



## **General Certificate of Education**

# **Physical Education 1580**

## **PHED1**

### **Opportunities for and the Effects of Leading a Healthy and Active Lifestyle**

# **Mark Scheme**

*2010 examination - January series*

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## Section A

1

We eat different classes of food. One of these classes of food is fat.

- (a) (i) Describe **two** benefits to athletes of including 'fat' in their diet. (2 marks)

2 marks for 2 of:

- A. Used as an energy source
- B. Contains fat-soluble vitamins/essential fatty acids
- C. Acts as insulator
- D. Slow release/low intensity

- (ii) Too much dietary fat may cause obesity. Which diseases are associated with 'obesity'? (3 marks)

3 marks for 3 of:

- A. Heart disease/heart attacks
- B. Diabetes
- C. High blood pressure
- D. High cholesterol/fats/lipids in blood/atherosclerosis
- E. Stroke
- F. Lung disease
- G. Liver/gall bladder disease
- H. (Oesteo) arthritis
- I. Gout
- J. Cancer
- K. (Deep vein) thrombosis
- L. Psychosocial problems/depression

Athletes usually need to have an efficient cardio-respiratory system to enable them to meet the demands of an activity.

- (b) **Figure 1** shows the spirometer reading of an athlete.

- (i) Which 'lung volume' is represented by the letter **B**. (1 mark)

- A. B = Inspiratory reserve (volume)

- (ii) What would be the effect on the spirometer trace for lung volume **A** of a period of continuous running? (2 marks)

2 marks for 2 of:

- A. Increase in tidal volume/larger/higher proportion
- B. More frequent peaks/closer together

- (iii) How is 'breathing rate' controlled to meet the demands of changing levels of exercise? (4 marks)

4 marks for 4 of:

- A. (Exercise/movement) - more carbon dioxide
- B. Increased acidity/decrease in pH/increase hydrogen ions (in blood)
- C. Detected by chemoreceptors
- D. (Nerve impulses to) respiratory centre/medulla (of brain)
- E. Phrenic nerve

F. Diaphragm/intercostal muscles/sternocleidomastoids/scalene/pectoralis minor/abdominals

2

Games players require a good level of stamina if they are to be successful.

(a) (i) What do you understand by the term 'stamina' **and** why is it an important component of fitness for games players? (1 mark)

A. Ability to delay the onset of fatigue/equiv/important because game lasts more than 20 mins/length of match/equiv.

(ii) Explain how different lifestyle choices can positively **and** negatively affect a games player's stamina. (4 marks)

4 marks for 4 of:

Stamina reduced by:

A. Smoking – reduces lung/oxygen transport capacity

B. Lack of exercise – reduces stamina

C. Diet – overweight/obese – extra tissue

D. Alcohol – damages heart/affects concentration

(sub max 3 marks)

Stamina increased by:

E. Not smoking – improved breathing

F. Training – improved fitness

G. Care with diet – correct weight

H. No alcohol – remain alert

I. Cycle/walk to work/walk upstairs

(b) **Figure 2** shows a games player running.

The player's left leg is driving him forward. For the movement occurring at the **knee joint** of the drive leg, name:

(i) the 'axis' about which the movement is taking place (1 mark)

A. Transverse axis/horizontal axis

(ii) the main 'agonist' causing the movement (1 mark)

A. Quadriceps/rectus femoris

(iii) the 'joint action' taking place. (1 mark)

A. Extension/flexion to extension

(c) During a game, a player's work rate will vary. Describe how the 'parasympathetic' **and** the 'sympathetic' nerve pathways control heart rate during a game. (4 marks)

4 marks for 4 of:

A. Controlled by medulla/cardiac centre

B. Sympathetic pathway increases heart rate

C. By release of adrenaline/noradrenaline

- D. Increase stroke volume/ejection fraction
- E. Parasympathetic decreases HR
- F. By vagus nerve
- G. Production of Acetylcholine
- H. (Both) act on sino atrial node/SAN

3

A badminton coach may observe players in matches to see whether they are skilful.

- (a) What are the characteristics of a skilful performance? (3 marks)

3 marks for 3 of:

- A. Minimisation of time/quick/fast/efficient
- B. Minimisation of energy/effort/equiv.
- C. Repeatable success/consistent/few mistakes
- D. Flowing/smooth/fluent/aesthetically pleasing
- E. Adaptable
- F. Good technique/coordinated/controlled
- G. Learned
- H. Goal directed

In order to improve their performance, badminton players need motivation.

- (b) (i) Explain the meaning of the term 'motivation'? (2 marks)

2 marks for 2 of:

- A. The will/desire/drive/want to learn/achieve success/equiv
- B. Intrinsic – from within/self satisfaction
- C. Extrinsic – rewards
- D. Tangible – touchable/egs
- E. Non tangible – not physical/equiv.

