WORKBOOK

AQA A-LEVEL

PE 1

PAPER 1

- Full topic coverage
- Over 300 questions
- Answers free online

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Contents

About this book

1 **This workbook** will help you to prepare for AQA A-level PE Paper 1.

2 **AQA A-level PE** is assessed by:

- **Paper 1: Factors affecting participation in physical activity and sport** lasts for 2 hours and covers: Section A: Applied anatomy and physiology; Section B: Skill acquisition; and Section C: Sport and society. Paper 1 is worth 35% of the A-level. All sections have multiple-choice, short-answer and extended-writing questions with each section totalling 35 marks.
- **Paper 2: Factors affecting optimal performance in physical activity and sport** lasts for 2 hours and covers: Section A: Exercise physiology and biomechanics; Section B: Sport psychology; and Section C: Sport and society and the role of technology in physical activity and sport. Paper 2 is worth 35% of the A-level. All sections have multiple-choice, short-answer and extended-writing questions with each section totalling 35 marks.
- **Non-exam assessment: Practical performance in physical activity and sport.** Students are assessed as a performer or coach in the full-sided version of one activity and provide a written / verbal analysis of the performance. This assessment is worth 30% of the A-level and totals 90 marks.

3 For each topic in this workbook there are:

- stimulus materials, including key terms and concepts
- short-answer questions that build up to exam-style questions
- spaces for you to write or plan your answers
- questions that test your data skills.

4 **Answering the questions** will help you to build your skills and meet the assessment objectives AO1 (knowledge and understanding), AO2 (application) and AO3 (analysis and evaluation).

5 **Example student answers** are included throughout the questions to help you understand how to gain the most marks.

6 Icons next to the question will help you to identify:


where your calculations skills are tested


where questions draw on synoptic knowledge, i.e. content from more than one topic

7 **You still need** to read your textbook and refer to your revision guides and lesson notes.

8 **Marks available** are indicated for all questions so that you can gauge the level of detail required in your answers.

9 

Timings are given for the exam-style questions to make your practice as realistic as possible.

10 Answers are available at: **www.hoddereducation.co.uk/workbookanswers**

Example student answer

The amount of force that a muscle can produce depends on the number of motor units that are recruited. Motor units consist of a motor neurone and the muscle fibres involved. The more motor units that are used, the stronger the force of contraction involved. This is called spatial summation.

Muscle fibres contract because of the production of an action potential in the fibre. An action potential causes a muscle fibre to either fully contract or there is no contraction. This is the 'all or nothing' law. An action potential occurs when sufficient nerve impulses happen to cross the threshold. The more nerve impulse that occur generates another type of summation, called wave summation. If enough nerve impulses are involved, then there is a tetanic contraction.

The muscle spindles are receptors that detect whether the muscle is contracting too much. They protect the muscle from damage.

AO1: Demonstrates good knowledge of the structure of motor units and the principle of spatial summation.

AO2: Demonstrates some knowledge of wave summation, but detail of tetanic contractions is lacking.

AO3: Knowledge of the function of muscle spindles is rather superficial.

The musculo-skeletal system and analysis of movement in physical activities

The musculo-skeletal system gives us the ability to move using our muscles, bones and joints. The ways that the body moves are described as taking place in each of the three planes of motion (sagittal, frontal and transverse) and around each of the three corresponding axes of rotation (transverse, sagittal and longitudinal).

Practice questions

AO1: Knowledge and understanding

1 Describe the sagittal plane and transverse axis. **2 marks**

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2 Identify the types of movement possible in a sagittal plane around a transverse axis. **3 marks**

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3 Describe the frontal plane and sagittal axis. **2 marks**

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4 Identify the movements possible in a frontal plane around a sagittal axis. **1 mark**

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5 Describe the transverse plane and longitudinal axis. **2 marks**

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6 Identify the movements possible in a transverse plane around a longitudinal axis. **2 marks**

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7 Distinguish between isotonic and isometric contractions. **2 marks**

