

G.C.S.E Physical Education

Revision Booklet.

There are two types of fitness: health related fitness & skill related fitness.

Health Related Fitness.

Most people exercise just to stay fit and healthy.

Health - is a state of complete mental, physical and social well-being

We can however be physically fit without being healthy. Good health requires sensible eating, plenty of rest, very little alcohol, no smoking and an ability to cope with stress

Let's look closely at the **benefits** of regular physical activity:

Mental benefits:

Feel good : due to the release of the hormone *serotonin*.

Stress relief: from work, school or family life.

Increased self-esteem. Feeling good about yourself.

Physical challenge/competition: Seeing an improvement.

Enjoyment: Most activities are pursued because they are liked and we know they are beneficial.

Physical benefits:

Health: Maintaining or improving general health. Reducing chances of becoming ill and improving life expectancy.

Fitness: Components of fitness are improved, notably **strength, endurance, flexibility, LME** and our **body composition**.

Performance: Whatever our aims, the more we do an activity the better we will become.

Social benefits:

Friends: Socialise with current friends and make new friends.

Cooperation and Teamwork: Team activities whether recreational or competitive (sport) improves our ability to work with others. Also improves **confidence**.

Fitness - the ability to meet the demands of the environment.

ADHERENCE STRATEGIES

This means - 'sticking to': in this case sticking to an exercise/fitness programme.

Keep a diary.

Make a plan.

Have fun. Share goals.

Set a routine

Begin with easy tasks.

Set achievable goals.

Train to music.

Exercise with a friend.

Consider location.

Use electronic monitoring.

Use fitness testing.

Be committed.

Set realistic & measurable

goals. Set intensity and duration of exercise to suit purpose.

Use competition.

Short and snappy.

Change type of exercise occasionally.

Tip: Circle 5 strategies that you can easily remember.

Health Related Fitness:

This means we are healthy enough to carry out everyday activities without becoming too tired. The **components of fitness** important for this are:

Cardiovascular endurance/fitness - is the ability to exercise the whole body for a long time without becoming too tired.

This relies on the efficiency of our heart and lungs and is sometimes known as **aerobic capacity** or **cardio-respiratory endurance**.

Muscular strength - the amount of force that a muscle can apply.

For health related purposes muscular strength is the ability of our muscles to carry out daily tasks efficiently.

Local muscular endurance - the ability of a muscle or muscle group to work very hard for a limited amount of time.

When a muscle or muscle group is worked hard for a length of time they start to feel heavy and weak. In many everyday activities this component is important - carrying, lifting or pushing etc.

Flexibility - the range of movement around a joint.

Also known as mobility or suppleness. Is important in order to stay healthy and avoid injury.

Body composition - the proportion of fat in the body compared to muscle and bone.

Our body shape - **somatotype**. This can influence the type of activity/position. We can change somatotype with training and diet.

- **Endomorph** - v large or **enormous**:
Pear shaped body. Lots of fat. Wide shoulders and hips. Sumo wrestler.
- **Mesomorph** - medium build, **muscular**:
Heavily muscled. Little body fat. Wide shoulders, narrow hips. Decathlete.
- **Ectomorph** - very slim: Little muscle and fat. Narrow shoulders, long legs. Marathon runner.

Skill- Related Fitness.

Here we are looking at the other components of fitness that are required for competitive sport. Competitive sport also requires the *health-related fitness* components to be trained to a *higher*

level. In other words the sports performer will train with **greater intensity and duration** in specific components than the individual who is exercising to improve **general health**.

The **skill-related components** are:

Agility - the ability to change direction at speed whilst maintaining control.

This is essential in many sports or specific position where changing direction quickly is required. Can you think of any examples from various sports?

Balance - maintaining equilibrium whilst stationary (static balance) or moving (dynamic balance).

This takes a lot of practice as we try to keep our **centre of mass/gravity** over the **area of support**.

Coordination - the ability to carry out a series of movements smoothly and efficiently.

This relies on our nervous and muscular system working well together. With practice we improve hand-eye, foot-eye and whole body coordination. Eg, tennis serve, drop kick.

Reaction time - the ability to respond to a stimulus quickly.

Simple reaction time - the delay between the stimulus and our action. [gun in a 100m race.]

Choice reaction time - delay between the stimulus and an action that involves making a choice. [what shot to make in cricket or tennis.]

Speed - the ability to move all or part of the body as quickly as possible.

We use our **anaerobic energy** system for speed and utilise **fast twitch** muscle fibres. This is also linked to the ability to **react** quickly.

Power - the ability to contract muscles with speed and force in one explosive act.

Power = speed x strength. Again, as this involves speed it uses anaerobic energy and is essential in many sports. Eg sprint start, long jump take off, gymnastic tumble etc.

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Factors that can affect Fitness.

Fatigue.	Dietary factors.	Obesity.	Physical factors.
Age.	Inappropriate training.	Stress factors.	Substances.