- (ii) How could a coach motivate a badminton player to improve? (3 marks)

3 marks for 3 of:

- A. Make it fun/variation in training/more interesting (accept reverse – not boring)
- B. Use reinforcement/praise/verbal encouragement/equiv
- C. Use of external rewards – certificates/prizes
- D. Allow success
- E. Alter environment to favour players/feel competent
- F. Positive feedback/eg
- G. Set more (demanding/achievable) goals/target/more competition
- H. Emphasise personal improvement
- I. Use role models

- (c) One form of learning is through schema. 'Schmidt's schema theory' (1975) is based on the concept that every time athletes make a movement, they gather information from four sources.

Explain how athletes use these **four** sources of information to make a movement. (4 marks)

4 marks for 4 of:

- A. Knowledge of initial conditions/environmental conditions – where am I?

- B. Knowledge of response specifications/response demands – what is expected/required?
- C. Sensory consequences/kinesthesia/knowledge of performance/KP – how did it feel?
- D. Movement/response outcomes/knowledge of results/KR – what happened?
- E. Recall schema – prior to movement
- F. Recognition schema – during/following movement

4

In order to learn gymnastic skills, gymnasts need to remember important instructions and use selective attention.

- (a) What are the characteristics and functions of 'short-term memory'? (3 marks)

3 marks for 3 of:

- A. Information enters from STSS
- B. Only selective attended items enter
- C. Limited capacity
- D. Retrieves information from LTM
- E. Memory trace/schema/motor programme
- F. If not practised/reinforced then lost
- G. Limited duration/seconds
- H. Working memory/decision making
- I. Transfers to LTM
- J. Effector system from STM

- (b) How can a coach ensure that important information is stored in the gymnast's 'long-term memory'? (4 marks)

4 marks for 4 of:

- A. Rehearse/repeat/practice/over learning
- B. Associate with familiar information/transfer of learning/related to past experiences
- C. Make information meaningful
- D. Make experience enjoyable/interesting
- E. Make stimuli contrasting/recognisable/vivid
- F. 'Chunking'/'chaining'/'progressive-part learning'/breakup the skill
- G. Imagery/mental rehearsal

- (c) (i) Explain the meaning of the term 'operant conditioning'? (2 marks)

2 marks for 2 of:

- A. Trial and error learning
- B. Successful response linked/associated with stimulus/strengthens S-R bond
- C. Use of reinforcement

- (ii) How can a coach use operant conditioning to develop a gymnast's skills? (3 marks)

3 marks for 3 of:

- D. Using rewards/praise
- E. Shaping/altering environment to progress towards success
- F. Use of target areas/mechanical feeders/equipment/etc
- G. Use of negative reinforcement

- H. Removal of criticism – explanation of negative reinforcement
- I. Use of punishment to decrease probability of undesired response
- J. Example of punishment

5

Early forms of modern sports were primarily developed by men for men. It is only since the start of the 20<sup>th</sup> century that women have become more actively involved in sport.

- (a) (i) How did 19<sup>th</sup> century public schools contribute to the technical development of 'rational recreation'? *(3 marks)*

3 marks for 3 of:

- A. Rules/numbers/boundaries/facilities
- B. Inter-house/intra-school competitions/matches
- C. Training/coaching
- D. Skills/tactics/positions
- E. Leadership/captain
- F. Kit/equipment
- G. Introduction of officials
- H. Division between players and spectators

- (ii) How did 19<sup>th</sup> century public schools and universities help to spread of rational recreation into wider society? *(3 marks)*

3 marks for 3 of:

- A. Universities as 'melting pots'/lots of different types/styles of game/new sports
- B. Codification/rules standardised
- C. Provided facilities
- D. Factory/church teams
- E. Officers to troops
- F. British Empire – over the world/missionaries/diplomats/military/clerics
- G. Old boys network
- H. Clubs/NGBs formed
- I. Teachers to schools
- J. Competitions/fixtures/leagues/internationals

- (b) **Figure 3** shows the increase in the number of women participating in sport and physical activity in the United Kingdom (UK) over the past 100 years.

The participation of women in physical activities often depends on whether the opportunities are available to them.

- (i) Explain the term 'discrimination'. *(2 marks)*

2 marks for 2 of:

- A. Treating people differently/unfairly
- B. Prejudice
- C. Based on stereotyping/egs such as race/ethnicity/etc

- (ii) Discuss whether current opportunities for women to take part in sport and physical activity are the same as for men. (4 marks)

4 marks for 4 of (sub max 3 marks per section):

**Yes:**

- A. Women have more leisure time/less tied to home/housework
- B. Women have greater disposable income/greater mobility/accessibility to transport
- C. Women encouraged to participate on the grounds of health/fitness/weight loss
- D. Fits in with stereotypical ideals of women's physique/body image
- E. Promoted by the media/fashionable activity/role model
- F. Improvement in levels of provision for some activities/more clubs
- G. Improvement in child care facilities/crèches
- H. School PE programmes promote healthy lifestyle/provide opportunities for aerobics/conditioning activities
- I. Positive discrimination by local leisure centres to encourage women's participation/women only sessions
- J. Sport England/WSF – policy to promote sport/physical activity among under represented groups such as women/equal opportunities

**No:**

- K. Lack of equal opportunities/male dominated sports
- L. Limited membership rights of clubs/membership restrictions/men only section/fewer leagues/clubs
- M. Rules/regulations/preventing women/girls playing with/against men
- N. Sexual harassment/verbal abuse discourages participation
- O. Sexual stereotyping channelling girls/women into female appropriate sports
- P. Overlooked for top sport jobs/coaching/management/administration
- Q. School-based PE programmes limited activities available for girls
- R. Less tournament earnings/sponsorship eg Wimbledon/lack of media coverage/denigration by media/more male professionals

6

The National Curriculum for Physical Education is compulsory in state schools.

