

Name

Paper 1

Target Grade:

GCSE PE

Chapter Support:

Physical Training



A simple booklet designed to support you
chapter by chapter through GCSE PE

Glossary

Components of Fitness

Cardiovascular Endurance – the ability of the heart and lungs to keep working efficiently during an endurance event

Strength:

Static - greatest amount of strength that can be applied to an immovable object

Dynamic – (*Muscular endurance*) The ability to use voluntary muscles /many times/without getting tired

Explosive – a short burst of maximal force

Maximal – the greatest force that can be exerted in one single contraction

Flexibility - The range of movement at a joint

Power - the combination of the maximum amount of speed with the maximum amount of strength

Coordination - the ability to link all the parts of a movement

Agility - the ability to move quickly, changing direction and speed

Balance - the ability to retain the centre of mass above the base of support

Reaction time - the amount of time taken to respond to something/ the speed of response to external events

Fitness Tests:

Sit & Reach – flexibility

Plank Test – muscular endurance

Alternate hand throw – coordination

Ruler drop – reaction time

1 minute press-up test – dynamic strength

Stork Stand – balance

Standing long jump – power

Vertical Jump – explosive strength

30 minute sprint – speed

12 minute cooper run / bleep test – cardiovascular endurance

Illinois agility test – agility

1 Rep Max – maximal strength

Training:

Health - physical, social or mental well -being/the absence of disease/illness

Fitness - the ability of your body to cope with the demands of everyday life

Repetitions - the number of times you actually move the weights
Sets - the number of times you perform a particular weight activity

Flexion – The decreasing of the angle at the joint
Extension - The increasing of an angle at joint
Abduction - the movement of a bone or limb away from the midline of the body
Adduction – the movement of a bone or limb towards the midline of the body
Rotation – a movement in a circular motion

Principles of Training

Specificity - A training method or system/which is particularly suited to one particular sport or one particular aspect of fitness
Progressive Overload - Gradually making training harder in order to keep improving. Making the body work harder in order to improve it
Reversibility – Losing the gains made due to stopping of training
Tedium – Boredom due to overuse of certain training methods

Frequency – how many times you train or perform a particular activity
Intensity – how hard you train on a particular exercise or activity
Time - duration or length of time a particular exercise or activity is performed
Type – varying the type of training

Training Types/Methods:

Altitude training - this involves performers going to specific areas where they are able to train at high altitude at heights significantly above sea level
Interval training - Times of work / followed by times of rest or fixed patterns
Fartlek - 'Speed play' or changing speed
Continuous Training – a method that keeps the heart rate high for a sustained period
Plyometric Training – high impact exercises such as leaping & bounding to improve strength of muscular contractions
Weight Training – working muscles against a resistance
Static stretching - A movement is extended beyond its normal limit and held for a length of time e.g. ten seconds

Training Thresholds:

Training Thresholds – Calculating the intensity of training to ensure a performer is training to improve the targeted type fitness

Aerobic Training Zone – 60-80% of maximum heart rate
Anaerobic Training Zone – 80-90% of maximum heart rate

Calculating Maximum Heart Rate – 220 - age

Fitness components and their definition

Task

Study the part sentences below that relate to fitness components serving the body. Choose what you think is the correct ending of each sentence from the statement bank and write your answer in the space provided.

a) Flexibility is the body's ability to _____

b) A person with good muscular endurance and stamina can work their muscles over long periods of time without _____

c) Strength can be defined as the muscles' ability to _____

d) Good cardiovascular endurance and stamina will enable the heart and lungs to _____

e) Sportspeople will show good balance by keeping their body stable whether _____



Statement bank

- ...tiring, losing effectiveness or reaching their maximum effort load.
- ...move the joints to the full range of movement.
- ...supply oxygen to the working muscles over long periods of time.
- ...still or moving by keeping their centre of gravity over the base.
- ...apply force and overcome resistance

Principles of Training

Tasks

- 1 — Study the principles of training in the speech bubble.
- 2 — Read the list of key phrases below and match each one with a principle of training by placing the appropriate initial in the box by the phrase.



	Muscular strength is improved by matching the actions of the game or event.
	The exercise is performed above the threshold of training.
	Further training has to be planned.
	Exercise matches the actions of the sport.
	Effects of training are lost three times faster than any gain made.
	After six weeks, training changes to become harder.
	Exercise becomes more intense by increasing the frequency, intensity and time.
	Changes made to the programme are gradual to avoid injury.
	Injury or illness can stop training and so the athlete loses fitness.
	Training is at the pace of a competitive game.
	If training stops, muscles atrophy.
	The body works harder than normal.

