

A-LEVEL PHYSICAL EDUCATION

PHED1 Opportunities for and the effects of leading a healthy and active lifestyle
Mark scheme

2580
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Version: 1.0 Final

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available from aqa.org.uk

Applied Exercise Physiology

Question 1

1 (a) What do you understand by the term agility **and** why is it important for badminton players?
[2 marks]

<p>A. (agility) – the ability to change direction/body position quickly B. (important) – recover position after a shot/adjust movement around the court or equiv.</p>	<p>A. Needs reference to direction and speed B. Must refer to agility not speed or reaction time</p>
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1 (b) Name **two** health related components of fitness **and** explain how **each** is used when playing badminton.
[3 marks]

<p>A. Any two from – stamina/strength/muscular endurance/speed/power/flexibility B. Stamina – due to the extended duration of the game/last for a whole game without tiring C. Strength – to be able to hit the shuttle to the back of the court/hit with force/harder/appropriate shot example D. Muscular endurance – to play repeated shots during a rally/game E. Speed – to move quickly to another area of the court F. Power – to play a smash shot/overhead clear/long serve/shot as quick as possible G. Flexibility – to be able to reach the shuttle/playing shots with correct technique/full range of movement to play the shot</p>	<p>Accept first 2 answers only A. Also accept cardiovascular fitness/cardio respiratory endurance/aerobic capacity as an equivalent for stamina Sub-max 1 All examples given must relate to badminton, in context Do not accept definitions C and F need to be different examples D. Emphasis is on repeated F. Shots requiring strength which are played at speed</p>
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1 (c) What are the possible physiological effects of a lack of water on a performer?

[3 marks]

<p>A. Increased body temperature/overheating B. Reduced sweating/reduce blood flow to skin C. Increased blood viscosity/blood becomes thicker/reduction in blood plasma D. Increased heart rate/cardiovascular drift E. Lower blood pressure F. Lower cardiac output/stroke volume/venous return G. Transportation of oxygen/carbon dioxide less efficient H. Loss of electrolytes/possible cramp I. Headaches/dizziness/fainting</p>	<p>Do not accept dehydrated as hydration is in the question stem</p>
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1 (d) (i) Explain the term anticipatory rise.

[1 mark]

<p>A. <u>Increase</u> in heart rate <u>prior to</u> exercise caused by (the release) of <u>adrenaline</u>.</p>	<p>Accept alternatives to prior to, eg before. Must have all 3 points for mark</p>
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1 (d) (ii) Identify **and** explain the role of different receptors involved in increasing heart rate.

[3 marks]

<p>A. <u>Chemoreceptors</u> – detect <u>increase</u> in blood acidity/<u>decrease</u> in pH/<u>increase</u> in CO₂/<u>increase</u> in Hydrogen ion concentration/H⁺ B. <u>Proprioceptors/mechanoreceptors</u> – detect movement/muscular contractions C. <u>Baroreceptors</u> – detect <u>decrease</u> in blood pressure D. Impulses sent to cardiac control centre/medulla (oblongata) E. Increase in impulses to the <u>SA node</u> via the <u>sympathetic nervous system</u>/<u>cardiac accelerator nerve</u></p>	<p>Accept equivalent words to increase and decrease, eg more and less A-C must state the receptor and the role B. Must state function not location D. Do not accept CCC D and E. Accept messages and information in relation to impulses</p>
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Question 2

2 (a) Complete **Table 1** to identify the main agonist, the type of isotonic muscle contraction and the joint action at the **hip** during the movement from position **A** to position **B**.

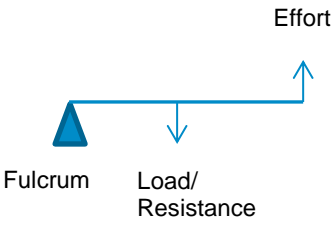
[3 marks]

Main agonist	Type of muscle contraction	Joint action
A. Gluteus maximus/gluteals/hamstrings	B. Concentric	C. Extension/hyper-extension

A and C – accept first answer only
B – Accept isotonic-concentric

2 (b) (i) Using **Figure 1**, name, sketch and label the lever system operating at the **ankle joint** from position **A** to position **B**.

