



**General Certificate of Education
June 2011**

Physical Education 1581

PHED1

**Opportunities for and the effects of
Leading a Healthy and Active Lifestyle**

Post-Standardisation

<i>Mark Scheme</i>

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

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Section A

Applied Exercise Physiology

Question 1

- 1 (a) Using **Figure 1**, identify the 'joint action', 'main agonist' and the 'type of muscle contraction' occurring at the hip **and** ankle joint as the weightlifter moves from Position **A** to Position **B**. (5 marks)

	Hip	Ankle	First answers only A – accept flexion to extension (do not accept hyperextension) B – accept gluteus maximus (do not accept glutes)/accept biceps femoris semi-membranosus/semi-tendinosus C – do not accept flexion D – do not accept calf or soleus
Action	A. Extension	C. Plantar flexion	
agonist	B. Gluteals/hamstrings	D. Gastrocnemius	
Type		E. Concentric/isotonic	

- 1 (b) Weightlifting requires different types of strength.

Name **and** describe the different types of strength used during weightlifting. (2 marks)

A. <u>Explosive</u> strength – rapid/maximal/ forceful/powerful contraction/equiv; B. <u>Static</u> strength – holding position/isometric/ equiv;	First answer only Needs name and description of movement Not power/ not dynamic as types of strength
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- 1 (c) Apart from strength, name **and** describe another component of fitness that is needed for weightlifting. (1 mark)

A. Flexibility – wide range of movement; B. Speed – rapid movement/move quickly; C. Co-ordination – combining movements/ arms and legs together; D. Power – strength x speed/large force quickly; E. Agility – change direction quickly; F. Balance – Remaining stable/equilibrium/ centre of mass over area of support;	First answer only One component named and described
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- 1 (d) Explain how **and** why the diet of a competitive weightlifter may need to differ from that of an untrained individual. (4 marks)

How (sub max 2)	Why	Do not credit different foods – e.g. sugars/meats/fruits/vegetables etc A – accept carbs E – Accept named vitamin and mineral A, C, E, G requires more/higher Assume correct order – more fats plus more proteins for energy and growth = 4 marks Accept opposites if talking about untrained
A. <u>Extra</u> calories/carbohydrates/fats	B. Carbohydrates/fats for energy/respiration /ATP resynthesis;	
C. <u>Extra</u> protein;	D. Protein for muscle growth and repair/development/ equiv	
E. <u>Extra</u> vitamins and minerals;	F. Vitamins and minerals for higher metabolism/muscle nerve functioning/tissue growth/energy release from foods/equiv;	
G. <u>Extra</u> fluid/water	H. Fluid/water to avoid dehydration/replace losses through sweating/ temperature regulation	

Question 2

- 2 (a) (i) Use 'Starling's law of the heart' to explain how stroke volume increases when running. (3 marks)

A. Increased <u>venous return</u> ;	A – not simply more blood back to heart E – not increase stroke volume – in question
B. Greater diastolic filling/heart fills with more blood;	
C. Cardiac muscle stretched/elastic;	
D. Greater/stronger/more powerful force of contraction/contractility;	
E. Increased ejection fraction/greater percentage of blood ejected;	

- 2 (a) (ii) Explain how the heart controls the rate at which it beats. (4 marks)

A. Heart generates own electrical/nerve impulses/intrinsic/myogenic;	A – not electrical signals
B. Sino-atrial node/SAN/pacemaker;	
C. Causes systole/contraction (of atria);	
D. Atrio-ventricular node/AVN;	
E. Bundle of His/AV bundle;	
F. Purkinje fibres;	
G. To ventricle/ventricle contracts;	

- 2 (b) Running helps the 'venous return' mechanism.

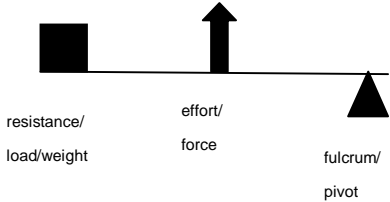
Explain how the venous return mechanism works.

(3 marks)

<p>A. Muscle/skeletal pump/respiratory pump/ suction pump; B. One-way/pocket valves in veins/give direction; C. Contraction of leg muscles compresses <u>veins</u>; D. Breathing mechanism/inspiration increases pressure compresses veins; E. Suction pressure of heart/heart draws up blood;</p>	<p>B must link valves with location or direction</p>
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- 2 (c) When a person is running, the knee joint works as a lever system.

