media hype could increase tensions between teams
- Influence of drugs and alcohol
- Links between groups of supporters and gang culture.
- Frustrations at the events occurring in an event e.g. refs decisions.

Strategies to combat hooliganism and poor behaviour

Educating spectators: Promotional campaigns and high profile performers encourage good behaviour and condemn hooliganism.

Early kick offs : Reduce the amount of alcohol that is consumed prior to the match.

All-seater stadia: All fans are allocated seating to prevent crushes or pushing. Occurred due to Hillsborough disaster.

Alcohol restrictions: Strictly controlled or banned altogether depending on the stadium

Segregation of fans:
Rival supporters are kept apart in separate areas of the stadiums. Away fans can be escorted to the stadium by police and can be kept behind after games to allow home fans to leave first.

Travel restrictions and banning orders: Known troublemakers are banned from attending matches or travelling to away games. Extreme circumstances would be when the game is played behind closed doors and is done without spectators.

PHYSICAL, EMOTION AND SOCIAL HEALTH, FITNESS AND WELL-BEING

Fitness benefits to participating in physical activity

- Improve fitness
- Reduce the chance of injury
- Aid physical ability to work.

Mental benefits to participating in physical activity

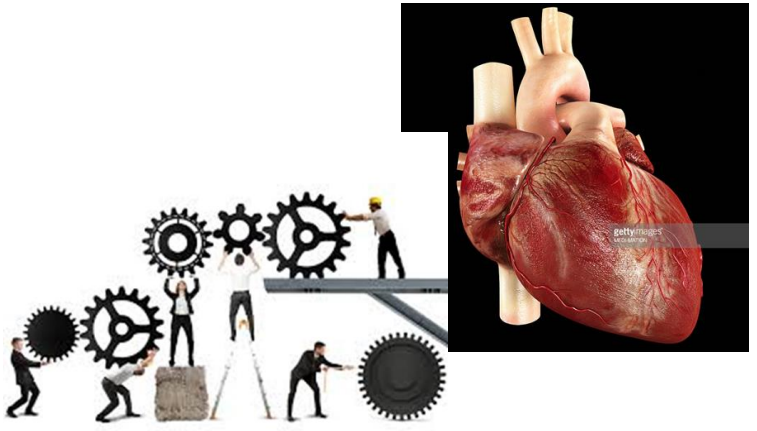
- Reduce stress and tension
- Release of feel good hormones (serotonin)
- Able to control emotions

Social benefits to participating in physical activity

- Socialise and make new friends
- Cooperate with others
- Teamwork

Physical benefits to participating in physical activity

- Improve heart function
- Improve efficiency of body systems
- Reduce risk of some illness
- Prevent obesity
- Able to complete everyday tasks



SEDENTARY LIFESTYLE AND OBESITY

Sedentary lifestyle - a lifestyle with irregular or no physical activity.

Consequences

- Increased risk of poor sleeping patterns
- Lethargy
- Increased risk of hypertension.
- Increased risk of heart disease.
- Increased risk of type 2 diabetes.
- Weight gain.

Obesity – BMI of 30 or over. This is when an individual has a high fat content due to a higher number of calories consumed compared to the number of calories expanded.

Physical ill health associated with obesity

Increased risk of;
cancer, heart disease and heart attacks, type 2 diabetes, hypertension, pressure on joints and high cholesterol

Mental ill health associated with obesity

Increased risk of depression a loss of confidence.

Social ill health associated with obesity

Increased risk of being unable to socialise or leave the house (either physically unable or lacking confidence).

Affect of obesity on performance in physical activity and sport

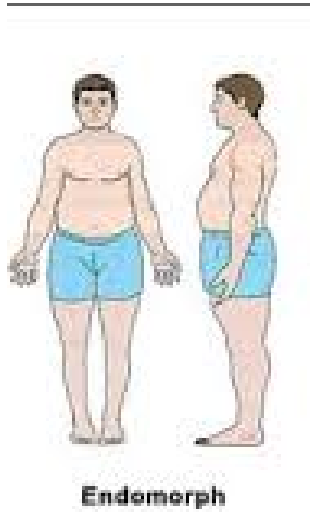
Reduced flexibility, agility, cardiovascular endurance, speed and power.