[2 marks]

<p>A. 2nd order/class lever B. (Correct order) fulcrum/load/effort</p> 	<p>B. Also accept pivot (fulcrum), resistance (load), force (effort)</p> <p>Accept reverse</p> <p>Do not accept letters only (F R E)</p> <p>Disregard directional arrows</p>
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2 (b) (ii) State **one** mechanical advantage of the lever system operating at the **ankle joint** in **Figure 1**, from position **A** to position **B**.

[1 mark]

<p>A. Overcomes heavy loads/weight B. Large force is generated/longer effort arm/reduced effort needed</p>	<p>A. Do not accept carry/withstand/support, must refer to lifting or moving</p>
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2 (c) (i) How is carbon dioxide transported in the blood?

[2 marks]

<p>A. <u>As</u> hydrogen carbonate ions/bicarbonate ions (HCO_3)/combines with water/carbonic acid (H_2CO_3)</p> <p>B. <u>Combined</u> with haemoglobin/carbaminohaemoglobin</p> <p>C. (Dissolved) <u>in</u> plasma</p>	<p>Do not accept terms on their own ie plasma</p> <p>B. Accept equivalent words to combined, eg attached, joined</p>
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2 (c) (ii) Describe how the processes of inspiration **and** expiration differ at rest **and** during exercise.

[4 marks]

<p>Inspiration</p> <p>A. Rest – <u>external</u> intercostal muscles/diaphragm contracts/flattens</p> <p>B. During exercise – sternocleidomastoid/scalenes/pectoralis minor contract</p> <p>C. During exercise – allows thoracic cavity to increase in size/lungs to expand more/greater pressure difference/to lift ribcage higher</p> <p>Expiration</p> <p>D. Rest – <u>external</u> intercostal muscles/diaphragm relax</p> <p>E. Rest – <u>passive</u> process</p> <p>F. During exercise – <u>internal</u> intercostal/abdominals contract</p> <p>G. Pulls ribcage down faster to force air out more quickly</p> <p>H. During exercise – becomes <u>active</u> process</p>	<p>Must indicate inspiration/expiration and rest/during exercise</p> <p>C. Do not accept improved gaseous exchange as in question. Must imply greater/more/higher Sub-max 3 marks</p> <p>G. Do not accept improved gaseous exchange as in question. Must imply faster / quicker. Sub-max 3 marks</p>
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Skill Acquisition

Question 3

3 (a) Name **two** types of sensory information used in tennis.

[1 mark]

<p>A. Visual/Auditory/Hearing/Sound/Touch/Kinaesthetic/Balance</p>	<p>Accept First 2 answers only</p> <p>Visual (also accept sight/seeing)</p> <p>Auditory (also accept hearing/sound)</p> <p>Touch (also accept tactile/feel)</p> <p>Kinaesthetic (also accept proprioceptive)</p> <p>Balance (also accept equilibrium)</p>
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3 (b) When playing tennis, the ball occasionally hits the top of the net during a rally and the receiver has to adjust their response. This causes a delay before the final response can be made.

Explain why this occurs.

[4 marks]

<p>A. Psychological refractory period</p> <p>B. Can only deal with one piece of information at one time/respond to one stimulus at a time</p> <p>C. <u>Second</u> stimulus arrives in close succession</p> <p>D. One signal must be cleared before another can be responded to</p> <p>E. Due to the single channel hypothesis/bottle neck/limited processing capacity</p>	<p>A. Do not accept PRP Sub max 1 mark</p> <p>B-E accept suitable examples to explain each term.</p> <p>Sub-max 3 marks</p>
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3 (c) Performers often use anticipation to improve response time.

Explain the term anticipation.

[2 marks]

<p>A. Attempting to predict that a movement will happen</p> <p>B. <u>Spatial anticipation</u> – predicting <u>what/where</u> a movement will happen eg type of pass or equiv.</p> <p>C. <u>Temporal anticipation</u> – predicting <u>when</u> something will happen eg. speed of the ball</p>	<p>A-C accept suitable examples to explain each term.</p> <p>A-C accept judging as alternative for predicting</p>
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3 (d) (i) Outline the function of selective attention.

[2 marks]

<p>A. Filters irrelevant information <u>and</u> selects relevant information</p> <p>B. Receives information from the short term sensory store</p> <p>C. Passes information to the short term memory</p> <p>D. Speeds up the decision making process</p>	<p>B. Do not accept STSS</p> <p>C. Do not accept STM</p>
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3 (d) (ii) Describe how a coach can improve selective attention for a performer.