- 3 — Using the key phrases as a guide, write three sentences for each principle in the space provided. Use the back of this sheet if you need extra space.





The FITT principle

Tasks

1 — Answer the following questions.

- a) What does the F in FITT stand for? _____
- b) What does the I in FITT stand for? _____
- c) What does the T in FITT stand for? _____
- d) What does the second T in FITT stand for? _____
- e) Which principle tells us that the training exercise should match the sporting action? _____
- f) What does the word 'overload' mean to the person training?

- g) At what percentage of the maximum should a person train to apply the principle of overload?

2 — Fill in the gaps in the following sentences about reaching levels of fitness.

To achieve the minimum level of fitness, a person should follow these guidelines:

- a) A person must train _____ times a week.
- b) Training should last for at least _____ minutes.
- c) The heart rate should rise to between _____ of the maximum heart rate.
- d) To reach higher levels of fitness an athlete must train harder. A top-class athlete should train to _____ of their maximum to reach a performance to suit the level of competition.
- e) Systematic programming is a planned change to the sessions, applying the principle of _____
- f) Reversibility happens when training stops and the muscles _____
- g) Getting the right balance in the amount of training is called _____

I must apply FITT to my training in order to improve.



Components of Fitness

Tasks

This task concerns your understanding of sport and the different fitness components required to be successful in them. Most activities require a variety of components to be successful but, for some sports, developing one in particular may be vital for success.



- 1 — Study the list of activities below.
- 2 — Link each activity to the most important fitness component. Use the words from the word bank to help you.

Goalkeeper _____

Marathon runner _____

Gymnast on the beam _____

Hockey player _____

Sprinter _____

Shot-putter _____

Rugby player in the scrum _____

Netballer _____

Swimmer _____

Footballer _____

Word bank

- Agility
- Cardiovascular endurance and stamina
- Reaction Time
- Balance
- Speed
- Dynamic Strength
- Power
- Flexibility
- Explosive Strength
- Static Strength



Sporting activities and components that serve the body

Tasks

- 1 — In the table below, list the five fitness components
- 2 — Fill in the rest of the table with the positive and negative effects of these fitness components. Give a sporting example for each.

Use the illustrations to help you.

Use the same sport for your positive and negative examples.

An example has been given to help you.

Fitness component	Sport	Positive effects	Negative effects
Cardiovascular endurance and stamina	Cross-country skiing	The body can meet the demands of exercise and keep working without losing skill.	The body cannot transport oxygen to the working muscles so they tire easily before the end of the race.



Cross-country skier



Pole vaulter



Rower



High jumper

Warm-Up & Warm-Down Exam Questions

Describe and explain a suitable warm up that Shareen should carry out before taking part in the run.

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(Total 7 marks)

Describe a suitable warm-down after an intensive training session, and explain how this would help the performer to recover quickly.

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(Total 6 marks)

Warm up

Candidates should be given credit for explaining the importance of the various stages and components of a warm up including stretching exercises/ to extend muscles/and tendons/ to prevent muscle pulls./ Accept descriptions and explanations of specific muscle stretches, eg quadriceps/hamstrings stretch/also give credit for the need to stretch opposing muscles/ in antagonistic pairs.
Gentle jogging/ to increase heart rate/increase breathing rate./ Credit the need for mental preparation.

Warm-Down Answer:

Award up to **two** marks for describing a suitable warm-down.

- Aerobic phase – jogging or walking.
- Stretch phase – static (or gentle dynamic) stretching/ holding each stretch for 10 seconds.
- Each phase should last 5 to 10 minutes.

Award a further **four** marks for explaining how this would enable a performer to recover quickly.

Explanation:

- reduce the stresses on the body
- prevent muscle soreness (DOMS)
- allow muscles to relax
- gradually decrease body temperature
- reduce the chance of dizziness or fainting
- stops blood pooling
- gradually reduces adrenalin in the blood
- stretches or lengthens the muscles
 - remove lactic acid (from muscles) or waste products
 - encourage blood flow to previously active muscles
 - breathing rate reduced
 - heart rate reduced
 - reduce carbon dioxide in the body/increase oxygen intake.

Q1. Components of fitness are important for sports performers.

(a) What is meant by the term 'balance'? Give **one** example from a physical activity.