Name, sketch and label the lever system operating at the knee during running.
(2 marks)

<p>A. 3rd Class/order lever; B. Identify effort/fulcrum/resistance – effort in middle;</p>	<p>First answer only No abbreviations allowed Diagram (can be mirror image):</p>  <p>Credit detailed drawings of joint structure if appropriate</p>
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Skill Acquisition

Question 3

- 3 (a) (i) Using **Figure 2**, explain what is happening in relation to skilled performance between point **A** and point **B**.
(2 marks)

<p>A. No improvement/levels off/equiv; B. (Learning) <u>plateau</u>;</p>	<p>A – Accept optimum/maximum performance B – key term</p>
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- 3 (a) (ii) Suggest possible solutions to limit what is happening between point **A** and point **B** in **Figure 2**. (4 marks)

<p>A. Distributed sessions/rest/recovery periods;</p> <p>B. Resetting of goals/tasks more challenging;</p> <p>C. Offering extrinsic rewards/encouragement/praise/positive reinforcement;</p> <p>D. Using mental rehearsal/imagery/visualisation;</p> <p>E. Provide feedback/visual guidance;</p> <p>F. Competition against opposition;</p> <p>G. Use of whole-part-whole/part method/breaking the skill down;</p> <p>H. Ensure performer focuses on appropriate cues;</p> <p>I. Make practices more varied/more interesting/fun/enjoyment;</p> <p>J. Make performer fitter;</p> <p>K. Better quality coaching/new coach/different teaching style.</p>	<p>Increase motivation on own too vague</p> <p>C accept rewards/prizes/etc</p>
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- 3 (b) (i) To be effective, games players will need to use 'selective attention'.

Using an example from a game, explain the term selective attention.

(3 marks)

<p>A. Eg Ignore crowd/environment <u>and</u> concentrate on player position, ball/equiv;</p>	<p>Suitable example; not just watch ball <u>or</u> ignore crowd - both aspects identified</p> <p>Sub max 1</p>
<p>B. Filtering/ignoring/blocking out of unnecessary information;</p> <p>C. Focussing/concentrate/picking out on relevant information/stimulus;</p> <p>D. Too much information/stimuli from environment;</p> <p>E. Located between STSS and STM;</p> <p>F. Limited processing capacity;</p> <p>G. Single channel hypothesis/bottleneck theory;</p> <p>H. Attentional narrowing;</p>	<p>Sub max 2</p>

- 3 (b) (ii) How can a coach improve a player's selective attention? (3 marks)

<p>A. Increase intensity of the stimulus; B. Motivate and/or arouse the performer/ performer is alert; C. Direct attention to one aspect of the performance/highlight/focus on cue; D. Learn to ignore irrelevant stimulus/what is relevant/training with (more) distraction/ audience; E. Lots of relevant practise/rehearsal; F. Mental rehearsal/imagery; G. Transfer from previous experience to help with explanation/expectation;</p>	<p>A – accept examples – orange ball/etc</p> <p>F – not just practise</p>
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Question 4

- 4 (a) (i) What do you understand by the term 'intrinsic' motivation? (2 marks)

<p>A. The will/want/desire/drive to win/achieve success/equiv; B. That occurs within performer/equiv.</p>	<p>Stating the reverse, such as 'its not rewards' is too vague B – accept examples – self- satisfaction/personal pride/etc</p>
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- 4 (a) (ii) Explain the disadvantages of using 'extrinsic' motivation to motivate an individual. (2 marks)

<p>A. (Excessive) extrinsic may damage/lead to loss of intrinsic motivation/love of the game/self satisfaction; B. Become dependent on/loss of extrinsic motivation; C. <u>Excessive</u> extrinsic motivation eventually loses its effect/becomes worthless; D. Removal/failure to achieve extrinsic reward may lead to loss of motivation; E. Too much pressure, leading to cheating;</p>	<p>A – idea is too much extrinsic motivation is bad</p> <p>B – idea that extrinsic motivation controls you</p> <p>D – Not achieving enough for extrinsic motivation to work E – Accept win at all costs</p>
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- 4 (a) (iii) How could a coach motivate a group of performers, of differing abilities, who regularly practise together? (4 marks)

A. Allow success/ handicap races/ competitions/group similar abilities together; B. Use of external rewards/prizes/equiv; C. Make it fun/enjoyable; D. Use of role models; E. Use praise/verbal encouragement/ reinforcement/positive feedback; F. Emphasise personal improvement/set personal goals/challenges; G. Avoid punishment; H. Immediate reinforcement for the weaker runners; I. Attribute success internally;	A – Idea of competitions for success, NOT becoming competitive E – Not just feedback
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- 4 (b) 'Schmidt's schema theory' is based on various sources of information which are used to modify motor programmes.

