Version 1.0



General Certificate of Education June 2010

Physical Education 2581

Optimising Performance and Evaluating Contemporary Issues within Sport

PHED3



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Section A

Question 1

At the 2008 Beijing Olympic Games, David Davies won the silver medal in the swimming 10 kilometre marathon event, in a time of 1 hour 51 minutes and 53.1 seconds.

01 Explain how the **majority** of energy used during the race would be provided **and** outline the process of 'glycogen loading' that may be used by performers to improve performance in this type of event. (14 marks)

Mark Scheme	Commentary
A good answer must address both parts of the question adequately, and should consider accurately the following topic areas:	If all energy systems named = no mark Stages must be in correct
 How the majority of energy would be provided, addressing points such as: A. Majority produced by the aerobic system/oxygen B. Glycolysis/Anaerobic glycolysis C. Carbohydrates/glycogen/glucose D. broken down into pyruvate/ pyruvic acid E. Some ATP produced/2 ATP F. Krebs cycle G. Fats/triglycerides/fatty acids/glycerol H. Beta oxidation 	order B, F, J Accept annotated diagrams of the aerobic process Accept first energy system only Stages must be in the correct order
 Oxidation of acetyl-coenzyme-A/Citric acid/ production of CO₂ Electron transport chain Water/H₂O formed/hydrogen ions formed (H⁺)/ hydrogen/protons Large quantities of ATP produced or resynthesised/34- 36 ATP 	No credit for stating more ATP produced/ resynthesised – too vague. Need link to amount in the different stages
 The process of glycogen loading, addressing points such as: 	no points for evaluation
 M. Aim to increase (muscle) glycogen stores/ supercompensation N. Delays fatigue/increases endurance capacity/ increased ATP/energy production/hitting the wall O. (Method 1) Reduce glycogen levels P. Achieved by increased endurance training Q. Following three days of low carbohydrate diet R. And tapering/reduction in training levels S. Few days before competition high carbohydrate level diet/ eg pasta 	hitting the wall MUST be in correct context not reduce carb intake several weeks before
T. <u>Trained/elite/equiv</u> athletes may rest for several days before eating high carbohydrate diet	
 U. Increased water consumption helps the process V. (Method 2) day before 3 minute high intensity exercise W. Carb window opens X. Immediately/within 20 minutes intake high carbohydrate diet 	

The following table should be used to determine the mark.

Band Range	Band descriptors	
Level 4 12-14 mks 18/19/20 points – 12 marks 21+ points – 13 marks + QWC – max 14 marks Level 3 8-11 mks 12/13 points – 8 marks 14/15 points – 9 marks 16/17 points – 10 marks	 Addresses all areas of the question, demonstrates a wide rang of depth and knowledge 2 marks Expresses arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language Addresses most areas of the question, demonstrates a clear level of depth and knowledge Attempts to express arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of the question and grammar, correct use of the second seco	
+ QWC – max 11 marks Level 2 4-7 mks 6/7 points – 4 marks 8/9 points – 5 marks 10/11 points – 6 marks + QWC – max 7 marks Level 1 1-3 mks 1/2 points – 1 mark 3/4/5 points – 2 marks + QWC – max 3 marks	 Addresses some aspects of the question but lacks sufficient depth and knowledge Limited attempt to develop any arguments or discussions, normally vague or irrelevant Errors in spelling, punctuation and grammar, limited use of technical language Addresses the question with limited success Major errors in spelling, punctuation and grammar, little use of technical language 	
Level 0 0 mks	Addresses no aspect of the question	

Question 2

During the race a swimmer has to dive off the starting blocks as quickly as possible.