Training to improve Health, Fitness or Performance.

In order to improve fitness it is advisable to follow a **training programme**. For some people they should take the advice of a doctor if returning from illness, injury or are obese. Some may follow advice given by personal fitness instructors in gyms or sports coaches/teachers.

When training everyone should follow the:

Principles of Training [SPORT]

S	SPECIFICITY - ensuring that the training is specific to the <i>needs of the individual</i> and at the right level. Eg. A winger will focus mostly on improving speed.
P	PROGRESSION - when improvements (adaptations) have been made training can be steadily increased. <u>Progression comes as a result of applying OVERLOAD</u>
O	OVERLOAD - making the body work harder than normal. This is done by using the FITT principle. Frequency - how <u>often</u> you train eg 3 times p/week; Intensity - how <u>hard</u> you train. Eg 60 - 80% MHR to improve endurance. Time - how <u>long</u> you train for eg 20 mins. As progression is made these elements can be increased <i>gradually</i> . Type - Important to vary to avoid boredom.
R	REVERSIBILITY - progress made from training will be lost if training is stopped because of <i>injury, illness or loss of interest</i> .
T	TEDIUM/VARIANCE - Training needs to be <i>interesting</i> so varying the type of activity or location is beneficial to avoid boredom and maintain the motivation to train.



REMEMBER: the body adapts to training only when sufficient **rest and recovery** is allowed. Hard training should be followed a gentle cool-down. The following day should involve easy training or a recovery day of complete rest. Elements of the **FITT** principle should only be *gradually* introduced.

Warming-up.

This is vital before any activity: training or competition.

It prepares the body physically and mentally. **Heart Rate** is increased and also the **body temp**. Specific activities can be incorporated depending on the activity/sport. A good warm-up can prevent injury.

Three phases of a warm-up.

1. Aerobic phase. Usually very light jogging.
2. Stretching/flexibility phase: Using movements specific to the activity.
3. Static: Slow stretching of muscles beyond normal position and held for short periods.

Training Methods.

It is important to remember that we need to consider the different **intensities and duration** of training if we are aiming to improve **health** or **performance for sport** [eg gentle jogging with even some walking for an unfit person, or to achieve weight loss, as opposed to a 30 min fartlek session for the County standard hockey player.] Training should be **specific** to individual needs.

<p><u>Continuous training methods.</u> Develops: CV endurance</p>	<p><u>Continuous training.</u> Swimming, exercise classes such as aerobics, running or cycling for a prolonged period (at least 15-20mins) at a moderate pace (HR at 60 - 80% of max.) Helps to develop the aerobic system.</p> <p><u>Fartlek training.</u> Working continuously for 20 - 30 mins changing pace throughout. Ideal for games players - improving aerobic & anaerobic fitness.</p>
<p><u>Interval Training Methods.</u> This means bouts of exercise followed by intervals of rest. Develops: LME. Power. Speed. Endurance. Strength.</p>	<p><u>Circuit training.</u> Series of exercise that can be used to develop many components eg, power, LME, strength & endurance. Great for developing general fitness as well as specific fitness. Circuits can be modified to suit individual needs. Many variations: 20 secs on 40 secs rec. Pyramid - 3 sets. 1 - 30 secs; 2 - 20 secs; 3 - 10 secs.</p> <p><u>Weight training.</u> Usually in the form of repetitions and sets. Can improve strength (heavy weights with few reps) or muscular endurance (lighter weights with many reps)</p> <p><u>Interval training.</u> Popular in athletics. Can be used to improve both anaerobic and aerobic fitness. Examples. 10 x 60m @ 7secs w/ 2mins recovery. (for sprinters) 6 x 800m @ 3.30 w/ 6 mins recovery. (middle distance runners)</p> <p><u>Plyometrics:</u> develops power. Involves jumping, hopping & bounding. Often in the form of a circuit. Mainly works on developing explosive strength. Movements are performed quickly developing the elastic strength of the muscle. Eccentric muscular action followed by a concentric action.</p>
<p><u>Mobility Training Methods.</u> Develops: Flexibility</p>	<p>Static: Easing into the stretch slowly and then holding for 10 secs. Dynamic: Moving into stretch position and then 'bouncing' the muscle. PNF: Assisted stretches with partner gradually pushing the limb/joint further.</p>
<p><u>Altitude training.</u> Develops: Endurance</p>	<p>Due to less oxygen the body produces more red blood cells. Therefore, more oxygen within the cells of the body. This improves the athletes' ability to work aerobically especially when back at sea level.</p>

Application of training.

Changing activity or training routines can have a major impact on health and performance.

Training cycle: Periodisation: (a plan of the training year). This depends on the individual and the activity. Is normally divided into:

- Pre-season: improving general fitness gradually. Intensity will increase as season approaches.