(2)

(b) What is meant by the term 'co-ordination'? Give **one** example from a physical activity.

(2)

(Total 4 marks)

Q2. Which **one** of the following is the **most** appropriate method of training for a marathon runner?

A Weight training

B Circuit training

C Continuous training

D Fartlek training

Q3. Other than by wearing appropriate footwear and obeying rules, state **four** ways of minimising the risk of injury **before** taking part in physical activity.

1. _____

2. _____

3. _____

4. _____

(Total 4 marks)

Q4. Taking part in a training programme is important for improving performance.

What are the advantages of using circuit training as a method of training?

(Total 4 marks)

Q5. State what is meant by 'fartlek training' **and** explain why it may be the most appropriate form of training for a games player.

(Total 3 marks)

Q6. Training in sport is often structured into seasons.

Outline **two** reasons why performers take part in pre-season training.

1. _____

2. _____

(Total 2 marks)

Q7.What is meant by the principle of 'reversibility' **and** state the effect that it may have on performance?

(Total 2 marks)

Q8.Name **one** test that can be used to measure co-ordination.

(Total 1 mark)

Q9.Explain how an improvement in co-ordination may enable a sportsperson to improve their performance in a named physical activity.

(Total 3 marks)

Q10.

Which **one** of these performers relies most heavily on their cardiovascular endurance?

A 200m runner

B 10 000m runner

C Discus thrower

D Long jumper

(Total 1 mark)

Q11.

The vertical jump test measures leg power.

Discuss the suitability of this test for a football player.

(Total 3 marks)

Q12.

Using your knowledge of agility and reaction time, evaluate the importance of these components of fitness for performers in the 100m sprint.

(Total 6 marks)

- M1.** (a) Award **one** mark for a correct explanation of balance and **one** mark for a correct example from a physical activity.

Balance:

- the ability to retain the centre of mass above the base of support
- physical stability in which the weight of the body is distributed evenly.

Physical activity examples:

- a gymnast being able to maintain a controlled handstand
- a sprinter holding themselves in the set position at the start of a race
- maintaining good footwork when landing in netball or basketball
- a footballer maintaining position on ball when being tackled
- a player preparing to shoot/ move/ save.

Accept the above plus any other suitable examples.

2

- (b) Award **one** mark for a correct explanation of co-ordination and **one** mark for a correct example from a physical activity.

Co-ordination:

- the ability to use two or more body parts together
- the ability to properly control your body when performing a physical activity
- balanced or skilful movement.

Physical activity examples:

- a pole vaulter linking all the sequences of their jump
- a tennis service action
- batting in cricket or rounders.

Accept the above plus any other suitable examples.

2

[4]

M2.Continuous training

[1]

M3.Award **one** mark for stating each way that would minimise the risk of injury before taking part in physical activity, up to a maximum of four marks.

- Carry out a risk assessment.
- Check the playing area for hazards.
- Check the equipment is safe or secure or in good condition.

- Ensure you have trained appropriately or that you are fit enough to take part.
- Carry out a warm up.
- Prepare mentally.
- Wear protective clothing or equipment.
- Correct technique.

Accept any other suitable response.

NB Answers must relate to tasks that would be carried out before taking part in physical activity for marks to be awarded. Do not accept answers that relate to footwear / rules.

[4]

M4. The advantages of circuit training include:

- suitable for general physical fitness;
- suitable for specific physical fitness;
- suitable for skill;
- tuition is minimal/ exercises suits all participants;
- circuit can be designed to meet personal specifications;
- participants can work at own rate (own reps/ sets);
- regulated overload;
- progress can be checked/ monitored easily;
- not demanding on time;
- not demanding on space/facilities/equipment;
- can be done outdoors or indoors;
- all year round training (not dependent on weather);
- many people can be accommodated;
- supervision is not essential;
- reduces tedium.

*accept ... good for strength; speed; stamina; suppleness
(max 1 mark).*

[8]

M5. Award **one** mark for stating what fartlek training is:

- Speed play or training involving changes in speed or distance or terrain or intensity.

Award a further **two** marks for explaining why it is the most appropriate form of training for a games player.

- Replicates many game situations.

- Specific example from a games situation eg sprinting for a pass, jogging back to position.
- Uses all the energy systems.

Accept any other suitable response.

[3]

M6.

Award **one** mark for each of the following points up to a maximum of two marks.