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8 Identify **two** examples of isometric contractions being used in sport. **2 marks**

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9 Distinguish between concentric and eccentric muscle contractions. **2 marks**

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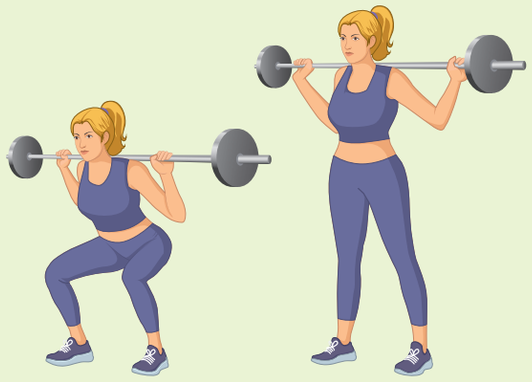
AO2: Application

10 The image shows the upward phase of a squat.



Identify the movements occurring and the main agonist causing the movement at:

- the hip
- the knee
- the ankle. **6 marks**

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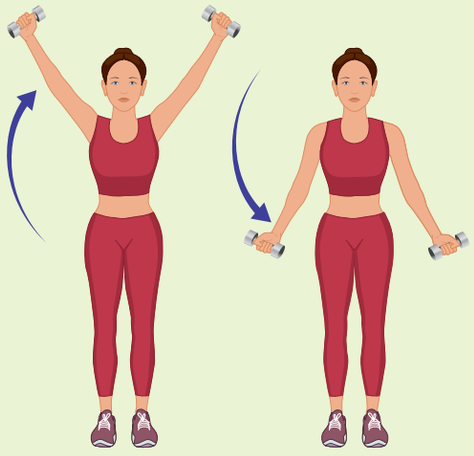
11 The image shows the performance of a weight training movement.



A B

Identify the correct term for each of the movements from A to B and from B to A. **2 marks**

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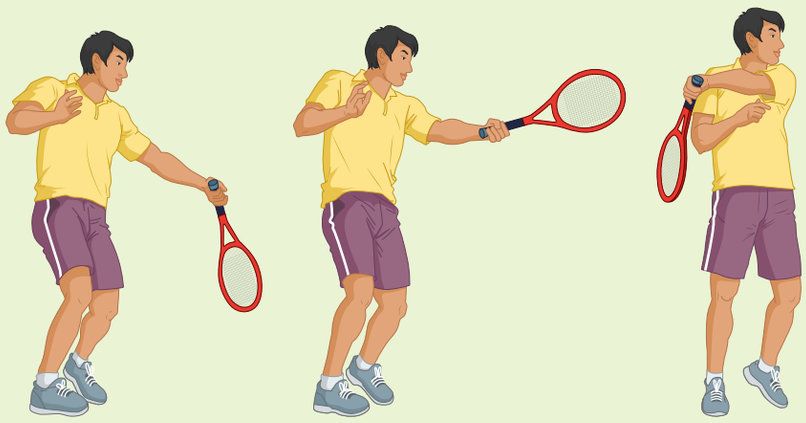
12 The images show a tennis stroke.



Identify the movement taking place and the main agonist causing the movement at the shoulder joint during the sequence. **2 marks**

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13 Explain how the main agonist at the elbow performs **three** different types of muscle contraction during a press-up. **3 marks**

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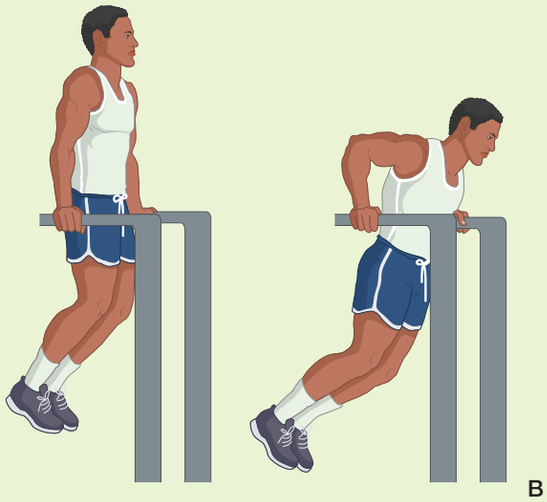
AO3: Analysis and evaluation