SOMATOTYPES

Ectomorph

Tall and thin
Narrow shoulders and hips

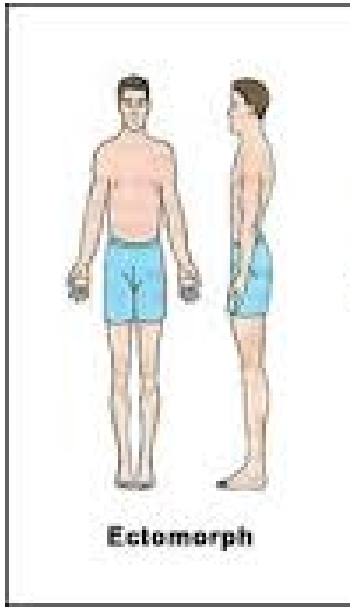
Would be suited to sports such as high jump.



Mesomorph

Muscular appearance
Wide shoulders and narrow hips.

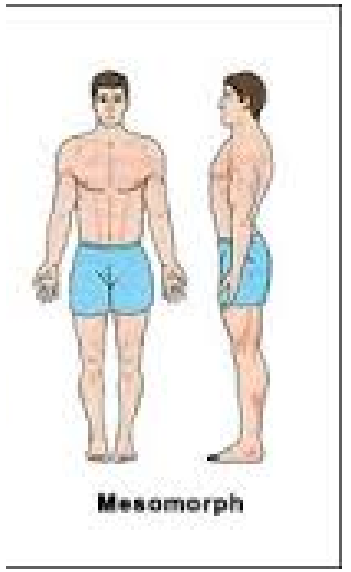
Generally good for all sports.



Endomorph

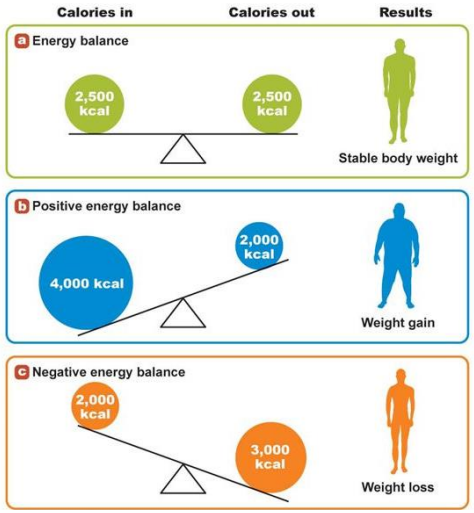
Pear shaped
Wide hips and narrow shoulders.

Would be suited to sports such as rugby.



ENERGY USE, DIET AND NUTRITION

The Concept of Energy Balance



Energy use

This is the amount of calories and individual requires in a day. They typical amount is 2500 for a man and 2000 for a woman. This can be affected by:

- Age
- Height
- Gender
- Energy expenditure

Calorie – unit of measurement for heat in the body.

Key terms

Balanced diet – a diet that contains the right quantity of food so that you consume only as many calories as you expand each day; and the right mix of different foods so the body receives all the nutrients, vitamins and minerals it needs.
Nutrition – intake of food, considered in relation to the body's dietary needs.
Hydration – having enough water in the body to function normally
Dehydration – excessive loss of water from the body, interrupting normal functioning of the body.

Carbohydrates

Carbohydrates provide the energy to exercise. There are two types of carbohydrates, complex and simple.

- Complex carbohydrates should be favoured as they provide slow release, long lasting energy (rice, bread, pasta, potatoes)
- Simple carbohydrates provide the body with immediate energy but can be stored as fat (sugar, honey, sweets, fruit, chocolate, yogurt and jam)
- Make up 55-60% of diet

Fat

Provide energy at low intensity and provide insulation.

Saturated fats

- Too much in diet increases risk at heart disease and obesity

Unsaturated fats

- Healthier than saturated and reduces risk of heart disease.

Makes up 25-30% of diet

Protein

Supports muscle growth and repair. Should be eaten after activity to help recovery. Makes up 15-20% of diet.

Vitamins and minerals

Only required in small quantities to maintain body systems and general health.

Effects of dehydration

- Blood thickening – blood becomes more viscous (thicker and stickier) slowing down the speed at which it can travel around the body and deliver oxygen and nutrients.
- Increase in HR as the heart has to work harder to pump the blood around the body.
- Increase in body temperature – causing the body to overheat
- Slower reaction time
- Muscle fatigue and cramp
- Dizziness, nausea, blurred vision and headaches.

Daily recommendation of water intake is 2.5L for men and 2 for women. If the temperature is warmer or you do exercise then this intake should be increased (amount depending on the intensity of activity).