02 Identify the 'muscle fibre type' used to complete this action **and** justify your answer.

(3 marks)

Α.	Fast twitch fibres/type 2	First answer only
В.	Type 2b/fast twitch glycolytic/FTG	B – Not Type 2a
C.	Fast speed of contraction	Fast twitch oxidative/FOG
D.	High force of contraction/powerful contraction/ strong	
	contraction	Not characteristics
		If both types of fast twitch named,
		point A only

03 Using 'Newton's First' **and** 'Second Laws of Motion', explain how the swimmer dives off the starting blocks. (4 marks)

4 marks for 4 of:

A. Ne v	Force is applied by the <u>muscles</u> vton's First Law of Motion/Law of inertia	Sub max 2 marks
В. С.	Performer will remain on the blocks unless a force is applied Performer continues to move forwards with constant velocity until another force is applied	Do not credit push Law has to be identified to be credited marks
D.	Water slows the swimmer	
Nev E. F. G.	vton's Second Law of Motion/Law of Acceleration Mass of swimmer is constant Greater the force exerted on the blocks, the greater the acceleration/momentum Force governs direction	Stating the law no marks but must be applied to the swimmer Don't accept velocity Not F=ma

Question 3

Competitive swimmers will often compete in several events and suffer from fatigue due to limited recovery time.

04 Exp	ain the possible causes of fatigue during a race.	(3 marks)

3 marks for 3 of:

А. В. С.	Build up of lactic acid /accumulation of hydrogen ions/OBLA Glycogen depletion/needed for glycolysis Dehydration/reduces blood flow/loss of electrolytes/increase body temperature	Lack of energy too vague Not glucose
D. E.	Reduced levels of calcium Reduced levels of acetylcholine/slows nerve impulse and	
F.	inhibits contraction Lack of PC stores	

05 Explain how the use of an ice bath can help reduce the 'delayed onset of muscle soreness' (DOMS). (4 marks)

Α.	(Involves sitting in ice cold water for) between $5-20$ minutes	Be careful not to credit DOMS – in the question
В.	Causes blood vessels to tighten/decreases metabolic activity/vasoconstriction	
C.	Restricting blood flow to the area	
D.	Reduces swelling/tissue breakdown/aids muscle repair	F must be linked to E
Ε.	After leaving the ice bath, area is flooded with new	
	blood/vasodilation	
F.	Fresh oxygen removes lactic acid (when out of the ice bath)	F – don't accept 'waste
G.	Some studies suggest ice baths of limited value	products'

Elite swimmers follow structured training programme to develop exceptional levels of fitness.

06 Outline the relationship between VO_2 max' and 'lactate threshold'. (3 marks)

3 marks for 3 of:

A. VO_2 max – the maximum amount of oxygen utilised/equiv per Has to be utilised	od notivet
	eu, noi jusi
unit of time/per minute taken in	
B. Lactate threshold – the point at which lactic acid starts to Alternative wor	rds for
accumulate in the <u>blood</u> /OBLA utilised are upta	ake, used,
C. Lactate threshold is a percentage of VO ₂ max consumed	
D. The higher the VO_2 max, the more the delay in lactic acid OBLA must be	written in
build-up/as VO ₂ max increases, so does lactate threshold full initially	
E. <u>Trained athletes</u> can exercise for longer periods at the	
same/higher intensity compared to an untrained	
athlete/lactate threshold a much higher percentage of VO ₂	
max	

07 Explain how a swimmer would use 'periodisation' to prepare for competitions. (4 marks)

Α.	Cycle based on World Championships/Olympics	No marks for definition of
В.	Possible to plan for double periodisation	Periodisation eg splitting
C.	Preparation phase/pre season training – involves	year up
	development of base levels of fitness/general	
	conditioning/quantity rather than quality	
D.	Competitive phase – refinement of skills/ maintenance of	
	fitness levels/quality rather than quantity/relevant examples	
	of training modifications	
Ε.	Tapering/peaking – preparation for specific	
	competition/mainly skill focus	
F.	Transition phase – active rest/out of season recovery period	
G.	Macro-cycles – long term planning/yearly/two yearly cycle	
Η.	Meso-cycles – periods of two to eight weeks/months	
Ι.	Micro-cycles – periods of a week/day/individual training	
	sessions	

