

Examination Scope: PHYSICAL EDUCATION

Year: 11

Mock EXAM

Preparation:

The topics that will be in your mock exam are listed below. It is essential that you build on your knowledge and success by following revision guidance and filling in any gaps that you may have in your understanding.

In the time between now and the exam please ensure that you prepare in a **quiet place away from any distractions or with other PE students, to share knowledge, link information with examples, practice exam questions etc.**

Revision:

- Use your flash cards to help you revise the definitions of key terms.
- Read through your classwork and booklets.
- Practice answering long questions worth 3+ marks. Often these questions will include the words 'Explain' or 'Describe' such as *Explain how antagonistic pairs work together*. This will require you to link your knowledge from different parts of a topic and applying sporting examples.
- Use the BBC Bitesize website to check your knowledge and complete quizzes.
- Work with another student and check each other's understanding. Test each other's knowledge of key facts such as the names of bones and muscles as well as how each joint moves and why.
- Ensure that you can link these key facts in sporting examples such as during a Tennis serve, how is the shoulder joint moving and which bones and muscles are enabling this.

Exam Materials:

Writing equipment (A pen that writes in black or blue ink, pencil, eraser and sharpener).

Exam Date	Exam Type	Exam Length
January, 2018 (day tbc)	Paper 1	1 hour 45 mins

Topics to Revise: Anatomy and physiology

Topic	Details
Functions of the skeleton	<p>The functions of the skeleton, to include:</p> <ul style="list-style-type: none"> • shape and support • muscle attachment for movement • protection • red blood cell production. <p>Refer to the functions in sporting examples.</p>
Bones of the skeleton	<p>Classify the bones specified below as long, short irregular or flat.</p> <p>The location and function of the following bones:</p> <ul style="list-style-type: none"> • cranium • clavicle • scapula • humerus • radius • ulna • carpals, metacarpals, phalanges • ribs • pelvis • femur • tibia • fibula • patella • talus • tarsals, metatarsals, phalanges.
Joint types	<p>Examples of the different types of joints:</p> <ul style="list-style-type: none"> • fixed or immovable joints / fibrous joints • slightly movable / cartilaginous joints • freely movable joints / synovial joints – ball and socket and hinge.
Joint structure and function	<p>The structure of a synovial joint and function of its components:</p> <ul style="list-style-type: none"> • synovial membrane • synovial fluid • joint (fibrous) capsule • cartilage • ligaments
Movement at joints	<p>Describe types of movement in physical activities:</p> <ul style="list-style-type: none"> • flexion / extension • abduction / adduction • rotation • plantar flexion / dorsiflexion. <p>Compare the range of movement and stability of ball and socket joints with hinge joints.</p>
Muscles	<p>The location and role of the following muscles:</p> <ul style="list-style-type: none"> • latissimus dorsi • trapezius • deltoid

	<ul style="list-style-type: none"> • pectorals • biceps • triceps • abdominals • gluteals • hip flexors • hamstrings • quadriceps • gastrocnemius • tibialis anterior. <p>The role of tendons</p>
Antagonistic muscle action and muscle contractions	<p>With reference to the shoulder, elbow, hip, knee and ankle:</p> <ul style="list-style-type: none"> • the action of agonists (prime movers) and antagonists • how the muscles / muscle groups work using isotonic (concentric / eccentric) and isometric contractions.
Muscle fibre types	<p>The differences between muscle fibre types (slow and fast twitch) with reference to physical activities, limited to:</p> <ul style="list-style-type: none"> • force created • fatigue tolerance • aerobic/anaerobic energy supply

Respiratory System

Pathway of air	<p>The pathway of air into the body:</p> <ul style="list-style-type: none"> • mouth/nasal passage • trachea • bronchi • bronchioles • alveoli.
Gaseous exchange at the alveoli	<p>Identify and explain the characteristics of alveoli that enable gaseous exchange to occur.</p>
Mechanics of breathing	<p>The function of the diaphragm and intercostal muscles in normal breathing.</p>
Breathing volumes and minute ventilation	<p>Describe and explain:</p> <ul style="list-style-type: none"> • tidal volume • vital capacity • residual volume • minute ventilation. <p>The effect of exercise on these volumes</p>

