

A-LEVEL

Physical Education

PHED1 Opportunities for and the Effects of Leading a
Healthy and Active Lifestyle
Mark scheme

June 2015

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

1 (a) (i) What do you understand by the term power?

A. Strength x speed/combination of strength and speed B. Amount of work/force performed per unit of time	
---	--

[1 mark] AO1

1 (a) (ii) Explain the use of **one** named component of skill-related fitness required by a tennis player.

<p>A. <u>Agility</u> –changing direction/body position quickly to move to different area of the court B. <u>Balance</u> – remain stable during shot C. <u>Co-ordination</u> – hand and eye to hit the ball D. <u>Reaction time</u> – quick reaction to return the ball E. <u>Speed</u> – Moving quickly to the net</p>	<p>Accept first answer only B. need to mention coordination of 2 or more body parts D. Need to refer to quick movement</p> <p>Do not require specific shot/skill to be awarded the mark</p> <p>Accept suitable applied examples linked to tennis</p> <p>Do not accept definitions</p>
--	---

[1 mark] AO1

1 (b) (i) Using **Figure 1**, complete **Table 1** to identify the articulating bones, the joint action and the main agonist at the right **shoulder** from position **A** to position **B**.

Articulating Bones	Joint Action	Main Agonist
A. Humerus <u>and</u> scapula	B. <u>Horizontal</u> flexion / <u>Horizontal</u> adduction	C. Pectorals / pectoralis major / (Anterior) deltoid

[3 marks] AO1

1 (b) (ii) Identify the plane **and** the axis about which the movement at the right **shoulder** is taking place from position **A** to position **B**.

<p>A. Transverse / horizontal plane B. Longitudinal / vertical axis</p>	<p>Do not accept any other terms</p> <p>Accept first answer only</p>
--	--

[2 marks] AO1

1 (c) Tennis players must plan their diet to optimise their performance.

Discuss whether a tennis player should have a diet rich in fat.

<p>Yes</p> <ul style="list-style-type: none"> A. Energy source/slow release of energy B. Important to last duration of the match (3 / 5 sets)/longer time C. Transport/storage of (fat soluble) vitamins D. Source of vitamins/named vitamins e.g. A / D / E / K <p>No</p> <ul style="list-style-type: none"> E. Gain weight / excess body fat / risk of obesity F. Limit stamina / cardiovascular fitness / fatigue more quickly G. Reduce flexibility / movement / speed / agility H. Overheat I. Coronary heart diseases / diabetes / high blood pressure / atherosclerosis or any other health related disease 	<p>sub max 3 marks</p> <p>D. do not have to name all vitamins</p> <p>G. accept suitable example within a match</p> <p>H. not just 'gets hotter'</p> <p>I. 'heart problems' too vague</p>
---	--

[5 marks] AO3

2 (a) (i) Complete **Table 2** to identify the type of lung volumes **A**, **B** and **C** shown in **Figure 2**.

<p>A – Tidal (Volume)</p> <p>B – Expiratory Reserve (Volume)</p> <p>C – Residual (Volume)</p>	<p>Do not accept any other terms</p> <p>Accept first answer only</p>
---	--

[3 marks] AO1

2 (a) (ii) What effect does a continuous exercise session have on lung volumes **B** and **C** in **Figure 2**?

<p>Volume B (Expiratory Reserve Volume)</p> <p>A. Decrease / get smaller</p> <p>Volume C (Residual Volume)</p> <p>B. Stay the same / remain unchanged / no effect</p>	<p>Do not accept 'get closer together' as the question refers to the volume not the trace</p>
---	---

[2 marks] AO1

2 (b) The transport of oxygen during a continuous training session is vital for athletes to make sure that oxygen supply meets oxygen demand.

What is the difference between haemoglobin **and** myoglobin when transporting oxygen?

<p>A. <u>Haemoglobin</u> in the <u>blood / red blood cells</u> B. <u>Myoglobin</u> in the <u>muscle</u> C. Myoglobin has a higher affinity for oxygen/haemoglobin has a lower affinity for oxygen</p>	<p>A and B. Must state substance and location. B. accept 'to the mitochondria' B. Not 'stores' as question refers to transportation</p>
---	---

[2 marks] AO1

2 (c) If an athlete performs a continuous exercise session lasting 45 minutes at a sub-maximal pace, cardiovascular drift will occur.

Explain the term cardiovascular drift.