[3 marks]

<p>A. <u>Relevant</u> practice/learn to ignore irrelevant stimuli, eg the crowd/practice with distractions/reduce the number of stimuli</p> <p>B. Mental rehearsal/imagery/visualisation</p> <p>C. Increase stimulus intensity</p> <p>D. Make stimuli unique/memorable/ meaningful/relate to past experiences</p> <p>E. Highlight specific cues</p> <p>F. Optimal arousal levels/high motivation/ motivate</p> <p>G. Warning signals</p>	<p>C. Accept examples, eg brighter ball</p> <p>G. Accept examples, eg shouting ‘man on’</p>
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Question 4

4 (a) Using examples, explain the difference between cognitive **and** psychomotor skills.

[2 marks]

<p>A. Cognitive skills – mental/thinking skills plus suitable example, eg devising tactics/developing a routine or sequence/deciding on a movement</p> <p>B. Psychomotor skills – analysing the situation <u>and</u> completing the skill plus suitable example, eg defender sees an attacker in space <u>and</u> then moves to cover them or equiv.</p>	<p>B. Must have information processing and then resulting movement / action</p>
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4 (b) (i) Classify the skill of taking a penalty in football using these **three** continua.

[1 mark]

<p>A. Closed – self-paced – discrete</p>	
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4 (b) (ii) Explain how shooting at goal during general play may alter these classifications.

[2 marks]

<p>A. Closed becomes open – (affected by the environment) need to make decisions due to opponents or team mates or environmental factor</p> <p>B. Self-paced becomes externally paced – environment decides when player shoots.</p>	<p>Answers must be in relation to the game, not just a definition</p>
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4 (c) (i) Outline how feedback may differ between students in the associative **and** autonomous stages of learning.

[3 marks]

<p>Associative stage</p> <p>A. Mainly extrinsic feedback B. Aim to eliminate gross errors/mistakes C. As a performer improves intrinsic feedback more relevant D. Kinaesthetic being developed</p> <p>Autonomous stage</p> <p>E. Mainly intrinsic feedback/kinaesthetic F. Ability to correct own errors G. Extrinsic feedback is more detailed/specific/correction of minor errors H. Can deal with negative/critical feedback</p>	<p>Do not accept internal and external</p> <p>Sub-max 2 marks</p> <p>Sub-max 2 marks</p>
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4 (c) (ii) Suggest reasons why a teacher may decide to use insight learning during a lesson rather than operant conditioning.

[4 marks]

<p>A. <u>Operant conditioning</u> – developing a specific stimulus-response bond/S-R bond/uses reinforcement</p> <p>B. (Insight learning) – developing an understanding of the whole problem</p> <p>C. (Insight learning) – develops more independent learners/ students have to think more/cognitive processes</p> <p>D. (Insight learning) – develops greater understanding of relationship between sub-routines/ timing</p> <p>E. (Insight learning) – able to modify/adapt actions or skill in a new situation</p> <p>F. (Insight learning) – increased motivation of students</p> <p>G. (Insight learning) – encourages creativity/decision making</p>	<p>C - G accept reverse points if stated in relation to operant conditioning</p>
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Opportunities for Participation

Question 5

5 (a) From an early age, children participate in, and benefit from, play. Using examples, suggest how the characteristics of play may be included into a physical education lesson.

[3 marks]

<p>A. (Fun) –fun warm up games B. (Spontaneous) – <u>pupils</u> choosing activity C. (Creative/expressive) – <u>pupils</u> making routines/ games D. (Negotiable rules) – <u>pupils</u> make up rules E. (Develop communication) - teamwork/ social through working together F. (Self-officiated) – no external officials</p>	<p>Do not accept list of characteristics</p>
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5 (b) Swimming is a category within the National Curriculum.

How can individuals experience swimming as active leisure **and** as a sport?

[2 marks]

<p>A. Active leisure – voluntary/completed in own or free time/intrinsic rewards/ spontaneous/ non-standard sized pools B. Sport – more extrinsic – rewards/ training/ competitive/institutionalised, eg set time, place;rules, facility, specialist</p>	<p>Must state which concept they are referring to</p>
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5 (c) In the early 20th century, the Syllabuses of Physical Training were introduced into state schools.

Identify the similarities **and** the differences between the early Syllabuses of Physical Training (1904 and 1909) and the current National Curriculum.

