

**GCSE PE
REVISION QUESTIONS
2011**

Tick off list of revision topics

Section 1

- Reasons for taking part – physical, social, mental
- Influences – people, image, cultural, resources, health and well-being, socio-economic
- Opportunities – policies
- Health, exercise, fitness and performance
- Health-related exercise
- Skill-related fitness
- PAR-Q and fitness testing
- Principles of training
- Goal setting
- Methods of training
- Exercise sessions: Warm-up, main activity and cool down
- Aerobic and anaerobic exercise
- Heart rates
- Target zones, threshold of training
- Graphical analysis
- Exercise, diet, work and rest
- Balanced diet
- Diet and exercise

Section 2

- Body types (somatotypes) – mesomorph, endomorph, ectomorph
- Optimum weight and performance
- Obese, overfat, overweight, underweight and anorexic
- Smoking and alcohol
- Performance enhancing drugs – effects on health
- Risks and participation – preparation and readiness to take part
- Blood pressure – systolic and diastolic
- Heart rate, stroke volume and cardiac output
- The body systems and rest and adaptation to exercise
- Diet and the body systems, including HDL and LDL
- Recreational drugs & the cardiovascular and respiratory systems
- Tidal volume and vital capacity
- Muscles and exercise – lactic acid – effects of regular participation on muscles
- Isotonic and isometric contractions
- Muscle injuries – treatment
- Performance enhancing drugs
- Skeletal system joints: hinge – ball and socket and their movement possibilities in exercises
- Ligaments and tendons – injuries – treatment – diet

SECTION 1

1. List as many reasons as you can for taking part in physical activity.
2. See if you can divide those reasons into mental, physical and social effects of exercising.

A.

PHYSICAL	SOCIAL	MENTAL
Contribute to good physical health	Mix with others	Relieve and / or prevent stress and tension
Physical challenge	Make new friends	Mental challenge
Increase fitness	Meet current friends	Increase self esteem and confidence
Improve performance	Develop teamwork / cooperation	Help the individual feel good
Improve any of the health related exercise factors -Cardiovascular fitness - Muscular strength - Muscular endurance - flexibility - body composition	Work with others	Contribute to enjoyment of life

3. What influences are there on people's ability to take part in sport and exercise?

A. People: Family, peers, role models
Image: Fashion, media coverage
Cultural Factors: Age, disability, gender, race
Resources: Availability, location, access, time
Health and Wellbeing: Illness and health problems
Socio – economic: Cost, status

4. What is Aesthetic Appreciation?

A. To be able to see the beauty in a performance.

5. What is the definition of Health?

A. A state of complete physical, mental and social wellbeing, and not merely the absence of disease and infirmity

6. What is the definition of Exercise?

A. A form of physical activity done to maintain or improve health and / or physical fitness.

7. What does HRE stand for?

A. Health Related exercise

8. List the 5 components of HRE and give a full definition for each.

- A. Cardiovascular Fitness: The ability to exercise the entire body for long periods of time.
Muscular Strength: The amount of force a muscle can exert against a resistance.
Muscular Endurance: The ability to use the voluntary muscles many times without getting tired.
Flexibility: The range of movement possible at a joint.
Body Composition: The percentage of body weight that is fat, muscle and bone.

9. What is the definition of fitness?

- A. The ability to meet the demands of the environment.

10. What is the definition of performance?

- A. How well a task is completed

11. What does SRF stand for?

- A. Skill Related Fitness

12. List the 6 components of SRF and give a full definition of each.

- A. Agility: The ability to change the position of the body quickly and to control the movement of the whole body.
Balance: The ability to retain the centre of mass (gravity) of the body above the base of support with reference to static (stationary), or dynamic (changing) conditions of movement, shape and orientation.
Coordination: The ability to use two or more body parts together.
Power: The ability to undertake strength performances quickly. $\text{Power} = \text{Strength} \times \text{Speed}$
Reaction Time: The time between the presentation of a stimulus and the onset of movement
Speed: The differential rate at which an individual is able to perform a movement or cover a distance in a period of time.

13. Chose a sport and list the three most important components of SRF for it, and explain why.

- A. Most sports will need all the elements in some way; they just need to be justified.

14. List as many roles and careers within sport as you can think of.

- A. E.g. Professional, coach, teacher, journalist, leisure manager, physiotherapist, official etc

15. What does PAR-Q stand for?

- A. Physical Activity Readiness Questionnaire

16. Think of the areas of HRE and SRF. Can you think of a fitness test you could use for each of these areas and explain it?