- Peak season: maintaining skill and fitness level throughout. Focus will vary depending on sport and there may be a few 'peaks' within a season to target.
- Out of season: as soon as season finishes a period of rest/recovery is needed. For many this may be active recovery (some very gentle activity)

Training session: Warm-up, main activity (could be fitness, skills and a small-sided game), & cool down.

Evaluation of Health and Fitness.

You need to be familiar with the procedures for monitoring and assessing/testing the performer's health and fitness.

This is necessary to:

- Inform coach and performer of the current state of fitness
- Identify strengths and weaknesses
- Check if progress has been made
- To compare with others.
- Find suitable sport/position.

Monitoring can be carried out in a number of ways e.g. **diary, pedometers, calories used, health screenings etc.** These are also adherence strategies - ways to help us keep motivated to train/exercise.

The components are **tested** or assessed with the following: [learn the procedures]

Health related components	Fitness test	Skill related components	Fitness test
Cardio-vascular endurance	12 min Cooper run or Bleep test	Speed	30/50m sprint
Muscular strength	1 rep max	Agility	Illinois agility run
Local musc. endurance	Sit up test or press up	Power	Standing broad jump
Flexibility	Sit & reach	Balance	Stork stand
Somatotype	Skin fold calipers	Coordination	Alternate hand wall throw
		Reaction time	Ruler drop

Protocols:

Tests need to be:

Reliable - consistent eg when re-testing *procedures and conditions* are the same thus results are 'reliable'.

Valid - they are *specific* and testing what they should be testing.

EFFECTS OF EXERCISE ON THE BODY.

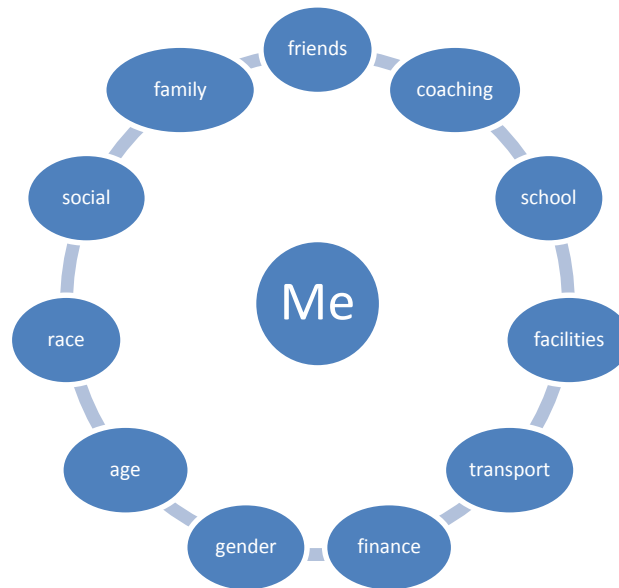
Short term/immediate effects of exercise.

- Increased breathing rate.
- Increased pulse rate.

Participation.

Factors affecting my participation.

[Be prepared to give both positive and negative factors.]



Other influences that you can relate to:

Physical Education: The 4 National Curriculum areas.

1. Health fitness and well being.
2. Creative.
3. Adventurous.
4. Competitive

PE and any physical activity have: **Social, Physical and Mental benefits.** [Remember the start of your booklet]

Extra curricular provision

- Sport development. Dev officers
- School/Community links. Local clubs.
- 5x60 Initiative.
- Dragon Sport [Experts delivering sport in Junior schools]

Other considerations:

- Risks associated with sedentary lifestyle - heart attack, diabetes etc.
- Equal Opportunities - disabled, age, gender.
- Media coverage - develops interest, or lack of coverage reduces interest.
- Deviance [cheating] e.g. drug taking to improve performance.
- Role models - sports stars, teachers, coaches.

Consider how some of the above factors affect/influence your participation in physical activity

Who influences our participation?

Grouping	Positive Effect	Negative Effect
Friend/family	Encouragement, interest, support, a role model.	Possibly no interest or support in sport
Gender	Many opportunities for boys. Improving for girls - girls only	Some stereotypes and attitudes still remain. Media still focuses on

	classes, rugby etc	male dominated sports.
Social	More opportunities, accessible and more funding available.	Some activities are too expensive - equipment and fees.
Race	Cultural aspect, some ethnic groups favour certain sports.	Racist attitudes still prevail. Lack of positive role models.

Tasks:

Suggest three reasons why many school pupils do not have the opportunity to participate in Adventurous activities such as mountain walking, surfing and sailing.

What effect can the media have on sport? [Consider positive & negative effects.]

[Tip: Four aims of the media: Inform, entertain, educate & advertise.]

Why are athletes tempted to take performance enhancing drugs?

Provision.

1. Government Policies

- Government have seen the need to promote healthy living and healthy lifestyles.

Why do you think there is a need to promote this?

- Through the funding of the National Lottery the government has given the Sports Councils the responsibility for implementing the policies and directives

[Sports Council for Wales, Sport England, Sport Scotland, Sports Council for Northern Ireland]

The Sports councils are responsible for:

- PE and School Sports projects.
- Increasing participation levels.
- Developing the elite performer.
- Coach education.