<p>A. Increase in heart rate <u>due to/and</u> a decrease in stroke volume / ejection fraction B. Occurs after 10 minutes C. Warm environmental conditions D. Caused by a reduction of fluid in the blood / plasma / blood volume / increase in sweating/ blood more viscous E. Venous return decreases/blood pumped back to heart decreases/reduced atrial filling F. Aims to <u>cool the body</u> (by maintaining cardiac output)</p>	<p>Do not accept abbreviations – SV, Q, HR F. Reason for increase in cardiac output explained</p>
--	---

[3 marks] AO3

2 (d) Cardiac hypertrophy and bradycardia are two long-term effects of continuous training on the heart.

What are the effects of cardiac hypertrophy and bradycardia on the heart during exercise?

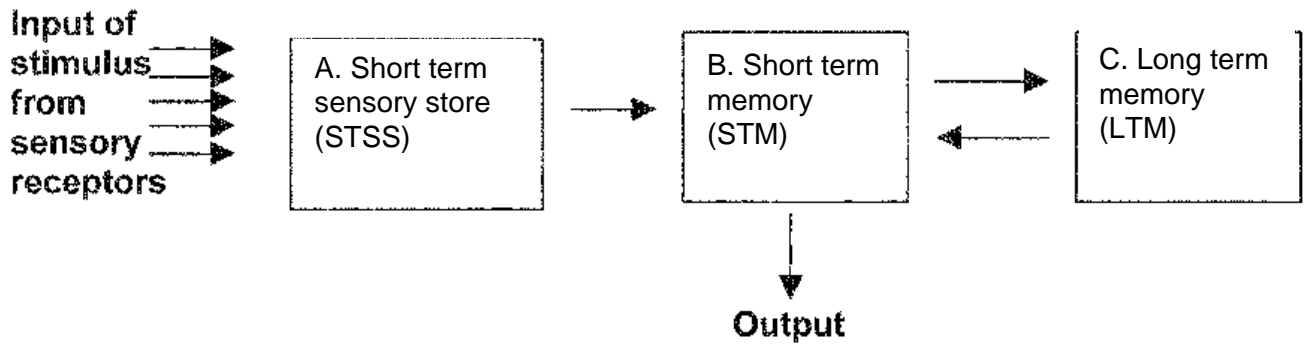
<p>A. Lower exercising heart rate for any given load/ greater heart range B. Stroke volume increases / amount of blood ejected per beat increases C. Increase in ejection fraction / increase strength of contraction D. <u>Maximal</u> cardiac output increases E. Cardiac muscle has lower demands for oxygen during exercise</p>	<p>Do not accept definitions must be effects during exercise.</p>
---	---

[2 marks] AO1

Skill Acquisition

3 (a) Complete **Figure 3** by writing the correct key term in each of the boxes.

All 3 terms in correct order for 1 mark



Accept abbreviations as given in question (STSS, STM, LTM)

[1 mark] AO1

3 (b) Outline the characteristics and the functions of the short-term memory.

<ul style="list-style-type: none"> A. Limited capacity / 7 ± 2 items B. Information is stored for limited time/duration/up to 30 seconds C. Working memory/decision making D. Receives stimuli from STSS/ via selective attention E. <u>Passes information</u> to the long term memory / <u>receives information</u> from the long term memory F. Part of DCR process / encoding / decoding/comparison G. Triggers motor programme / effector mechanism / implements desired response 	
---	--

[3 marks] AO1

3 (c) In order to improve performance, an athlete needs to be able to store and retrieve important information.

How can a coach ensure that strategies and tactics are stored in the long-term memory?

<p>A. Relevant practise/ relevant rehearsal / overlearning B. Make it meaningful / associate / link to past experience / memorable/ transfer of learning C. Guidance / good demonstrations/highlight cues D. Make experience fun / enjoyable / interesting / novel E. Mental rehearsal / imagery / visualisation F. Chunking / chaining G. Improve capacity of STM H. Reinforcement / feedback</p>	<p>A. do not accept 'lots of practise' C. Accept different types of guidance (verbal, visual, manual, mechanical) H. Not rewards</p>
---	--

[4 marks] AO3

3 (d) Reaction time is important in effective decision making for many sport performers.

Explain the factors that affect reaction time.