- A. Cooper 12 minute run – Cardiovascular Fitness and Muscular Endurance
Hand grip strength test - Muscular Strength
Sit and reach test – Flexibility
Harvard step test - Cardiovascular Fitness and Muscular Endurance
Illinois agility run - Agility
Standing stork test – Balance (static)
Sergeant jump – Power
Standing broad jump – Power
Ruler drop test – Reaction time

30 metre sprint – Speed
Three ball juggle – Coordination

17. What are the 4 principles? Give a definition of each and explain why each would help improve fitness.

- A. Individual needs / differences: Matching the training to the needs of an individual
Specificity: Matching training to the requirements of an activity
Progressive overload: To gradually increase the amount of overload so that fitness gains occur, but without potential for injury.
Rest and recovery: The time required for the repair of damage to the body through training or competition.

18. What does FITT stand for?

- A. Frequency, Intensity, Time, Type

19. Explain each element.

- A. Frequency – How often
Intensity – How hard
Time – How long
Type – What kind of activity / exercise

20. Why would you use the FITT principle?

- A. Used to increase the amount of work the body does, in order to achieve overload.

21. Why do you set goals in your training?

- A. So that you can plan and monitor your training and progress. Those that set goals that they can then achieve are more likely to continue with fitness programmes than those that do not.

22. What does SMART mean?

- A. Specific, Measurable, Achievable, Realistic, Time bound

23. Why do we set SMART goals?

- A. The intention is to make them easier to achieve.

24. What are methods of training?

- A. Different ways we can train to help improve our fitness.

25. List the 6 methods of training studied?

- A. Interval Training – Periods of work followed by periods of rest. Good for team games as it mirrors the activity.
Continuous Training – Continuous work at a low intensity for at least 15 – 20 minutes.
Fartlek Training - Periods of work and periods of rest of light work like interval training. The difference is this is completed over different terrains and hills etc.
Circuit Training - Involves a number of exercises, arranged as to avoid exercising the same muscle groups consecutively. Arranged as stations.
Weight Training – Uses progressive resistance either in terms of the weight itself or in terms of repetitions to increase muscular strength and endurance.
Cross Training – A mixture of the other training methods or activities.

26. Give at least 2 advantages of each.

- A. Interval Training – Includes repeated sprint running or swimming which is anaerobic.
Includes rest periods which allows recovery.
- Continuous Training – Improves aerobic fitness.
It is very cheap as there is no equipment needed.
- Fartlek Training – Can take place off the track in different landscapes and terrains.
Programmes can be very flexible.
- Circuit Training – People of all fitness levels can participate.
Can be kept interesting with a wide range of exercises.
- Weight Training – Easy to monitor progress and overload
Wide range of exercise to work different muscles and maintain interest.
- Cross Training – Allows for variety
Allows the option of resting certain muscle groups.

27. What is the difference between free weights and machine weights?

- A. Free weights allow you to lift heavier weights and complete a wider variety of exercises as you manually create your own bars. You do however normally need to work with a partner as a spotter to use free weights for safety. Machine weights make weight lifting accessible to all offering a wide range of exercises that can be completed individually as the machines have built in safety mechanisms.

28. Why would you use different methods to train?

- A. To create a varied and enjoyable programme and also to allow focus on specific muscle groups.
Different methods offer different advantages.

29. Think of the methods you use most regularly within your own sport, can you justify why you use them?

- A. Think of a number of different sports and justify your answers.

30. What are the three areas of an exercise session?

- A. Warm-Up, Main Activity, Cool-down

31. What should each area contain?

- A. Warm-Up – Exercises to gradually raise body temperature and heart rate and improves the exchange of oxygen from haemoglobin. A warm up should provide a smooth transition to the main activity. A warm-up is essential to prevent injury, improve performance, and practice skills before the event / match / game and prepare psychologically. The second phase of the warm –up should include stretches, these should be appropriate and relevant to the main activity. The warm –up should also include some skills based activities relevant to the main activity.

Main Activity – Is usually a training session using one of the methods of training, although it can be a game or competition. It always raises the performers heart rate above the normal level and last for at least 20 minutes.

Cool Down – Needs to gradually return the body to its normal body temperature and resting heartrate. Cooling down properly is important to disperse lactic acid to help prevent muscle soreness and stiffness.