[So, the Sports Council is responsible for developing physical activity & sport at **ALL** levels.]

Sport England's motto: Start, Stay & Succeed.

2. Funding

Sport is funded from a variety of sources, the largest supporter for Wales being the Sports Council.

- The Council currently receives around £12m per year from the National Lottery to distribute to sport in Wales.
- Sport is also funded from other sources:
 - TV rights
 - Governing Bodies eg WHU, WRU, UKA, FAW.
 - Sponsorship
 - Fund raising
 - Donations

There are three sectors of funding: **Public , Private & Voluntary.**

Public Sector	Private Sector	Voluntary Sector
For the <u>local population</u> : from Government & Local Councils.	For <u>profit</u> .	For <u>pleasure</u> as a reward
Facilities often <u>dual use</u> eg sports centre: school during day, community at evenings.	<u>High quality</u> , well maintained premises and facilities.	Often sports clubs, run by <u>volunteers</u> . Think of all our local sports clubs.
Usually located near to large population areas. Money in from taxes, business rates, grants and facility charges.	Provision is <u>custom driven</u> . Money in from membership fees or spectators at clubs privately owned (most prof football clubs), and merchandising.	Often <u>non-profit</u> making. Money in from grants, charities, sponsorship, subs and fund raising.

3. Target Groups

These groups of people are targeted so that their access to sport and physical activity is improved

Women - increased opportunity within male dominated sports, crèches within leisure centres, increased coverage and profile. **Do you think the situation has improved?**

Age - increase opportunity within schools, coaching, talent identification, opportunities for 60+.

Disabled - increase opportunity and provision, adapted sports and facilities. Raised profile -

How??

Social-economic - increase opportunity, provision and funding

What are some of the advantages for the business that *sponsors* a sport/event and for the sports or individuals that *receive sponsorship*?

Advantages to business.

Advantages to sport/individual

Do you think that sports provision and media attention for women has improved?

[This would be a good 'discuss' questions. For now list some bullet points - remember you can agree and disagree throughout such a question, but try and give examples.]

Energy Systems

Characteristics of the 3 Energy Systems.

Energy system	Aerobic/ Anaerobic	Fuel/ Energy Source	By-product	Exercise Intensity	Duration	Sporting examples	Notes
ATP/PC phosphocreatine	Anaerobic without O ₂	ATP/PC	Creatine	High (flat out),	ATP = Approx 3 seconds, PC gives up to	Sprinting, athletics field events, Weight-	Small muscular stores of ATP & PC run out very quickly leading to a

					10 -15 secs of high intensity work	lifting (power events)	rapid decline in immediate energy.
Lactic Acid	Anaerobic without O ₂	Glycogen Glucose	Pyruvic acid is produced and converted to Lactic acid	High Intensity	Up to 3 Minutes	200m - 800m, Racket sports	Lactic acid is a by-product and causes rapid fatigue and discomfort.
Aerobic	Aerobic with O ₂	Fat/ Glucose mixture	Water/CO ₂	Low	3 minutes onwards	Long distance running, cycling and swimming. Triathlon.	This system relies purely on the availability of O ₂

When considering which energy system is being used in a physical activity you need to think about the '**intensity**' of the activity [how hard is the performer working] and the '**duration**' [how long are they working for.] and also the '**type**' of activity taking place.

Exam tip: Questions relating to the energy systems may ask you to describe some of the key features of a system and also give examples of an activity using a particular system.

Training zones and thresholds.

- Aerobic training zone: 60% - 80% MHR
- Anaerobic training zone: 80% - 100% MHR
- Aerobic training threshold: 60% [must train at or above this threshold to gain aerobic benefit.]
- Anaerobic training threshold: 80% [must train at or above this for anaerobic benefit.]
- Below 60% - regarded as the 'fat burning zone'. Very low intensity - little improvement, but ideal for those individuals who are very unfit.

Remember: Max HR is 220 - age.

Notes:

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Fuel for Exercise.

Exercise - improves healthy lifestyles and fitness/sporting performance.

To aid this a **balanced diet** is also essential.

Energy balance:

$$\text{Energy in (calories eaten)} = \text{energy out (calories used)}$$

Here, body weight remains constant.

If energy in exceeds energy out = weight gain.

If energy in is less than energy out - weight lost.

A balanced diet should include 5 fruit & veg per day.

Of the 7 food groups the main ones are:

Carbohydrates - broken down to glucose & stored in muscles as glycogen. Immediate source of energy.

Fats - Slow energy release, during long activity when oxygen is present.

Protein - good for growth and repair of tissues.

Water - important before, during and after activity. Helps to maintain body temp. And to cool down. During intense activity to avoid 'dehydration' it is important to 'rehydrate' (take in fluid)

Energy expenditure depends on: [DETAILS]
Duration of activity Exercise Type of activity Age Intensity of activity Lifestyle Sex

Basal metabolic rate (BMR) = the amount of energy needed to keep you alive.