<p>A. (Stimulus intensity) – bright stimulus / louder gun, quicker detection, quicker reaction B. (Previous experience/stage of learning) – experience speeds up reaction time. C. (Anticipation) – predicting a movement can reduce reaction time D. (Choice) – more choices/stimuli, slower reaction / Hicks Law/PRP E. (Age) – reaction time increases (slows) with age F. (Gender) – usually, males have a faster reaction time than females G. (Temperature) – the colder the body, the slower the reaction H. (Drugs / Alcohol) – drugs speed it up / alcohol slows it down I. (Fatigue levels) – if high level of fatigue can increase reaction time J. (Arousal level) – optimal arousal levels decrease reaction time - too high / too low, reaction time is slower K. (Body size) – length of neural pathways for message to travel/slower in taller people L. (Stimulus compatibility/probability of stimulus/warning signal) – something more likely to happen is easier to predict and speeds up reaction time</p>	<p>Accept reverse/opposite of points A, B, D, E, F, G,H, I,K Do not accept list of factors. All must be explained in relation to affect reaction time. Do not accept fitness as question refers to reaction time not response time. Check increase or decrease in reaction time is used in the correct context.</p>
--	---

[4 marks] AO3

4 (a) What is the difference between ability and skill?

<p>A. Ability – innate / born with / genetic / inherited. B. Skill – learned/acquired</p>	<p>A. Do not accept natural B. Do not accept practised / equiv</p>
---	--

[2 marks] AO1

4 (b) Skills can be classified on the following continua:

- open – closed
- self-paced – externally paced
- discrete – serial – continuous.

Classify the badminton serve using these three continua. Justify your answers.

<p>A. Closed – limited information processed prior to serving/opponent(s)/environment stable B. Self-paced – speed/timing is controlled by <u>performer</u> C. Discrete – Clear beginning and end</p>	<p>Must state classification as well as justification. Accept circling/underlining of correct classification.</p>
---	--

[3 marks] AO1

4 (c) Coaches may consider transfer of learning when coaching new skills.

Apart from positive transfer, explain **three** other forms of transfer of learning that may occur.

<p>A. <u>Negative</u> – hinders learning of new skill. B. <u>Zero</u> – no <u>effect/impact</u> on learning of skill C. <u>Retroactive</u> – current practice effects learning of previously learned skill D. <u>Proactive</u> – current practice effects learning of skill yet to be learned/to be learnt in the future E. <u>Bilateral</u> – practise on limb on one side of body improves other side</p>	<p>Accept first three forms identified Must have term and explanation for the mark A. Do not accept 'has negative effect on learning' B. Do not accept 'has zero effect on learning' B. Do not accept no transfer E. need side to side not just 'limb to limb'</p>
---	--

[3 marks] AO1

4 (d) Using Bandura’s observational learning theory, explain how a coach could make demonstrations more effective.

<ul style="list-style-type: none"> A. Accurate B. Everyone can see it C. Everyone paying <u>attention</u> / focussed / strategies (or examples) to get <u>attention</u> D. Clear instructions / verbal guidance / highlight specific cues/don’t overload with information E. Role models / significant other / peer group F. Within observer’s physical capability / stage of learning/mental capacity G. Give time for mental rehearsal /create a mental image H. Breakdown into sub-routines I. Deliver in different formats e.g. video, pictures J. Limit time between demonstration and practice 	<p>Do not accept stages of model</p> <p>B. e.g. Accept ‘make fun/interesting/attractive so performer pays attention’</p>
--	--

[4 marks] AO3

Opportunities for Participation

5 (a) Active leisure involves physical activity during an individual’s free time.

What are the benefits of active leisure to the **individual**?

<ul style="list-style-type: none"> A. Improve health/fitness/ develop skills B. Sense of achievement / self-fulfilment / confidence/challenge C. Relax / refresh / escape from stresses of work/ stress relief / catharsis D. Socialise / meet with friends / working with others E. Fun / enjoyment F. Anyone can take part / lifetime opportunities / process more important than the outcome/not based on selection 	<p>Focus on question is on active leisure, not rock climbing</p>
--	--

[3 marks] AO1

5 (b) When using indoor climbing walls, individuals can experience perceived risk.

Explain how individuals can experience perceived risk when using an indoor climbing wall.