Circulatory System

Components of blood	<p>The function of:</p> <ul style="list-style-type: none"> • plasma • red blood cells • white blood cells • platelets.
Haemoglobin	<p>The role of haemoglobin in carrying oxygen and carbon dioxide.</p>
Blood vessels	<p>The basic structure (wall thickness, lumen size and presence of valves) and function of:</p>

	<ul style="list-style-type: none"> • arteries • capillaries • veins.
Heart structure and function	<p>Heart structure and function The function and location of:</p> <ul style="list-style-type: none"> • atria • ventricles • valves. (Valve names are not required.) <p>The pathway of blood through the heart, to include:</p> <ul style="list-style-type: none"> • aorta • vena cava • pulmonary artery • pulmonary vein.
Cardiac output	<p>Explain the terms cardiac output, stroke volume and heart rate with reference to how cardiac output can be calculated. The effect of exercise on the heart.</p>

Energy supply and the effects of exercise on the body

Aerobic and anaerobic respiration	<p>Outline how energy can be released, summarising the equations as:</p> <ul style="list-style-type: none"> • aerobic (glucose + oxygen → carbon dioxide + water) • anaerobic (glucose → lactic acid). <p>Link duration and intensity to the use of aerobic and anaerobic respiration:</p> <ul style="list-style-type: none"> • longer, low-intensity activities require aerobic • shorter, intense activities require anaerobic • examples of aerobic and anaerobic energy demands in physical activities.
Recovery	<p>Recovery is required after exercise, with reference to:</p> <ul style="list-style-type: none"> • Excess Post-exercise Oxygen Consumption (EPOC) (also known as oxygen debt) – caused by anaerobic exercise, producing lactic acid and requiring high breathing rate after exercise to remove lactic acid • Factors affecting recovery time.
Short-term effects of exercise	<p>The short-term effects of exercise:</p> <ul style="list-style-type: none"> • heart rate increases • breathing rate increases • red skin / heat control / sweating • fatigue (feeling tired) • suffering from nausea / feeling light-headed.
Long-term effects of exercise	<p>The long-term effects of exercise on:</p> <ul style="list-style-type: none"> • heart size (hypertrophy) • resting pulse rate (bradycardia) • stroke volume • ability to tolerate lactic acid.

Simple biomechanics

Principles of force	<p>Explain the concepts of force, mass and acceleration:</p> <ul style="list-style-type: none"> • a force can be a pull or a push • force = mass × acceleration • increases/decreases in force can cause acceleration/deceleration.
Applications of force	<p>Identify and explain the forces acting upon:</p> <ul style="list-style-type: none"> • a moving performer (gravity, air resistance, muscular force) • a sprinter in the blocks (gravity, ground reaction force, air resistance) • an object flying through the air (force applied at release, air resistance, gravity).
Levers	<p>Identify and draw the three classes of levers:</p> <ul style="list-style-type: none"> • first class • second class • third class. Identify the fulcrum, resistance and effort. <p>State an example of each type of lever in the body</p>

Health, fitness and training

Health and well-being	<p>The World Health Organization (WHO) defines health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’.</p> <p>Physical health and well-being:</p> <ul style="list-style-type: none"> • all body systems working well • free from illness / injury / disease • able to carry out everyday tasks. <p>Mental health and well-being:</p> <ul style="list-style-type: none"> • able to cope with stress • can control emotions • feeling good / self-esteem. <p>Social health and well-being:</p> <ul style="list-style-type: none"> • essential human needs are met • friendship and support • having value within society • ability to mix with other people.
Fitness	<p>Definition of fitness – the ability to cope with (or meet) the demands of the environment.</p>
The relationship between health and fitness	<p>The relationship between health and fitness, including:</p> <ul style="list-style-type: none"> • decreased fitness because of ill health, e.g. ill health can lead to an inability to train (lowering fitness) • increased fitness despite ill health, e.g. unhealthy but able to train (increasing fitness). <p>The need to:</p> <ul style="list-style-type: none"> • live a healthy, active lifestyle • eat a balanced diet • maintain a level of fitness to help maintain health. <p>Exercise and fitness can have positive effects on physical, mental and social health.</p>