- Increase aerobic fitness / general fitness so that they are ready / match fit for the start of the season (1)
- Increase specific fitness, eg. weight training for strength (1)
- Develop techniques and skills which are specific to the sport (1)

Accept any other suitable outline of reasons why performers take part in pre-season training. Answers must refer to general / specific fitness or technique and skills. Answers must be outlined rather than simple statements.

[2]

M7. Award **one** mark for explanation of principle of reversibility and **one** mark for reference to performance deteriorating.

- (When training stops), any gain to the body is lost (use it or lose it).
- Performance will deteriorate or fitness levels will decrease.

NB Need to state effect on performance.

[2]

M8. Award **one** mark for naming one test that can be used to measure co-ordination.

- Alternate hand ball throw.

NB Accept hand eye coordination test.

[1]

M9. Award up to **three** marks for explaining how an improvement in co-ordination may enable a sports person to improve their performance in a named activity.

- Tennis serve – linking all parts of the action / gain more accuracy or power / so more likely to serve an ace or win the point.
- Athletics triple jump – linking the three phases together / gain more speed or height / enabling greater distance to be achieved.
- Ice skating jumps – linking movements together / more technical or aesthetic / and gain higher marks.
- Gymnastics cartwheel – linking movements together / more technical or aesthetic / and gain higher marks.
- Football volley – timing the movement of the foot to the speed and trajectory of a moving ball / more accuracy or power / increasing chances of a goal being scored.
- Rugby drop goal – synchronising the movement of the hands dropping the ball onto the kicking leg / more accuracy or power / to achieve greater distance.

- Kayaking slalom – linking strokes together / to gain more power / to complete more technical courses or faster times.

Accept any other suitable response.

[3]

M10.

B

[1]

M11.

Award **one** mark for each of the following points up to a maximum of three marks.

Agree (sub-max 2 marks)

- Leg power is a component of fitness needed by football players to perform specific skills (1)
- The test measures the ability to jump up so appropriate for jumping to head the ball / a goalkeeper to launch into a save / other equivalent example (1)

Disagree (sub-max 2 marks)

- The test is not sport-specific as would not test power needed to kick a ball / start a sprint towards the ball / other equivalent example (1)
- Does not test many aspects of playing football, eg. dribbling / marking / other equivalent example (1)
- Can be argued that other aspects of fitness are more important, eg. cardiovascular endurance to last 90 minutes (1)

Accept any other suitable discursive point around the suitability of leg power to football.

[3]

M12.

Level	Marks	Description
3	5 – 6	Knowledge of agility and reaction time is accurate and generally well detailed. Application to performers in the 100m sprint is mostly appropriate, clear and effective. Evaluation is thorough, reaching valid and well-reasoned conclusions for both components of fitness. The answer is generally clear, coherent and focused, with appropriate use of terminology throughout.
2	3 – 4	Knowledge of agility and reaction time is evident for both agility and reaction time but is more detailed for one than the other. There is some appropriate and effective application to performers in the 100m sprint, although not always presented with clarity. Any evaluation is clear but reaches valid and well-reasoned conclusions for one component of fitness more than the other. The answer lacks coherence in places, although terminology is used appropriately on occasions.
1	1 – 2	Knowledge of agility and reaction time is limited. Application to performers in the 100m sprint is either absent or inappropriate. Evaluation is poorly focused or absent, with few or no reasoned conclusions for either component of fitness. The answer as a whole lacks clarity and has

		inaccuracies. Terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content may include:

AO1 – Knowledge of agility and reaction time, eg.

- Agility – changing direction at speed, whilst maintaining control
- Reaction time – time taken to initiate response to a stimulus

AO2 – Application to the 100m, eg.

- 100m sprint does not need agility because it is run in a straight line and therefore changing of direction is not required
- 100m does need reaction time because runners start in a stationary position and have to react to the gun (stimulus) at the start

AO3 – Analysis/evaluation of the importance of agility and reaction time in 100m, eg.

- Agility – any changes in direction could result in leaving a lane and being disqualified
- Agility – need to change direction is unlikely. However, athlete may change their positioning within their own lane
- Reaction time – 100m is the shortest outdoor sprint event and therefore reaction time at the start of the event is usually crucial to success
- Reaction time – is a major component impacting on overall time taken to complete the 100m sprint
- Reaction time – it is possible to win a race with a poor reaction time start
- Neither agility nor reaction time is as important as speed

Credit other suitable responses relevant to the question.