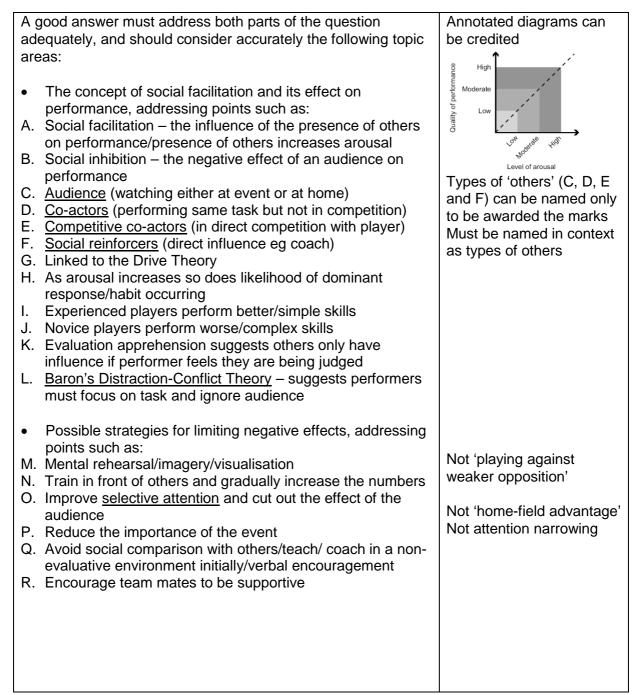
Section B

Question 5

The crowd can affect elite performers either positively or negatively. At the 2008 Wimbledon Tennis Championships, the British player Andy Murray commented after winning one match:

'You know, the crowd were awesome, they got behind me, I mean, more than they ever have before. I think to finish the set like that really got the crowd going. It shifted the momentum of the match hugely.'

08 Explain the concept of 'social facilitation' and how it can affect performance. Outline the possible strategies which the performer and coach may use to limit any negative effects that may occur. (14 marks)



Т. U.	Use stress management and relaxation techniques/accept suitable examples/goal setting Accept second named stress management technique Use attributions correctly/accept suitable examples Ensure skills are over-learned to encourage the dominant habit to occur as the levels of arousal increase/highly skilled/autonomous phase/ performance accomplishments/ensure success	Point S can be awarded for naming one example or simply stating stress management technique. S and T can be given for naming two stress management techniques.
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The following table should be used to determine the mark.

Band Range	Band descriptors	
Level 4 12-14 mks 16/17/18 points – 12 marks 19+ points – 13 marks + QWC – max 14 marks Level 3 8-11 mks 11/12 points – 8 marks 13/14 points – 9 marks 15 points – 10 marks	 Addresses all areas of the question, demonstrates a wide range of depth and knowledge Expresses arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language Addresses most areas of the question, demonstrates a clear level of depth and knowledge Attempts to express arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language 	
+ QWC – max 11 marks		
Level 2 4-7 mks 5/6 points – 4 marks 7/8 points – 5 marks 9/10 points – 6 marks + QWC – max 7 marks	 Addresses some aspects of the question but lacks sufficient depth and knowledge Limited attempt to develop any arguments or discussions, normally vague or irrelevant Errors in spelling, punctuation and grammar, limited use of technical language 	
Level 1 1-3 mks 1/2 points – 1 mark 3/4 points – 2 marks + QWC – max 3 marks Level 0	 Addresses the question with limited success Major errors in spelling, punctuation and grammar, little use of technical language Addresses no aspect of the question 	
0 mks		

Elite tennis players have to devote large amounts of time to develop their skills, requiring a positive attitude and high levels of motivation.

09 Name and explain the components of attitudes, giving an example of how a tennis player would display a positive 'attitude'. (3 marks)

3 marks for 3 of:

Α.	<u>Cognitive (component)</u> – believe/think they are training and playing in the correct manner or eq.	Sub max 2 marks points A to C
В.	<u>Affective (component)</u> – positive feelings/emotions/enjoyment or eq.	Not emotional for B
C.	<u>Behavioural (component)</u> – actions of the player/ train regularly/compete fairly or eq	
D.	Use of applied positive example	D cannot be awarded without gaining at least one of A, B or C