[4 marks]

<p>Similarities</p> <p>A. Both concerned with health promotion/fitness</p> <p>B. Both compulsory</p> <p>C. Both centralised policies</p> <p>D. Today's Primary schools still non specialist teachers</p> <p>E. Both develop motor skills</p> <p>Differences</p> <p>F. Early model narrow activities – NC range of activities</p> <p>G. Early model non specialist teacher/NCOs/ex-army officers – NC specialist PE teacher</p> <p>H. Early model practical performance only – NC other roles, eg leadership/choreographer/examined</p> <p>I. Early model class response/uniform response/command style – NC individual response/child centred/creative/decision making/range of teaching styles</p> <p>J. Early model no differentiation between ages/gender – NC has key stages</p> <p>K. Early model prepare for war – NC lifelong learning/education</p>	<p>Sub-max 3 marks</p> <p>Need both parts to gain the mark for differences (F-K) and must state which model</p> <p>Sub-max 3 marks</p>
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5 (d) The 19th century English public schools rationalised games, contributing to their technical and moral development.

Outline the technical developments that occurred to games in the public schools.

[3 marks]

<p>A. Introduction of kit/uniform</p> <p>B. Fixed playing areas/boundaries/equipment eg. goal posts</p> <p>C. Codification/rules/fixed number of players/time limit</p> <p>D. Referees/officials introduced</p> <p>E. Inter-house school/inter-school matches</p> <p>F. Strategies/tactics developed/positional play</p> <p>G. Develop skills</p>	
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Question 6

6 (a) (i) What is meant by the terms stereotyping **and** inclusiveness?

[2 marks]

<p>A. Stereotyping – shared image/simplistic generalisations/image/categorisation/ judgement of a group of people.</p> <p>B. Inclusiveness – including all kinds of people/everyone within an activity or group/policies which aim to encourage participation based on individual's needs/make people feel part of their society (not included)</p>	<p>A. Do not accept answers linked to discrimination</p>
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6 (a) (ii) Explain how stereotyping **and** inclusiveness have impacted on participation rates for people with disabilities.

[4 marks]

<p>Stereotyping</p> <p>A. Participation rates low</p> <p>B. Image that sport for disabled people is unsafe</p> <p>C. Disability sport involve low standards of performance/unable/incapable to perform/reduced confidence of disabled</p> <p>D. Restricts disabled people to certain sports/ has led to discrimination</p> <p>E. Could be positive due to channelling</p> <p>Inclusiveness</p> <p>F. Increase in participation</p> <p>G. Equal opportunity policies developed</p> <p>H. Led to new and adapted sports/ specialist facilities/coaches/access to provision</p> <p>I. Integrated <u>when suitable</u>/participation where disabled can participate alongside able bodied</p> <p>J. Segregation <u>when required/necessary</u> – participation where disabled can participate away from able bodied</p>	<p>Need to indicate whether they are talking about stereotyping or inclusiveness.</p> <p>Sub max 3 marks</p> <p>Idea that inclusiveness has had a positive impact</p> <p>Sub max 3 marks</p>
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6 (b) What are the characteristics of the public sector for the provision of leisure?

[3 marks]

<ul style="list-style-type: none"> A. Run by local authority/council/local government B. Provide for the needs of a local community/ open to all. C. Trading on set prices/pre-set budget/not for profit D. Money from taxation E. Facilities not as good as private F. Can be pay as you go/subsidised use G. Best value 	
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6 (c) Explain the potential benefits to society of increasing participation rates in physical activity.

[3 marks]

<ul style="list-style-type: none"> A. Health/fitness <u>results in</u> reduce the costs to NHS B. People buy equipment/use facilities <u>results in</u> Economic benefit/employment/leisure industry C. People join clubs/work together <u>results in</u> integration of community D. Increase skill levels <u>results in</u> morale of population/skilled citizens/more employable E. Keeps people occupied in acceptable activities/local authorities provide for leisure <u>results in</u> social control/reduce crime rates F. Wider participation base resulting in more chance of success at elite level G. Increase in medals/elite athletes <u>results in</u> national pride H. Social interaction <u>results in</u> better community 	<ul style="list-style-type: none"> A. Accept reduction in heart disease/ obesity or other specific example
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Section B**Question 7**

- 7 You have been asked to deliver a circuit training programme to develop muscular endurance, using the command style of teaching.

Explain the factors that you would consider when planning your programme **and** outline the disadvantages of using the command style in this situation.