<ul style="list-style-type: none"> A. Sense / feel / think like you’re at risk / in danger <u>with linked example to why</u> e.g. risk of falling/equipment or equivalent B. But environment is safe_environment / safety precautions / e.g. use of harness or matting C. Linked to performers level of experience / skill level / different routes/stage of learning D. Provides excitement / adrenaline rush 	<p>A. Do not accept ‘perceive’</p>
--	------------------------------------

[2 marks] AO1

5 (c) Opportunities for rock climbing are provided by the public, private and voluntary sectors.

What are the advantages of private sector provision for the individual?

<ul style="list-style-type: none"> A. More exclusive B. Less crowded C. High quality facilities / equipment /wider range of equipment D. Can meet individual needs E. Provides more opportunities for participation / wider range of activities 	<p>A. do not accept 'elitist'</p>
--	-----------------------------------

[2 marks] AO1

5 (d) (i) What initiatives have Sport England introduced to increase opportunities for participation?

<ul style="list-style-type: none"> A. Sportivate B. New Youth Sports Strategy/Creating a Sporting Habit for Life C. Whole Sports Plans D. TOPS programme E. Active programme F. This Girl Can G. Places people play H. Sporting Champions I. Satellite Clubs J. Sainsbury's School Games K. Step into Sport L. Young Ambassadors M. Sporting equals; N. Sport unlimited; O. Sport Action Zones; P. Sport England Small Grants Programme; Q. Sustainable Facilities; R. Innovation Fund; S. Recruit into Coaching; T. Playground to podium; U. Free swimming programme/FSCMP; V. Women's Cycling Network W. Beacon Clubs X. Street Games Y. Sporting Champions 	<p>.</p>
--	----------

[2 marks] AO1

5 (d) (ii) Why have the opportunities for participation in activities such as climbing increased for people with disabilities?

<ul style="list-style-type: none"> A. Equal opportunities/inclusion/social acceptance B. Demand from people with disabilities C. Improved technology D. group identified as lower participation / focus group E. <u>Adapted</u> equipment/facilities/activities/clubs F. <u>Specialist</u> coaches G. <u>More</u> media coverage/role models/greater awareness H. Physical and mental health benefits I. PE programmes J. <u>Additional</u> funding 	<ul style="list-style-type: none"> A. 'less discrimination' – too vague E. not related to transport or access to facilities e.g. ramps G. must link to disabled coverage
---	---

[3 marks] AO1

6 (a) Outline the main aims of the National Curriculum for Physical Education.

<ul style="list-style-type: none"> A. Improve health/fitness/sustained involvement B. Perform in a range/variety of activities C. Learn <u>physical/motor</u> skills/ develop <u>physical</u> competence D. <u>Social</u> skills/teamwork/leadership E. Gain knowledge of the body in action F. Experience different roles / e.g. coach, leader, official G. Sportsmanship/fair play/morals/values H. Experience competitive sport I. Become creative/problem-solving/cognitive skills/decision making J. Face up to challenges/develop self-esteem/confidence K. Learn how to plan, perform and evaluate/analysis/critical performer L. Make choices for 'lifelong learning' / sporting habit for life/encourage participation after school 	<p>L. Post 16</p>
--	-------------------

[4 marks] AO1

6 (b) How did 19th century English public schools improve opportunities for students to participate in games?

<ul style="list-style-type: none"> A. Emphasis on competitive sport/ teams developed B. Developed rational forms of games/technical developments/ e.g. rules/kit/officials C. Inter-house/games afternoons/Sports days/Inter-school fixtures D. Provided facilities/equipment/suitable E. Employed coaches/Blues F. Gave <u>sixth formers/prefects</u> leadership/self-government 	<p>This is a 'how' question, not a 'why' question.</p>
---	--

[3 marks] AO1

6 (c) There is a lower rate of participation in certain sporting activities by ethnic minorities in the UK.

Discuss the suggestion that solutions to overcome discrimination in sport for ethnic minority groups have increased participation.

<p>Yes</p> <ul style="list-style-type: none"> A. Clubs/schools/NGBs have a multi-cultural policy/equal opportunities policy/avoid discrimination/positive discrimination/discrimination laws B. Schools create links with external clubs C. Increase in media coverage/role models/sport leaders/mentors/coaches <u>from</u> ethnic minority groups D. Schools offer a wide range of activities/consider ethnic preferences; E. Raise expectations; F. Specific gender-only activities/awareness of cultural differences/dress codes; G. Avoid channelling/labelling/stacking <p>No</p> <ul style="list-style-type: none"> H. (Racial) discrimination/prejudice/racism still exists I. Not encouraged/actively discouraged by parents/peers; J. Low status/priority given to sport/ preference for academic work K. Conflict with religious customs/observance/dress code L. Lack of role models/media coverage/fewer coaches <u>from</u> ethnic minority groups; M. Stereotyping/channelling/stacking/Misconception that certain ethnic groups suit certain activities so won't try others. 	<p>Question focus is not on strategies but the current situation linked to participation</p> <p>C. Must link to ethnic minority</p> <p>Sub max 3 marks</p> <p>Sub max 3 marks</p>
---	---

[5 marks] AO1/AO3

7

You have been asked to deliver a weight training programme using visual guidance.