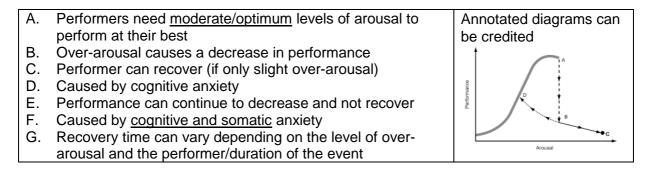
10 How would a coach use 'attribution theory' to maintain motivation following a defeat? *(4 marks)*

Α.	Attributions – perceived reasons for performance/outcome	
В.	Failure to internal-unstable factors/effort	Weiner's Model on its
C.	Failure to external-unstable factors/luck	own no marks –
D.	Failure to external-stable factors/task difficulty	must be reference
Ε.	Failure to external control/eg those areas which the player cannot influence	to applied use
F.	Not internal/stable factors /eg ability/accept reverse answer	Not learned
G.	Self-serving bias	helplessness/
Н.	Attribution re-training	self efficacy
		Don't just accept
		'external factors' or
		'internal factors'

During a tennis match a player may display signs of anxiety and become over-aroused.

11 Using the 'catastrophe theory', describe how over-arousal may affect a player's performance. *(4 marks)*

4 marks for 4 of:



12 Name a 'cognitive stress management technique' and describe how a player could use this technique to control their arousal level. *(3 marks)*

Α.	Thought-stopping	Accept first answer only
B.	Use of cue/action/word	
C.	Re-directs attention to positive thoughts	No marks if technique
D.	Example – key word – focus	not named
E.	Self-talk/positive self-talk	
F.	Use when negative thoughts occur	
G.	Replace with positive statements about performance	
Η.	Example – nerves are good before the race	
Ι.	Imagery/visualisation/mental rehearsal	
J.	Formation of mental pictures of good	
	performance/imagine in a calm place	
K.	Internal – creating the feeling of the movement/	
	sensations	
L.	External – seeing themselves completing the movement	
М.	Attentional control	
Ν.	Changing the focus of attention to detect only relevant	
	cues/improve selective attention/alter perceptual field	
О.	Broad/external – used during games to detect fast	
	changing situations and identify the best option	
Ρ.	External/narrow – used to concentrate on specific objects	
	or tasks, possibly with limited number of cues	
Q.	Narrow/internal – used to mentally rehearse a skill or task	
R.	Internal/broad – used to analyse performance and plan	
	future strategies and tactics	

A coach will often try to pair players with compatible personalities to form a successful doubles partnership.

13 What do you understand by the term 'profile of mood states'? (3 marks)

3 marks for 3 of:

Α.	Description – a graph to indicate the general profile of mood states/emotions of a performer	If 6 mood states named, but 1 incorrect, can award
В.	Six measures	point B and point C
C.	Tension/depression/anger/vigour/fatigue/ confusion	C – minimum of 2 named
D.	Ice berg profile	= 1 mark
E.	Performers have higher levels of vigour and lower levels of other measures	If all point C clearly stated, can award point B as well
F.	Some elite performers do not have this profile/some non- elite athletes display the profile	

14 Explain the term 'task cohesion' **and** why it is vital for success in any game. (4 marks)

Α.	Task cohesion – the ability of the group to achieve a	
	common goal	
В.	Players need to be able to interact effectively/ good	
	communication	
C.	Understand own role/other's role/good co-ordination	
D.	Poor cohesion can be classed as a faulty process	
E.	Good task cohesion can help social cohesion	
F.	Social cohesion – the ability of the group to relate well to	
	each other/get along socially	
G.	Social cohesion is not vital for group success/task	
	cohesion is more important than social cohesion	

Section C

Question 9

Following the success of Team GB Cyclists winning 14 medals at the 2008 Beijing Olympics, Brough Scott of the Daily Telegraph wrote:

'Their feats will not only change the way their sport is perceived back home, they will actually change our society.'