14 The image shows a performer completing dips.



A B

Identify the movements occurring at the each of the following joints during the movement from A to B:

- Elbow
- Shoulder

2 marks

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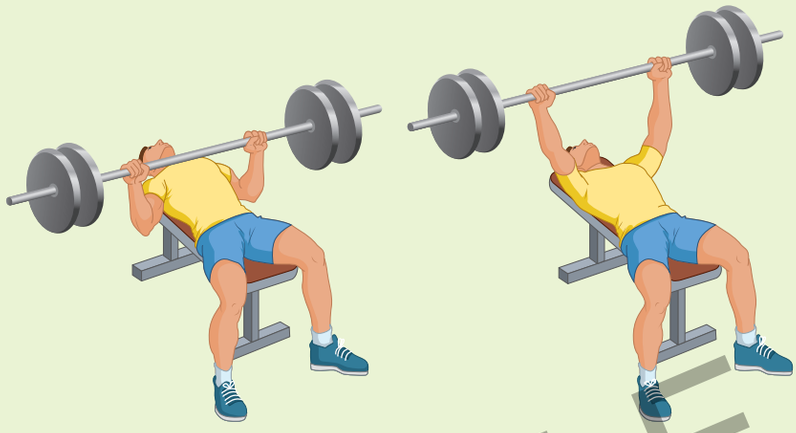
15 The image shows the upward phase of a bench press.



Identify the movement occurring at the shoulder and the main agonist causing the movement.

2 marks

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Exam-style questions

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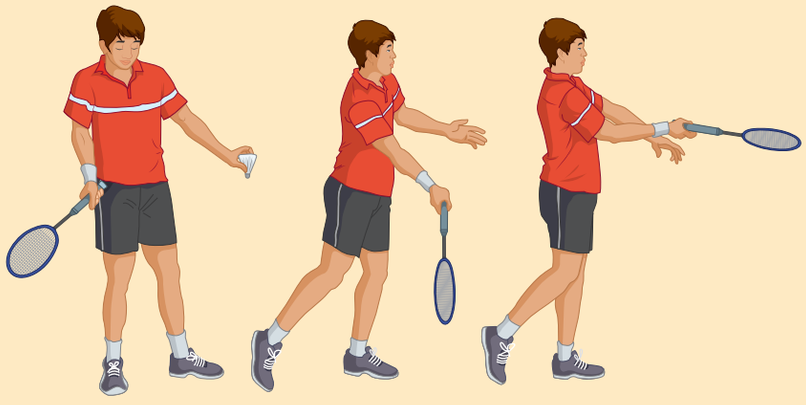
1 The images shows a sequence of a badminton serve.



Use the images to identify:

a the type of movement occurring at the right shoulder

b the agonist causing the movement at the right shoulder

c the type of movement occurring at the right ankle

d the main agonist causing the movement at the right ankle.

4 marks

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2 Which **one** of the following is correct about the shoulder joint? **1 mark**

- **A** Flexion occurs when the latissimus dorsi contracts.
- **B** Extension occurs when the deltoid relaxes.
- **C** Flexion occurs when the deltoid contracts.
- **D** Extension occurs when the latissimus dorsi relaxes.

3 Which **one** of the following is correct about the ankle joint? **1 mark**

- **A** Dorsiflexion occurs when the gastrocnemius contracts.
- **B** Plantar flexion occurs when the gastrocnemius relaxes.
- **C** Dorsiflexion occurs when the tibialis anterior contracts.
- **D** Plantar flexion occurs when the quadriceps relax.

4 Which **one** of the following is correct about the shoulder joint? **1 mark**

- **A** Abduction occurs when the latissimus dorsi contracts.
- **B** Adduction occurs when the deltoid relaxes.
- **C** Abduction occurs when the deltoid contracts.
- **D** Adduction occurs when the latissimus dorsi relaxes.