32. Explain Aerobic and Anaerobic fitness.

A. Aerobic Fitness – ‘With Oxygen’. If exercise is not too fast and is steady, the heart can supply all the oxygen the muscles need.

Anaerobic Fitness – ‘Without Oxygen’. If exercise is done in short, fast bursts, the heart cannot supply blood and oxygen to muscles as fast as the cells use them.

33. Explain the following:

- A.
- **Heart rate:** The number of times the heart beats each minute.
 - **Resting Heart rate:** The number of times the heart beats each minute when the body is completely at rest.
 - **How to measure Heart rate:** Check the radial pulse (In the wrist). Or for more accurate results, wear a heart monitor.
 - **Working Heart rate:** The measurement of the heart rate during or immediately after exercise.
 - **Maximum Heart rate (MHR):** Can be calculated by subtracting the persons age from 220.
 - **Target Heart rate / Target Zone:** Can be found by taking 60% of the maximum heart rate as the lower threshold and 80% as the upper threshold. This means that the person will be working at a worthwhile level of training and getting fitter.
 - **Recovery Rate:** Is the measure of how long it takes for a persons heart rate to return to its resting level after a training session.

34. How do Exercise, Diet, Work and Rest link?

A. Work can provide finance, motivation and opportunity, and exercise the fitness necessary to work enjoy life. Adequate rest maintains a balance between the two.

35. Can you list the 7 parts of a balanced diet?

A. Carbohydrates, protein, fats, minerals, vitamins, fibre, water

36. What do we mean by a “balanced diet”?

A. Eating different ‘types’ of food in correct quantities & combinations

37. What are the two types of carbohydrate and what do they do?

A. Simple (sugars) – fast release energy
Complex (starches) – slow release energy

38. Which food groups can provide energy?

A. Carbohydrates, fat, protein

39. What are the two types of fat and what foods are included in each?

A. Saturated – animal fats
Unsaturated – nuts, lentils & pulses

40. Which food group helps build muscle and repair tissue?

A. Protein

41. Which food group do these products belong to? Fish, meat, poultry, eggs, cheese, milk, cereals, peas, nuts and beans?

A. Protein

42. Which food group helps the digestive system function properly?

A. Fibre

43. Which food group helps prevent fatigue?

A. Carbohydrates

44. Which element helps heat control and waste removal?

A. Water

45. What is Carbo- Loading? And what effect does it have?

A. A diet very high in complex carbohydrates to fill energy stores prior to an event after having a diet low in carbohydrates a few days prior – complex carbohydrates are a slow release form of energy.

SECTION 2

1. What is a Somatotype and what are the 3 types?

A. “Classifications of body type”. Endomorph, Mesomorph, Ectomorph

2. Give a brief description of each and link them to specific sports.

A. Endomorph: “An individual with wide hips and narrow shoulders characterised by fatness”
Mesomorph: “An individual with wide shoulders and narrow hips characterised by muscularity”
Ectomorph: “An individual with narrow shoulders and narrow hips characterised by thinness”

3. What is Optimum weight and what factors can affect it?

A. Optimum Weight: “Best weight or desirable weight – the best weight that a player performs at”
Height, gender, bone structure, muscle girth, genetics.

4. Can you give definitions of, anorexic, under weight, over weight, overfat and obese?

A. Anorexic: “A prolonged eating disorder due to the loss of appetite”
Underweight: “Weighing less than is normal, healthy or required”
Overweight: “Having weight in excess of normal (not harmful unless accompanied by overfatness)”
Overfat: “Having body fat in excess of normal”
Obese: “A term used to describe people who are very overfat”

5. Smoking and Alcohol are considered to be Recreational Drugs. Discuss the effects of each.

A. Smoking – stimulant, raised the heart rate
Alcohol – sedative, slows reaction times and impairs judgements

6. Name the 6 Performance Enhancing Drugs discussed on your course & explain the effects of each.

A. Anabolic Steroids – “Drugs that mimic the male sex hormone testosterone and promote bone and muscle growth”

- Increases muscle mass
- Develops bone growth
- Increases aggression
- Produces quick results

Beta Blockers - “Drugs that are used to control the heart rate & have a calming and relaxing effect”

- Lower heart rate & blood pressure
- Stress levels and anxiety are reduced

Diuretics - “Drugs that elevate the rate of urine production.”