[12 marks]

Read the whole response and identify the points made from the indicative content in the mark scheme. The number of correct points made in the response determines the band that it falls into. Once the band has been identified, use the band descriptors to determine whether to place the response in the top, middle or lower end of the band, based on the overall quality. This is dependent on the explanation of the points made and the linking of those points to form a coherent response. Marks can be awarded at the higher end of the band level if specific points are discussed in greater depth. A judgement has to be made on depth versus breadth.

If a response is limited to one part of the question only, that response can only access the lowest mark in the relevant band awarded for the number of points.

Band range	Band descriptors	Number of points
Level 4 9 – 10 marks	Very good response Demonstrates a wide range of knowledge in substantial depth Excellent linking of knowledge and development of points, with application to applied situations Correct use of technical language Addresses all areas of the question for top of band If response is limited to one part of the question, maximum 9 marks	Minimum of 13 points to get into the mark band
Level 3 6 – 8 marks	Good response Demonstrates a range of knowledge in reasonable depth Good linking of knowledge and development of points, with some application to applied situations Generally correct use of technical language with minor inaccuracies Addresses most areas of the question If response is limited to one part of the question, maximum 7 marks	Minimum of 9 points to get into the mark band

Level 2 3 – 5 marks	Basic response Demonstrates some knowledge in some depth Some linking of knowledge and development of points, with limited application to applied situations Some use of technical language Addresses some areas of the question If response is limited to one part of the question, maximum 4marks	Minimum of 5 points to get into the mark band
Level 1 1 – 2 marks	Limited response Demonstrates a limited range of knowledge in limited depth Limited linking of knowledge and development of points, which are vague or irrelevant, with little/no application to applied situations Limited use of technical language Addresses the question with limited success If response is limited to one part of the question, maximum 1 mark	Minimum of 1 point to get into the mark band
Level 0 0 marks	Addresses no aspect of the question	0 points

Quality of Written Communication (QWC)

Once you have awarded a mark for the theoretical content, up to two further marks can be awarded for the QWC. This mark is determined by the accuracy of the spelling, punctuation and grammar of the overall response, and can move the response into the above band. Use the QWC descriptors (below) to help guide your judgement.

Where responses have no creditworthy material from the indicative content, then that response cannot be awarded any QWC marks.

Mark Awarded	Mark Descriptor
2 marks	Few errors in spelling, punctuation and grammar
1 mark	Some errors in spelling, punctuation and grammar
0 mark	Major errors in spelling, punctuation and grammar

Indicative content

<p>Circuit Training</p> <ul style="list-style-type: none"> A. Number of stations/exercises B. Ensure sport specific exercises included/replication of movement or skill patterns C. Relevant muscle groups exercised/energy system D. Correct order of exercises/alternate body areas E. Exception may be experienced/highly trained athletes F. Time available/frequency of sessions G. Number of repetitions/sets/intensity /time H. Recovery/rest periods I. Equipment/space available J. Current level of fitness/ability/age/gender/injuries/size of group/motivation <p>Disadvantages of command style</p> <ul style="list-style-type: none"> K. Command style teaching explanation – teacher makes all the decisions L. No input from the groups/learner M. Few opportunities for creativity/no cognitive/ thinking/no decision making/no discovery/no responsibility/no problem solving/no learning/thinking/questioning N. Pupils working for same length of time O. Demotivating/boring/less enjoyable P. Limited social interaction Q. Lack of understanding R. Less feedback given to individuals S. No differentiation in the task/circuit for different abilities/all do the same/no individual goals 	<p>Principles must be explained, not just stated. The focus of the question is on explanation of the factors, not a description of circuit training – description only = no marks available</p> <p>F. Refers to the time of the circuit/ programme</p> <p>G. Refers to the time at a station</p> <p>K. Refers to making decisions not about telling what to do</p>
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Assessment objectives grid

Question	AO1	AO3	Total
1a	2		2
1b	3		3
1c	3		3
1di	1		1
1dii	3		3
2a	3		3
2bi	2		2
2bii	1		1
2ci	2		2
2cii	4		4
3a	1		1
3b		4	4
3c	2		2
3di	2		2
3dii		3	3
4a	2		2
4bi	1		1
4bii		2	2
4ci	3		3
4cii		4	4
5a	3		3
5b		2	2
5c	4		4
5d	3		3
6ai	2		2
6aii		4	4
6b	3		3
6c		3	3
7	6	6	12
Total	56	28	84
Total %	67%	33%	100%