Physical Activity Level (PAL) = working energy, energy needed for sport/physical activity.

Total energy needs = BMR + PAL

This determines the amount of calories an individual needs daily. An athlete that trains for two hours per day requires more calories (food) in order to maintain their energy balance.

Remember:

Food -

- repairs injured tissue
- fuels the body
- provides energy for physical activity
- contributes to good health
- helps growth in body tissue.

Function of the Cardiovascular system in Facilitating and Improving Movement.

Basic functions:

- Supply and transportation of O₂ and other nutrients to the body for muscular contraction
 - Removal of waste: CO₂ and lactic acid
 - Stabilisation of body temperature - at rest and during exercise
- Protection from disease

HEART RATE (HR)

'The number of times the heart beats in one minute.'

At rest it beats between 50 and 80 times per minute. When more blood is required by the muscles during exercise, the heart rate can increase to over 200 beats per minute, pumping around 45 litres around the body.

Heart rate varies according to age, fitness and health.

STROKE VOLUME (SV)

'The amount of blood forced out of the heart (left ventricle) per beat.'

CARDIAC OUTPUT (CO)

'The amount of blood pumped out of the heart (left ventricle) in one minute.'

Cardiac output varies depending on the intensity of the exercise and the fitness levels of the person.

Cardiac Output = Heart Rate × Stroke Volume.

$$CO = HR \times SV$$

Note: a fit person is deemed to have a low resting heart rate. Because their heart muscle is stronger from training they can force more blood out with each beat [stroke vol] and will therefore also have a better cardiac output.

BLOOD PRESSURE.

'The amount of force that the blood applies on the sides of blood vessels.'

It is an indicator of how fit the circulatory system is.

What affects blood pressure?

Exercise: BP rises to meet the demands of exercise.

Age: Usually low in the young.

Gender: Men usually have higher readings than women.

Circumstances: If tired, stressed or at altitude BP will change.

Blood pressure can be controlled if we maintain a healthy weight, do not smoke, avoid too much alcohol and exercise regularly.

VASCULAR SHUNT:

When we exercise the body needs more oxygen at the site of certain working muscles. The redistribution of oxygen to areas of greater need is called the 'vascular shunt'.

BLOOD POOLING.

Blood has pooled or collected after exercise and there is not sufficient pressure to move the blood around the system. This can be achieved with gentle exercise.

Cardio-respiratory system.

Respiratory rate: The **respiratory rate (RR)**, also known as the **respiration rate** or **breathing frequency**, is the rate of ventilation, that is, the number of breaths taken within a set amount of time (typically 60 seconds).

Tidal volume: the volume of air moved into or out of the in one breath.

Vital capacity: the max volume of air breathed out after the deepest inhalation.

Residual volume: the volume of air still remaining in the lungs after the most forcible expiration possible.

Total lung capacity: The total lung capacity (TLC), about 6,000 mL, is the maximum amount of air that can fill the lungs.

Max Aerobic capacity - VO2 max: This is the maximum amount of oxygen in millilitres, one can use in one minute per kilogram of body weight. Those who are fit have higher VO₂ max values and can exercise more intensely than those who are not as well conditioned.

Oxygen debt - after rigorous exercise heavy breathing continues when we have stopped. This is paying back the 'oxygen debt' to the body until normal breathing resumes.

Task:

Consider the effects and benefits of the cardio-vascular system and the cardio-respiratory system on performance, health and lifestyle. [6]

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Skill Acquisition

Abilities: "An innate physical characteristics which facilitates movement"

These are **genetically determined (inherited)** and are **stable**. Abilities can improve with practice.

Examples of abilities: co-ordination, cardio vascular endurance, balance, speed etc.

Skill: "a learned ability to bring about pre-determined results with maximum certainty and efficiency."

Examples of skills - tennis serve, javelin throw, spin pass (rugby). Lay-up.

Skills are **learned** and improve through **practice**.

Skills are sometimes referred to as techniques.

Skills	Abilities
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Sidestepping Tennis smash Handstand	Agility, speed Hand-eye coordination. Balance
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WJEC
CBAC