- Weight Loss
- Masking Agents

Narcotics Analgesics - “Drugs that can be used to reduce pain”

- Pain Relief (depresses central nervous system) BUT increases the likelihood of injury

Stimulants - “Drugs that have an effect on the central nervous system, such as increased mental and/or physical alertness”

- Stimulates nervous system: increases alertness & overcomes tiredness
- Offsets the effects of DOMS

Peptide Hormones - “Drugs that cause other hormones to be produced”

- HGH - Increase muscle growth
- EPO- Increase the number of red blood cells (O₂ and lactic acid)

7. What are Masking Agents?

A. Masking agents are drugs or compounds that are taken with the express purpose of hiding or "masking" the presence of specific illegal drugs that are screened for athletic drug testing. Masking agents have the potential to impair or conceal the banned substance in the urine. The most common masking agents include diuretics, epitestosterone, probenecid and plasma volume expanders

8. What is Blood Doping?

A. This is the practice of boosting the number of red blood cells (RBCs) in the bloodstream in order to enhance athletic performance. This is because they carry oxygen from the lungs to the muscles, more RBCs in the blood can improve an athlete's aerobic capacity (VO₂ max) and endurance.

9. To ensure risk is minimal in sporting activities and to avoid injury, what do you need to consider?

A. Warming up / Cooling down

Checking equipment and facilities

Using protective equipment and clothing

Ensuring competition is balanced

Ensuring rules are adhered to

Ensuring participants are physically ready / capable

10. Can you think of some ways you could balance a competition / make it fair?

- A. Weight Categories
 - Mixed or single sex
 - Age
 - Handicap system

11. What is the cardiovascular system made up of?

- A. Heart, blood and blood vessels

12. What jobs does it have?

- A. To supply the body with oxygen and nutrients
 - To remove waste products such as carbon dioxide.

13. What is blood pressure?

- A. The force exerted by circulating blood on the walls of the blood vessels.

14. Explain the difference between Systolic and Diastolic pressure.

- A. Systolic blood pressure is the maximum blood pressure in the arteries when the heart contracts and pushes blood out through the aorta into the body.

Diastolic blood pressure is the pressure of the blood during the relaxation phase between heartbeats (when the heart is at rest).

15. What are the immediate effects of exercise on the cardiovascular system?

- A. Breathing becomes faster and deeper
 - Body temperature increases
 - Sweating starts and body requires fluids
 - Muscles begin to ache

16. Name some of the effects of regular exercise on the cardiovascular system.

- A. Decreased resting heart rate
 - Quicker heart recovery rate
 - Increased stroke volume
 - Increased cardiac output
 - Reduced blood pressure
 - Healthier veins and arteries

17. Explain some effects lifestyle can have on the cardiovascular system.

- A. Think about: Rest, high cholesterol, recreational drugs, sedentary lifestyle and lack of exercise and stress.

18. What is 'Cardiac output'?

- A. The amount of blood ejected from the heart in one minute.

19. What is 'stroke volume'?

- A. The volume of blood pumped out of the heart by each ventricle during one contraction.

20. What are the main functions of the respiratory system?

- A. To bring oxygen into the body
To take carbon dioxide out of the body

21. What is 'Tidal Volume'?

- A. The amount of air inspired and expired with each normal breath at rest or during exercise.

22. What is 'Vital Capacity'?

- A. The greatest amount of air that can be made to pass into and out of the lungs by the most forceful inspiration and expiration.

23. What are Alveoli and what do they do?

- A. The Alveoli are found at the end of the bronchioles. They are surrounded by capillaries. Oxygen is transferred into the blood through the semi permeable walls of the capillaries. Once oxygen is in the blood it can get to the muscles that need it. Carbon dioxide and other waste products are also able to be removed in this way. This is called 'Gaseous exchange'. This process is improved by regular exercise and damaged by nicotine and cigarettes.

24. How does lung capacity effect sporting success?

- A. It allows more oxygen to get into the blood quicker and be used by the muscles. It will also allow more CO₂ to be exhaled in each breath. This will prevent the athlete tiring and suffering from lactic acid build up and oxygen debt as quickly and therefore improving performance.

25. What are the effects of exercise on the respiratory system? List as many as you can.

- A. Short Term Effects: Breathing quickens & deepens, O₂ Debt
Long Term Effects:
Vital Capacity Increases due to hypertrophy of the intercostal muscles & diaphragm
Gaseous Exchange improves due to more capillaries forming around the alveoli & more alveoli being used

26. What is Lactic acid?

- A. A poison that builds up in the muscles due to Oxygen Debt

27. What is Oxygen debt?

- A. "The extra oxygen consumed during recovery from a period of strenuous physical activity, compared with the amount which would usually have been consumed over the same length of time at rest."