Diet and energy sources	<p>The function of nutrients, including carbohydrates, fats, proteins and water. Examples of sources of these nutrients in food. The energy balance suitable for physical activities. Different energy needs for performers: males compared with females, teenagers compared with children, active lifestyles compared with sedentary lifestyles. Unused energy is stored as fat, which could cause obesity.</p> <p>Energy is derived from food sources:</p> <ul style="list-style-type: none"> • muscle cells release energy from glucose in a process called respiration • some glucose is converted to glycogen and stored in the muscles and liver
Components of fitness	<p>The recognised components of health-related and skill-related fitness, linking these to performance in physical activities:</p> <ul style="list-style-type: none"> • agility • balance: static and dynamic • cardiovascular endurance / stamina • coordination • flexibility • muscular endurance • power • reaction time • speed • strength.
Test protocols	<p>How to carry out the following fitness tests:</p> <ul style="list-style-type: none"> • cardiovascular endurance / stamina (Multi-Stage Fitness Test / 12-Minute Cooper Run) • flexibility (Sit and Reach Test) • muscular endurance (Multi-Stage Abdominal Curl Conditioning Test) • power (Vertical Jump Test) • speed (30-Metre Sprint Test) • strength (1 Rep Max Test / Hand Grip Dynamometer Test). <p>Skill-related components of fitness:</p> <ul style="list-style-type: none"> • agility (Illinois Agility Test) • balance: static and dynamic (Standing Stork Test – static) • coordination (Anderson Wall Toss Coordination Test) • reaction time (Ruler Drop Test).
Reasons for fitness testing	<p>The main reasons for carrying out fitness tests, linked to:</p> <ul style="list-style-type: none"> • suitability for different physical activities • identifying strengths and weaknesses • monitoring improvement • comparison to others • informing the design of a training programme • motivation
VO2 max (maximum oxygen uptake)	<p>Describe and explain VO2 max and its importance as a measure of cardiovascular endurance / stamina.</p> <p>Factors which affect VO2 max level:</p> <ul style="list-style-type: none"> • age • gender • genetics • lifestyle • training.

Principles of training and overload	<p>How to apply SPORT and FITT to a training programme.</p> <p>Principles of training (SPORT):</p> <ul style="list-style-type: none"> • Specificity • Progression • Overload • Reversibility • Tedium. <p>Principles of overload (FITT):</p> <ul style="list-style-type: none"> • Frequency • Intensity • Time • Type (method of training). <p>Identify the dangers of overtraining</p>
Methods of training	<p>The reasons for using the following training methods, including a description of each type and how to achieve the training aim.</p> <p>Continuous training:</p> <ul style="list-style-type: none"> • advantages and disadvantages • methods to use – run, swim, cycle, row • calculating a suitable intensity for aerobic gains – 60–80% of maximal heart rate • safety considerations, e.g. footwear. <p>Weight training:</p> <ul style="list-style-type: none"> • advantages and disadvantages • methods to use (isotonically) – free weights, kettle bells, resistance machines • use of one rep. max. to calculate suitable intensity • safety considerations, e.g. spotter. <p>Fartlek training:</p> <ul style="list-style-type: none"> • advantages and disadvantages • methods to use – running, cycling (variation of speed and terrain), etc. • use of Borg scale to measure intensity • safety considerations, e.g. equipment checks. <p>Plyometric training:</p> <ul style="list-style-type: none"> • advantages and disadvantages • links to improvement in power • methods to use, e.g. depth jumping, hurdle jumps • safety considerations, e.g. injury prevention. <p>Circuit training:</p> <ul style="list-style-type: none"> • advantages and disadvantages • stations can be assigned to improve different components of fitness • periods of work and rest that can be manipulated for different gains • safety considerations, e.g. equipment. <p>High-Intensity Interval Training (HIIT):</p> <ul style="list-style-type: none"> • advantages and disadvantages • periods of work and rest that can be manipulated for different gains • reasons for the period of rest – removal of waste products • safety considerations, e.g. risk of overexertion.

High-altitude training as a specialist training method	The reasons for carrying out altitude training: <ul style="list-style-type: none"> • increase in red blood cell count • advantages with link to endurance activities • disadvantages with link to difficulties in completing the training.
Reasons for warming up and cooling down	The physiological and psychological reasons for a warm up and cool down. The phases of a warm up and cool down. Describe a suitable warm up and cool down related to a specific physical activity: <ul style="list-style-type: none"> • warm up – pulse raiser, stretches, familiarisation / skill-related activities • cool down – gradual decrease in pulse, stretches.