- (a) (i) List the **six** sport classifications on the National Curriculum for Physical Education. (2 marks)

4 correct for 1 mark

6 correct for 2 marks

Games/athletics/swimming/gymnastics/dance/outdoor and adventurous activities

- (ii) What roles, other than 'performer', does the National Curriculum for Physical Education encourage children to develop? (3 marks)

3 marks for 3 of:

- A. Critical performer/self improvement
- B. Coaching
- C. Choreographer/creative
- D. Official/judging
- E. Spectator/observation



- F. Leadership/captain
- G. Organising

- (b) (i) In what ways are the characteristics of physical education and those of sport different?

*(3 marks)*

3 marks for 3 of (sub max 2 marks per section)

**Sport:**

- A. Sport is competitive/sport primarily seeks winners and losers/extrinsic rewards
- B. Sport may not have educational objective/is elitist
- C. Sport does/may not lead to improvement/learning
- D. Sport is serious/commitment/training
- E. Sport is voluntary/in your own time/choice

**PE:**

- F. PE develops (motor/psycho-motor) skills
- G. PE involves learning other things
- H. PE develops morals/ethics/fair play
- I. PE health/social/life-long learning/child-centred
- J. PE is compulsory

- (ii) Describe how schools can provide extra-curricular opportunities to increase participation rates for their pupils.

*(4 marks)*

4 marks for 4 of:

- A. Clubs/societies/school club links
- B. Team/practices/matches/competitions
- C. Voluntary/participation/anybody can take part/increased numbers
- D. Lunchtime/after-school/weekends
- E. Wide range of activities/choice
- F. Cater for wide range of abilities
- G. On-site/off site
- H. Peripatetic teachers/coaches/instructors

## Section B

7

You have been asked to develop the flexibility of a group of AS level Physical Education Students.

Describe the different 'types of stretching' that could be safely used with the group **and** describe how you can use visual and manual 'guidance' effectively with the students.

(12 marks)

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

- The different types of stretching that can be safely used, addressing points such as:
  - A. Active – position held by agonist/muscles
  - B. Passive – position held by another body part or position held by partner
  - C. Static – position held with isometric contraction
  - D. Ballistic – bounce in and out of stretch
  - E. PNF – position held and isometric contraction
  
  - F. Warm-up prior to stretching
  - G. Make stretch sports specific
  - H. (Begin) slowly
  - I. Hold stretch for few/no more than (30) seconds
  - J. Never hold a painful stretch – injury
  - K. No bouncing/ballistic
  - L. Balance/equalise stretches/agonists and antagonists
  
- How visual and manual guidance can be used effectively, addressing points such as:
  - M. Visual – suitable example/watch/show/demonstrate
  - N. Manual – suitable example/force/help/assist
  
  - O. Visual – accurate/perfect demonstration
  - P. Learner paying attention
  - Q. Highlight cues/repeat demos
  - R. Skill within performers capabilities/memory limitations
  - S. Better for beginners
  
  - T. Manual – when difficult/dangerous skill
  - U. Good for beginners/weak
  - V. Permits kinaesthetic feel
  - W. Not for too long

The following table should be used to determine the mark.

<b>Band Range</b>	<b>Band descriptors</b>
<b>Level 4 10-12 mks</b>	<ul style="list-style-type: none"> <li>• Addresses all areas of the question, demonstrates a wide range of depth and knowledge</li> <li>• Expresses arguments clearly and concisely</li> <li>• Few errors in spelling, punctuation and grammar, correct use of technical language</li> </ul>
<b>Level 3 7-9 mks</b>	<ul style="list-style-type: none"> <li>• Addresses most areas of the question, demonstrates a clear level of depth and knowledge</li> <li>• Attempts to express arguments clearly and concisely</li> <li>• Few errors in spelling, punctuation and grammar, correct use of technical language although sometimes inaccurately</li> </ul>
<b>Level 2 4-6 mks</b>	<ul style="list-style-type: none"> <li>• Addresses some aspects of the question but lacks sufficient depth and knowledge</li> <li>• Limited attempt to develop any arguments or discussions, normally vague or irrelevant</li> <li>• Errors in spelling, punctuation and grammar, limited use of technical language</li> </ul>
<b>Level 1 1-3 mks</b>	<ul style="list-style-type: none"> <li>• Addresses the question with limited success</li> <li>• Major errors in spelling, punctuation and grammar, little use of technical language</li> </ul>
<b>Level 0 0 mks</b>	<ul style="list-style-type: none"> <li>• Addresses no aspect of the question</li> </ul>