5 Which **one** of the following is correct about planes and axes? **1 mark**

- **A** Body action during an ice-skating spin takes place in the longitudinal plane and around a frontal axis.
- **B** Body action during an ice-skating spin takes place in the transverse plane and around a longitudinal axis.
- **C** Body action during an ice-skating spin takes place in the frontal plane and around a sagittal axis.
- **D** Body action during an ice-skating spin takes place in the sagittal plane and around a transverse axis.

6 Explain how the rectus abdominus muscle (abdominals) will perform two different types of muscle contraction during the performance of a sit-up. **4 marks**

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Example student answer

During a sit-up the rectus abdominus muscle contracts during the actual sit-up and during the reverse movement. During the sit-up, the rectus abdominus will contract forcefully to cause flexion at the joint. During the reverse action, the rectus abdominus will relax while contracting to lower the body back to the floor.

AO1: Candidate response does not identify the type of muscle contraction (concentric) taking place, nor does it identify the movement involved (flexion).

AO2: The candidate's response does not identify the type of muscle contraction (eccentric) taking place, nor does it identify the movement involved (extension).

Energy systems

The energy needed for the various functions of the body comes from the food we eat. Energy is needed for muscles to contract to allow the body to move. A form of chemical energy found in molecules of ATP (adenosine triphosphate) is used. The energy to synthesise ATP molecules is obtained from food molecules. ATP is mainly synthesised in the mitochondria found within cells. This process requires oxygen and is said to be an aerobic process. When the demand for energy is intense, such as when sudden, forceful muscle contractions are attempted, ATP can be synthesised without oxygen, anaerobically.

Practice questions

AO1: Knowledge and understanding

1 Describe glycolysis. **3 marks**

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AO3: Analysis and evaluation

22 Justify why selective attention is a key process when receiving a tennis serve. **3 marks**

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23 Analyse Schmidt's schema theory in relation to performing a rugby drop goal. **4 marks**

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24 Justify why spatial anticipation may be key to a netball player. **2 marks**

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25 Analyse Whiting's model of information processing to explain how a golf shot is played. **8 marks**

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Exam-style questions

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1 Which **one** of the following is not a stage of Schmidt's schema theory? **1 mark**

- **A** Initial conditions
- **B** Response specification
- **C** Kinesthesis
- **D** Response outcome

2 Which **one** of the following is not associated with Baddeley and Hitch's working memory model? **1 mark**

- **A** Phonological loop
- **B** Translatory mechanism
- **C** Visuospatial sketchpad
- **D** Episodic buffer

3 Calculation of response time is: **1 mark**

- **A** reaction time – movement time
- **B** reaction time + movement time
- **C** response time – movement time
- **D** reaction time × movement time

4 Calculate the response time of a sprinter if their reaction time is 0.20 seconds and their movement time is 10.3 seconds. **2 marks**

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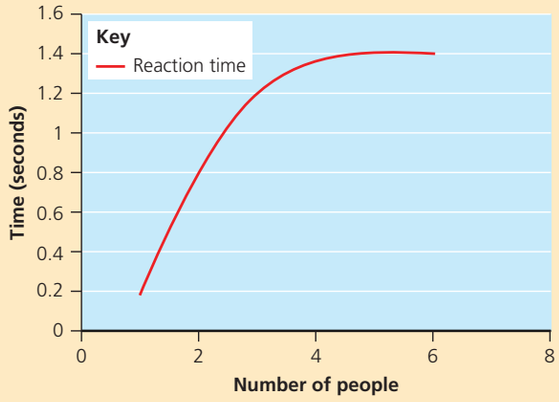
5 The graph shows the reaction time of a performer (y axis) playing association football when the number of people they could pass to increases (x axis). Plot the graphical data in a table and explain the concept shown. **3 marks**



6 Evaluate how knowledge of schema theory can allow a coach to help a beginner to progress in their learning of a sporting skill of your choice. **8 marks**