Explain the functions of 'recall schema'. (4 marks)

A. Prior to performance; B. Initiates/plan movement/equiv; C. (Knowledge of) initial/environmental conditions; D. What can you see/hear/feel/what's happening; E. (Knowledge of) response specifications/ response/movement demands; F. What is expected/required/what should I do;	C and E are both essential terms D – Accept relevant examples F – Accept relevant examples
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Opportunities for Participation

Question 5

- 5 (a) Play has been defined as 'an activity from which you get immediate pleasure without ulterior motive' (Spencer).

- 5 (a) (i) Explain this definition of play. (2 marks)

A. Fun/enjoyment/non-serious; B. Intrinsic value/no tangible/extrinsic rewards;	No rules – incorrect Do not accept 'no rewards'
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- 5 (a) (ii) State **three** ways in which sport differs from play. (3 marks)

<p>Sport has more/play has less:</p> <p>A. Extrinsic rewards;</p> <p>B. Competition/fixtures/leagues;</p> <p>C. Commitment/effort;</p> <p>D. Highly structured/time constraints/boundaries/equipment/kit;</p> <p>E. Rules/regulations/officials/tactics;</p> <p>F. Tactics/skills required;</p>	<p>A – accept trophies/prizes</p> <p>B – accept winners/losers</p> <p>D – accept organised/institutionalised/NGBs</p>
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- 5 (b) Many organisations, such as 'Sport England', are involved in the provision of sporting and physical recreational activities in the United Kingdom.

Identify some of the **initiatives** that Sport England has developed in order to achieve its objectives of "Grow, Sustain, Excel". (4 marks)

<p>A. Sports Colleges/School Sport coordinators(SSCo)/Competition Managers/FESCOs/PDMs/PLTs/ Sport development officers/ PESS/ Gifted and Talented;</p> <p>B. Sportsmark/Activemark/Clubmark/ Sports partnership mark;</p> <p>C. <u>Active</u> Sports/schools/communities programme/Activ8</p> <p>D. Sport Action Zones;</p> <p>E. PESSCLS/school-club links/PESSYP/ SSP (School Sport Partnerships)/5x60/E3;</p> <p>F. TOPS;</p> <p>G. Best Value;</p> <p>H. Step into Sport;</p> <p>I. Sporting equals;</p> <p>J. Sport unlimited;</p> <p>K. Sport England Small Grants Programme;</p> <p>L. Sustainable Facilities;</p> <p>M. Innovation Fund;</p> <p>N. Recruit into Coaching;</p> <p>O. Playground to podium;</p> <p>P. Free swimming programme/FSCMP;</p> <p>Q. Whole sport plans</p> <p>R. Women's Cycling Network</p> <p>S. Beacon Clubs</p> <p>T. Street Games</p> <p>U. Sporting Champions</p> <p>V. RAMP</p>	
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- 5 (c) How does the 'Youth Sports Trust' help to develop Physical Education and school sport opportunities? (3 marks)

Question 6

- 6 (a) Identify the similarities **and** differences between the state school (1904-1918) Syllabuses of Physical Training and the current 'National Curriculum for Physical Education'. (5 marks)

<p>Similarities –</p> <p>A. Both centralised/directed/told what to teach;</p> <p>B. Both concerned with health promotion;</p> <p>C. Both compulsory;</p> <p>D. Both preparation for life after school;</p> <p>Differences –</p> <p>Early syllabus:</p> <p>E. Limited curriculum breadth/choice;</p> <p>F. Little/no differentiation between sexes/ages;</p> <p>G. Command style/drilled/freestanding/ Swedish gymnastics;</p> <p>H. Obedience training/accepting orders;</p> <p>I. Preparation for role in factory/army;</p> <p>J. No concern for individual/class response/ unison;</p> <p>K. No interaction between pupils;</p> <p>Current NCPE</p> <p>L. Greater variety of activities</p> <p>M. Different key stages for different ages;</p> <p>N. Child centred/individual development;</p> <p>O. Develops independent thinking/problem-solving/different roles/observation and analysis;</p> <p>P. Preparation for leisure/lifelong learning/ future recreation;</p> <p>Q. Interaction encouraged;</p>	<p>Accept therapeutic</p> <p>sub max 2 marks</p> <p>Accept regimented/ranks/rows</p> <p>Sub max 2 marks</p> <p>sub max 2 marks</p>
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Section B

Question 7

You have been asked to improve the fitness and skills of a group of AS Level Physical Education students.