Skill acquisition and psychology

Skill and ability	The difference between skill and ability. The factors affecting variations in skill level: <ul style="list-style-type: none"> • age and maturity • culture • motivation • anxiety • arousal conditions • facilities • environment • teaching and coaching.
Skilled performance	The characteristics of a skilled performance, including: <ul style="list-style-type: none"> • fluent • aesthetically pleasing • consistent • accurate • goal-directed • coordinated.
Skill classification continua	Different types of skills, including: <ul style="list-style-type: none"> • basic and complex • fine and gross • open and closed. Place specific physical skills on the various continua and justify these choices.
Simple information processing mode	The stages of a basic information processing model: <ul style="list-style-type: none"> • input • decision-making • output • feedback. Identify the role of each stage. Explain the difference between short-term and long-term memory. Apply the stages of information processing to physical activities. Explain the concept of limited channel capacity / single-channel hypothesis.
The stages of learning	The characteristics of a performer at each stage of learning, naming and explaining: <ul style="list-style-type: none"> • cognitive • associative • autonomous.

Feedback	<p>The different types of feedback, naming and describing:</p> <ul style="list-style-type: none"> • intrinsic • extrinsic • knowledge of performance • knowledge of results. <p>Explain examples of how the types of feedback may be given, e.g. extrinsic feedback from a coach.</p> <p>Make links between the most appropriate types of feedback and the stages of learning:</p> <ul style="list-style-type: none"> • cognitive performers make more use of extrinsic feedback / knowledge of results • autonomous performers can use intrinsic feedback / knowledge of performance. <p>Explain the importance of receiving feedback</p>
Guidance	<p>The different types of guidance, naming and describing:</p> <ul style="list-style-type: none"> • visual • verbal • manual/mechanical. <p>Explain examples of how the types of guidance may be given, e.g. visual guidance via demonstrations.</p> <p>Make links between the most appropriate types of guidance and the different stages of learning.</p>
Goal-setting	<p>The principles of SMARTER goal-setting (Specific, Measurable, Agreed, Realistic, Time-phased, Exciting, Recorded).</p> <p>Apply knowledge of goal-setting to suggest appropriate use of SMARTER targets in physical activities.</p> <p>Using goal-setting as a means to control anxiety.</p>
Motivation	<p>The types of motivation, naming and describing:</p> <ul style="list-style-type: none"> • intrinsic • extrinsic. <p>Provide examples of intrinsic and extrinsic motivation.</p> <p>Explain the effect of intrinsic motivation and extrinsic motivation and how they can be used in physical activities.</p>
Arousal	<p>The definition of arousal.</p> <p>Draw and explain the Inverted-U theory (Yerkes-Dodson law).</p> <p>Explain how optimal arousal varies for different skills, e.g. fine skills require lower levels of arousal than gross skills.</p> <p>Apply knowledge to explain the effects of underarousal and overarousal.</p>
Anxiety	<p>The two types of anxiety, naming and describing:</p> <ul style="list-style-type: none"> • cognitive • somatic. <p>Explain the causes of anxiety in physical activities.</p>
Relaxation techniques	<p>The need to combine techniques to control arousal and anxiety.</p> <p>Describe appropriate relaxation techniques, including mental rehearsal, visualisation and deep breathing.</p> <p>Explain how relaxation techniques control arousal, including:</p> <ul style="list-style-type: none"> • increased concentration • controlled breathing • reduced heart rate.
Personality types	<p>The terms introvert and extrovert.</p> <p>Describe the typical characteristics of introvert and extrovert personality types.</p> <p>Suggest physical activities usually adopted by introvert and extrovert personality types.</p>

Exam Advice:

- Read each question thoroughly before answering and look at how many marks it is worth.
- When stuck on a question move on to the next one and come back to it.
- Try to write something for every question. No answer means no marks awarded.
- Cross out mistakes and write the answer again neatly.
- If there is lots of space to write the answer, the answer needs to include several points, a reason why, and explain the answer in detail e.g. long mark questions (3-5 marks) try to give 3-5 points. Giving only one point will probably get only 1 mark.
- Read through your answers and make sure you have not repeated the same point twice instead of two different points or contradicted one of your points later in the explanation.
- All sporting examples must be of sports that you can be assessed in for IGCSE PE. The list of activities can be found in this booklet.

<https://www.cambridgeinternational.org/Images/411735-2019-coursework-guidelines-booklet.pdf>