Information/Discussion

Practical Application

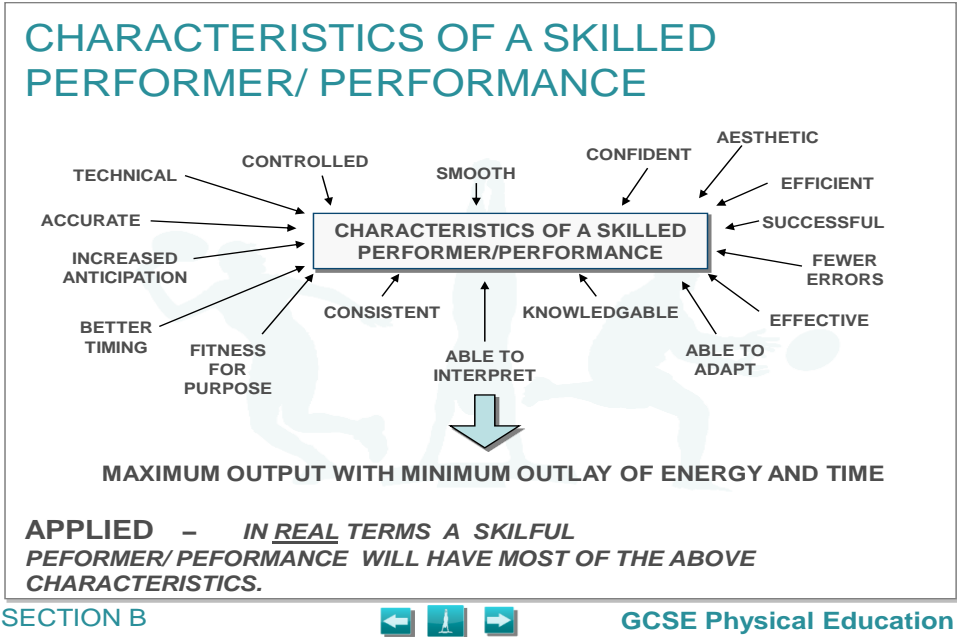
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Diagram/Table

Activity

Revision

UNIT 1 - Information



Technique: Basic movements in sport when combined form a skill.

Learning: "A permanent change in performance as a result of practice and/or experience.

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Classification of Skill.

The two factors that distinguish levels of physical performance are:

-Skill & fitness.

Skills are classified as:

- **Basic/simple** **complex.**

Basic eg running/walking. Very simple skills that need little information processing.

Complex - difficult skills with many parts requiring greater decision making. Eg dribbling, badminton rally etc.

- **Open** **Closed**

Open Difficult to learn. More information to process.	Closed Fewer decisions to be made. Less info to process
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Practice makes skill: **habitual, consistent, reliable, efficient, effective and accurate.**

Whole	Part	Whole-part-whole	Fixed	Variable
Complete skill is performed. Cannot be broken down. Usually simple skills. Best to learn through whole learning.	Taught in sub-routines. Often complex skills. For understanding best to perform whole skill first. Is motivating.	Combination practice. Begin with whole, break into sub-routines, then try the whole skill again.	Used to improve closed skills. Skill repeated. Conditions stay the same.	Open skills best practiced in situations that do change. Competitive situations eg 1 v2; 4 v 2. Requires decision making.

Information processing.

When learning and playing a sport we rely on the Information Processing Model:

Here, the body **INPUTS** information from the **SENSES** (visual, audio and touch).

The **BRAIN** will **MAKE DECISIONS** and the **BODY** will **OUTPUT** an action - the skill itself.

Finally, **FEEDBACK** will take place in response to the output and this information will affect future performances and enable learning to take place.



The body will react to the situation and focus on the information - usually visual or audio.

As we become more experienced we can pick out important information - **SELECTIVE ATTENTION**.

As we practice and experience situations on a regular basis info that is stored in **SHORT TERM MEMORY** is transferred into **LONG TERM MEMORY**.

We eventually make a **DECISION** and our body initiates an **ACTION**.

FEEDBACK

Immediately following that action we are provided with feedback on how successful the action was. Feedback can be intrinsic and extrinsic.

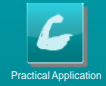
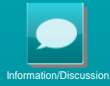
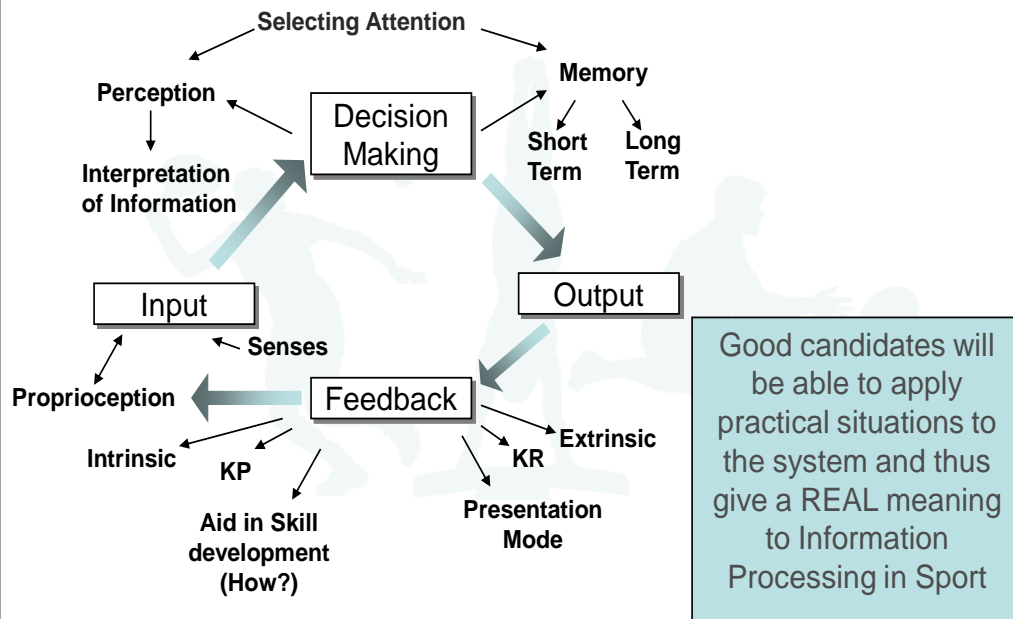
Two most important types of feedback are:

Knowledge of Results (KR) & Knowledge of Performance (KP).

Knowledge of results (KR)	Knowledge of performance (KP)
Outcome of the performance Score Points Time or distance Position	How well we performed Can be internal (how it felt) Feedback from coach Concentrate on technique.

Information Processing

A Theory Concerning How We Perform Skills



SECTION B



GCSE Physical Education

Motivation

Motivation is responsible for:

- 1) The selection and preference for activity
 - 2) The persistence at the activity
 - 3) The intensity and effort put into performance
 - 4) How well or how badly a person will perform.
- The more motivated a sportsperson is the harder he/she will work at it, and the more likely they are to succeed.
 - There are two types of motivation: Intrinsic and Extrinsic

Intrinsic Motivation

- - This is the inner drive to achieve success and a pride and satisfaction in completing a task. It can also be a determination to achieve personal goals.
- - This inner drive is enough to enthuse sportspersons to practice, train and compete.
- - Taking part in physical activity for fun, enjoyment, joy and satisfaction.

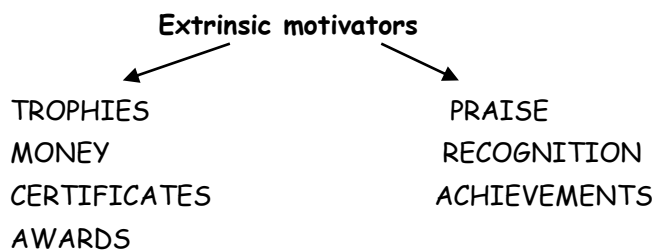
- - The challenges, satisfaction, sense of achievement and a desire to maintain a healthy, active lifestyle are intrinsic reasons motivating many people to take part in physical activities and sport.

Extrinsic Motivation

- Extrinsic motivation should be used carefully:
as a means of informing a person how well they are doing rather than the reason for performing.
- It is Intrinsic Motivation that will keep sportspersons interested in physical activity when extrinsic rewards have gone .
- The learning of complex tasks/ skills is heavily dependent on Intrinsic Motivation.
- Most motivation is a mixture of both types - Internal and External.

Extrinsic Motivation

Extrinsic motivation comes from a source outside of the performer - it can encourage the performer to perform:



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Setting Goals for Sports

Setting goals creates a path for athletes to follow to master sport skills. It is an effective **motivational technique** that boosts skill learning and performance in competition. Athletes tend to be **more focused** and **committed** to training when goals are clearly established.

There are three different types of goals coaches can set to help athletes develop sport skills:

1. Outcome goals are those that compare the performances of athletes with those of other athletes. For example, *win the county title*.

2. Performance goals are used to improve an athlete's individual performance. For example, improving a 400m time from 56 secs to 54 secs by the end of the season.

3. Process goals are used to improve the execution of a skill. For example, *extend fully on the power clean*.

Tips for Setting Goals and Tracking Progress:

1. Set **realistic**, yet challenging goals. More difficult goals lead to better results than easy goals.

2. Be **specific** about what you expect the athlete to accomplish. Specific goals are more effective than do-your-best goals or no goals.
3. Set goals that are meaningful. Athletes must understand the relevance of goals if they are to be motivated to achieve them.
4. Identify the target skills that an athlete needs to develop, as well as the conditions under which the athlete is to perform these skills. *eg hit 70% of free throws in basketball.*
5. Invite athletes to participate in the goal setting process and provide input about their progress. This leads to better results than assigning goals without their involvement.

SMART Targets.

S. (SPECIFIC)

Goals should be as specific as possible regarding what you want to achieve - Focusing attention.

M. (MEASUREABLE)

You need to be able to tell when you have reached a goal - they should assess PROGRESS against a standard and when to set new goals.

A. (AGREED / ACCEPTED)

The goals should be discussed and agreed with you and your coach, otherwise you will not be motivated. The acceptance by both parties gives ownership and confidence to the performer.

R. (REALISTIC)

Goals should be challenging but attainable. They can be motivational, give direction and control anxiety.

T. (TIME-PHASED)

You need a time frame so that you have reached all of your short term goals before the performance. If goals are time-phased they provide a focus and motivation to achieve.