Explain how you could calculate individual workload intensities for a continuous training programme.

In addition, explain the different methods of guidance **and** the factors that you should consider when deciding on the most appropriate method to use.

(12 marks)

A good answer must address all areas of the question adequately, and should consider accurately the following topic areas:

Valid points	Commentary
<p>Methods to calculate intensity</p> <p>A. Use heart rate to measure intensity;</p> <p>B. <u>Heart rate training zone</u>;</p> <p>C. 60-80% of maximum heart rate;</p> <p>D. Max heart rate = 220-age;</p> <p>E. <u>Karvonen</u> principle stated;</p> <p>F. Karvonen formula detailed – Exercising heart rate = (Heart rate range x intensity %) + (resting heart rate);</p> <p>G. Use <u>Borg scale</u> to measure intensity;</p> <p>H. <u>Rate of Perceived exertion/RPE</u>;</p> <p>I. Subjective/opinion;</p> <p>J. Scores 6-20;</p>	<p>A – Accept use of pulseometer/heart rate monitor</p> <p>B – Required term</p> <p>C – Accept within tolerances – 50-95%</p> <p>E – accept spelling mistakes</p> <p>F – no tolerance</p> <p>G – Required term</p> <p>I – How hard they feel they have worked</p> <p>J – Does not start at zero</p>
<p>Forms of guidance</p> <p>K. Visual – observe/demonstration/seen/show;</p> <p>L. Verbal – tell/speak;</p> <p>M. Manual – support/assistance from coach;</p> <p>N. Mechanical – use of aids/eg harness/belt/floats;</p>	<p>Name and describe</p>
<p>Factors to consider</p> <p>O. Depends on performer's stage of learning/ability/experience/age;</p> <p>P. Depends on nature of skill/task/complexity;</p> <p>Q. Depends on situation/environment/facilities available/time;</p> <p>R. Depends on level of danger/safety of situation/skill;</p> <p>S. Depends on motivation/personality of performer;</p> <p>T. Depends on size of group;</p>	

Students who simply make a (bullet point) list can only reach as high as Level 2.

Band/Level Descriptors

Band Range	Band descriptors
10-12	<ul style="list-style-type: none"> Addresses all aspects of question, demonstrating wide range of depth and knowledge Has explained at least 13+ relevant points Expresses arguments clearly and concisely Good use of examples to support answer Few errors in their spelling, punctuation and grammar, and correct use of technical language
7-9	<ul style="list-style-type: none"> Addresses most aspects of question, demonstrating clear level of depth and knowledge Has explained at least 9+ relevant points Attempts to express arguments clearly and concisely Uses examples to support answer Few errors in their spelling, punctuation and grammar, and correct use of technical language, although sometimes inaccurately
4-6	<ul style="list-style-type: none"> Addresses some aspects of question, but lacks sufficient depth and knowledge Has explained at least 5+ relevant points Limited attempt to develop any arguments or discussions, normally vague or irrelevant Attempts to use examples although not always relevant Errors in spelling, punctuation and grammar, and limited use of technical language
1-3	<ul style="list-style-type: none"> Addresses question with limited success Has explained at least 1+ relevant point Little or no use of examples No attempt to develop argument or discussions Major errors in their spelling, punctuation and grammar, and little use of technical language

Zero marks for no creditworthy information

LEVEL ACHIEVED	NO OF CORRECT RESPONSES	DISCRIMINATOR	INITIAL MARK	OPTIONAL QWC/ COVERAGE	POTENTIAL FINAL MARK
4	13+	15+ items	11	+1	11 or 12
		13 or 14 items	10	+1	10 or 11
3	9-12	11 or 12 items	8	+1	8 or 9
		9 or 10 items	7	+1	7 or 8
2	5-8	7 or 8 items	5	+1	5 or 6
		5 or 6 items	4	+1	4 or 5
1	1-4	3 or 4 items	2	+1	2 or 3
		1 or 2 items	1	+1	1 or 2
	0				0