28. What are the energy equations?

- A. Aerobic: Glycogen + O₂ = Energy = CO₂ + Water
Anaerobic: Glucose = Energy = Lactic Acid

29. What is the muscular system and what does it do?

- A. Allows Movement- fibres contracting and lengthening, defines body shape, and maintains posture e.g. Trapezius & muscle tone

30. What are the 3 types of muscle?

A. Cardiac (heart), Involuntary (e.g. intercostal, diaphragm), Voluntary (e.g. quadriceps, hamstring, biceps, triceps)

31. Can you name the 11 muscles we have taught you and demonstrate their location?

A. Trapezius – Neck
Deltoids – Shoulder
Triceps & Biceps – Arm
Latissimus Dorsi – Side of trunk
Pectorals – Chest
Abdominals – Stomach
Gluteals – Bum
Hamstrings – Back of the upper leg
Quadriceps – Front of the upper leg
Gastrocnemius – Back of the lower leg

32. Think of the movement possible in each muscle.

A. Trapezius – Rotates shoulder backwards
Deltoids – Abducts the upper arm from the body
Triceps & Biceps – Extension & Flexion of the arms
Latissimus Dorsi – Rotates upper arm at the shoulder
Pectorals – Adduction of arm
Abdominals – Flexion & Rotation of trunk
Gluteals – Extension of the upper leg
Hamstrings – Flexion of the leg at the knee
Quadriceps – Extension of the leg at the knee
Gastrocnemius – Plantar flexion of the foot

33. How are muscles attached to bone?

A. Tendons

34. What is the origin?

A. Where the muscle is attached to the bone that doesn't move.

35. What is the insertion?

A. Where the muscle is attached to the bone that does move

36. Why do muscles work in pairs? Use the words Prime mover (agonist) and antagonist in your answer.

A. Because muscles can only pull against a bone. To allow flexion of the arm the bicep is the prime mover (contracts) and the tricep is the antagonist (relaxes). To allow extension of the arm the tricep is the prime mover and the bicep is the antagonist.

37. What is an Isotonic Contraction?

A. "Muscle contractions that results in limb movement." (Think isotonic sports drinks)

38. What is an Isometric Contraction?

A. "Muscle contractions which results in increased tension but the length does not alter."

39. What are the long term effects of exercise on the muscular system?

A. Hypertrophy, increased muscular strength & muscular endurance, increased power, better tone, better posture, increased strength of ligaments, tendons & bones.

40. How do you treat muscular injuries?

A. R.I.C.E – Rest, Ice, Compression, Elevation

41. What are the 5 functions of the Skeletal system?

A. Protection, support, movement, blood production, shape

42. What is a joint?

A. “A place where two or more bones meet”

43. What is a hinge joint and where are they found?

A. Elbow & Knee – need to know structure of a hinge joint

44. What is a ball and socket joint and where are they found?

A. Elbow & Hip – need to know structure if a ball & socket joint

45. Explain Flexion, Extension, Adduction, Abduction and Rotation.

A. Flexion - Closing or making the angle at a joint smaller

Extension - Increasing the angle at between the bones at a joint

Adduction - A movement bringing part of the body towards the centre

Abduction - A movement taking part of the body away from the centre line

Rotation - The joint moves in a circular motion

46. Which movement occurs at which joints?

A. Hinge – flexion & extension

Ball & Socket – flexion, extension, adduction, abduction, rotation

Pivot - rotation

47. What are the effects of physical activity on bones?

A. Bones increase in density & strength

Tendons become thicker & stronger – Increasing power of movement

Ligaments become thicker & stronger – Increasing flexibility

Reduced chance of osteoporosis (Weakening of bones in old age)

48. What injuries can occur to the skeletal system?

A. Fractures – broken or cracked bone normally caused by a serve blow or twisting or a joint

Closed – skin in not broken

Compounded – bone protrudes through skin

Simple – Fracture in one line with no displacement of the bone

Stress fracture – Overuse injury

Tennis Elbow – Overuse of tendons

Dislocation – A bone or joint is forced out of its normal position

Sprain – Damaged or torn ligament

Torn cartilage

49. Why is diet so important to the skeletal system?

- A. Calcium – bones grow and increase in density
- Vitamin D – helps absorb calcium
- Smoking and drinking too much has a toxic effects on bones

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