Skeletal and muscular systems.

Our skeleton:

Protects:

- Skull & brain.
- Vertebral column & spinal cord.
- Rib cage & heart

Supports:

- As a framework giving shape to the body and posture.
- Holds vital organs in place.

Moves:

- Provides attachment for the muscles.
- Jointed allowing a wide range of movement depending on the type of joints.

Produces blood:

- Red and white blood cells produced in marrow.

Joints

A place where two bones meet.

Most common type of joint that allows wide range of movement is called a synovial joint.

Other types are **Fibrous** (fixed or immovable, eg, found in skull) and **Cartilaginous** (slightly moveable; found in vertebrae)

The synovial joint:

Freely moveable, found in most parts of the body & offers a wide range of movement.

Types of movement

Flexion	Reducing the angle at a joint (bending)
Extension	Increasing the angle at a joint (straightening.)
Circumduction	Circular movement, combining flexion, extension, abduction and adduction.
Rotation	Circular movement made by a joint.
Abduction	Sideways movement at hip and shoulder joints away from the body.
Adduction	Movement at the hip and shoulder joints towards the body.

Type of joint	Location	Movement
Ball and socket	Hip/shoulder	F & E, R, A & A (bowling, smash in tennis)
Hinge	Knee, elbow	F & E (kicking, running, throwing)
Pivot	Neck	R (turning head to breathe in front crawl)
Condylod	Wrist, ankle	F & E, A & A
Saddle	Base of thumb	F & E, A & A
Gliding	Carpals, tarsals	Slight sideways movement.

Note: Most exam questions relating to joint focus on ball & socket and hinge joints.

Ligaments: attach bone to bone. Help to stabilise a joint ie. Keep it in place.

Tendons: Attach muscle to bone (eg Achilles tendon.)

Cartilage: Smooth tissue that protects the end of bones. A shock absorber that reduces friction.

Muscular system

Our Muscles:

- Enable body parts to move. Give us our shape.
- Protect & keep our abdominal organs in place. Help maintain posture.
- Helps the circulation of blood. Generate body heat when they contract.

Muscular contraction

There are 3 types:

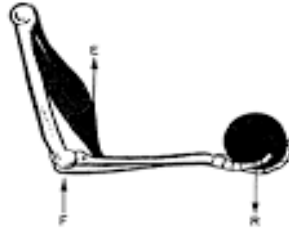
- **Isotonic concentric contraction.** This is where the muscle *shortens*, with the ends of the muscles moving closer together. Eg. Upwards movement of the arm in a bicep curl.

Isotonic eccentric contraction. Muscles *lengthen* as they contract under some tension. Ends of muscles move further apart. Lowering of the arm in a bicep curl.
- **Isometric contraction** - muscles *stay the same length* as they contract. No movement. Eg. Shoulders in a tug of war. In many movements, stabilising muscles hold part of the body steady as others move.

- **Isokinetic contraction** - contractions working at constant speed usually with the aid of machinery.

Muscles and joints as Levers.

Muscles and bones act as levers to bring about movement. The most common is a 3rd class/order lever. Here the effort (E), the working muscle, is between the fulcrum (F) or pivot (P) and the Load or resistance (R).



As in this example, muscles work in pairs. The muscle doing the work/**contracting** (here, the bicep) is known as the **agonist**, or **prime mover**. The opposite muscle (tricep) is relaxing and is called the **antagonist**. **Synergists** contract to hold the stationary bone still, in this case, the shoulder. In doing so the movement is smooth.

Muscles have a mixture of fast and slow twitch fibres, which are inherited. Both types can be trained to improve. The characteristics of each are:

	FAST TWITCH	SLOW TWITCH
Size	Large	Small
Colour	White	Red
Speed of contraction	Quick	Slow
Force generated	Large	Small
Fatigue	Quick - no oxygen	Slow - good supply of oxygen
Physical activity	Power, strength, explosive events	CV endurance events

Technological developments.

Such developments hopefully help to create an environment that can promote involvement in **physical activity and healthy lifestyles**. Technology has affected development in physical activity at all levels.

When answering questions on this topic consider technological development in:

Equipment/facilities: Eqpt is constantly modified and made lighter. Composite tennis rackets that reduce vibration in the arm. Fitness eqpt. more technical - giving more info and also allows you to be entertained - can plug in phone or watch tv on the treadmill.

IT/media: Can track info of perf/results instantly. TV analysis of play is far more informative.

Officiating: Hawk eye, goal line technology, hot- spot in cricket. TMO.

Safety: Air conditioned pads and helmets in NFL. Improved footwear. Plan to monitor effects of head impacts in contact sport with microchips inserted under the skin.

PHYSICAL EDUCATION

REVISION BOOKLET



"Excellence is the gradual result of always striving to do better."

– Pat Riley

*The vision of a champion is someone who is bent over, drenched in sweat,
at the point of exhaustion when no one else is watching – Anson Dorrance*