Outline the principles of weight training **and** identify the advantages of using visual guidance when introducing weight training exercises.

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 discussion. 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.

[12 marks] AO1/AO3

Band range	Band descriptors	Number of points
<p>Level 4 9 – 10 marks</p>	<p>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 in one part of the question, maximum 9 marks</p>	<p>Minimum of 13 points to get into the mark band</p>
<p>Level 3 6 – 8 marks</p>	<p>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 in one part of the question, maximum 7 marks</p>	<p>Minimum of 9 points to get into the mark band</p>

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 in one part of the question, maximum 4 marks	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 in 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.

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>Weight Training</p> <ul style="list-style-type: none"> A. Involves <u>free</u> weights/suitable examples B. Resistance machines/ fixed weights/ suitable examples C. Exercises relate to muscle group being developed/specific movement pattern D. Uses number of <u>repetitions / sets</u> E. Resistance is calculated using 1 rep max / Work at a percentage of 1 RM F. Develop strength (and/or) power through heavier resistance / high weight <u>and</u> less repetitions / sets G. 60 - 80% plus of 1 RM H. Develop muscular endurance through lighter resistance / lower weight <u>and</u> more repetitions / sets I. 50 - 60% of 1 RM J. Principles of training / FITT/ specificity/rest/SPORT/SPOR/intensity <p>Advantages of using visual guidance</p> <ul style="list-style-type: none"> K. Demonstrations / images / video L. Provides a clear idea of the movement pattern / technique /analysis of technique M. Helps develop a mental image N. Important for safety / to prevent injury through incorrect technique O. Suitable for learners in the cognitive / associative <u>stages of learning</u> P. Specific cues can be highlighted Q. Focused attention on the visual guidance (demonstration / image / video) given R. Suitable for large groups S. can motivate by using a significant other / role model, T. Can be used in conjunction with verbal guidance 	<p>Pt A & B – do not just ‘weights’ too vague</p> <p>Pt B – accept examples of exercises e.g. leg press</p> <p>Pt C – refers to the application of the principle of specificity</p> <p>1 point for application of sport. Just naming the words is not creditworthy.</p> <p>Pt E – refers to calculation of intensity</p> <p>Pt G & I – use discretion on the % figures used in explanation</p> <p>Guidance answers must refer to advantages rather than what makes a good demo.</p>
--	---

--	--

Assessment objective and specification coverage grid

Question Number	Assessment Objectives		Specification Section	Marks
	AO1	AO3		
Section A			Applied Exercise Physiology	

1ai	1		Health, exercise and fitness	1
1aii	1		Health, exercise and fitness	1
1bi	3		Analysis of movement in specified sporting actions	3
1bii	2		Analysis of movement in specified sporting actions	2
1c		5	Nutrition	5
2ai	3		Pulmonary function	3
2aii	2		Pulmonary function	2
2b	2		Transport of blood gases	2
2c		3	Cardiac function	3
2d	2		Cardiac function	2
Skill Acquisition				
3a	1		Information processing	1
3b	3		Information processing	3
3c		4	Information processing	4
3d		4	Information processing	4
4a	2		Difference between skill and ability	2
4b	3		Classification of skill	3
4c	3		Learning and performance	3
4d		4	Learning and performance	4
Opportunities for Participation				
5a	2		Characteristics and objectives of concepts	2
5b	3		Characteristics and objectives of concepts	3
5c	3		Historical, social and cultural factors	3
5di	2		Provision	2
5dii	2		Provision	2
6a	4		Historical, social and cultural factors	4
6b	3		Historical, social and cultural factors	3
6c	3	2	Barriers to participation	5
Section B			Applied Exercise Physiology and Skill Acquisition in Practical Situations	
B7	6	6	Training methods and methods of guidance	12
Total marks	56	28		
TOTAL				84