15 Discuss this statement with particular reference to the successful performers, the governing body and society (14 marks)

A good answer must address both parts of the question adequately, and should consider accurately the following topic areas:		No need to identify and specifically comment on performers, governing
	efits addressing points such as:	body and society
	neral Points	
A.	Increase in coverage/public awareness	
В.	Increase in participation/grass roots take-up/elite performers	'more involved in sport'
C.	Increase funding/economic benefits/sponsorship/ media/gate receipts or eq.	'more positive attitude' Comments too vague –
D.	Increase in public support/good will factor/ strong position	need to be more specific
	for future event bid/shop window effect	as to how involved & how
Per	former	more positive attitude
Ε.	Role model/fame/alternative career pathway after finishing competing	
F.	Creation of winning mentality/high confidence for the	
	future/high self efficacy/increase personal pride	
G.	Continued 'professional' set-up/increased support	
	structures/improve coaching standards/ or eq	
	verning Bodies	
Н.	New clubs established/talent ID scheme/ development	
	schemes/taster days	
I.	Increase in coach/official recruitment/volunteers	
J. K.	Increase spectators at events	
n.	Interest from other sports/exchange of ideas/ transferable skills to other sports eg Pitch to Podium	
Soc	siety	
L.	Increase national pride/feel good factor/bring the community	Not 'security issues'
	together/social integration	Focus of question on
M.	Health benefits	benefits & drawbacks of
N.	Legacy of new facilities	success not of hosting an event
Dra	wbacks addressing points such as:	
Ger	neral Points	
О.	High expectations	
	former	
Ρ.	Time commitment/over commitment sponsors/ media,	
~	etc/dependency on sponsorship deals	
Q.	Intrusion into private life	
R. S.	Pressure to perform if injured/positive deviancy/overtraining Possible change of attitude/negative deviancy/doping	
0.	i ossible change of autouc/negative deviaticy/doping	

Gov	Governing Bodies		
Т.	Inability to meet demand/not enough clubs/ coaches/competitions		
U.	Loss of control over events due to sponsors/ media		
V.	Struggle to keep high quality coaches/support staff in the system		
Soc	Society		
W.	Lack of facilities/cycle routes etc		
Χ.	Extra funding may not be available to meet demands		

The following table should be used to determine the mark.

Band Range	Band descriptors	
Level 4 12-14 mks	 Addresses all areas of the question, demonstrates a wide range of depth and knowledge 	
18/19/20 points – 12 marks	 Expresses arguments clearly and concisely 	
21+ points – 13 marks + QWC – max 14 marks	 Few errors in spelling, punctuation and grammar, correct use of technical language 	
Level 3 8-11 mks	 Addresses most areas of the question, demonstrates a clear level of depth and knowledge 	
12/13 points – 8 marks	 Attempts to express arguments clearly and concisely 	
14/15 points – 9 marks	• Few errors in spelling, punctuation and grammar, correct use of	
16/17 points – 10 marks	technical language although sometimes inaccurately	
+ QWC – max 11 marks		
Level 2 4-7 mks	 Addresses some aspects of the question but lacks sufficient depth and knowledge 	
6/7 points – 4 marks 8/9 points – 5 marks	 Limited attempt to develop any arguments or discussions, normally vague or irrelevant 	
10/11 points – 6 marks	 Errors in spelling, punctuation and grammar, limited use of 	
+ QWC – max 7 marks	technical language	
Level 1	 Addresses the question with limited success 	
1-3 mks	 Major errors in spelling, punctuation and grammar, little use of 	
1/2 points – 1 mark	technical language	
3/4/5 points – 2 marks		
+ QWC – max 3 marks		
Level 0	 Addresses no aspect of the question 	
0 mks		

The rewards for success in elite sport are increasing every year and officials are under greater pressure than ever from players, supporters and the media.

16 Discuss the suggestion that the increased use of technology to help officials make the correct decision has improved the sporting event. (7 marks)

7 marks for 7 of:

٨d	vantages	Sub max 4
Α.	Ensure correct decisions are made/fair competition/less	Candidate must imply
	controversy/players more confident in decisions	advantage or
В.	Helps officials communicate with each other	disadvantage
C.	Less pressure on official to make the final judgement/less	
_	post-match criticism	
D.	Timing/measurement accurate	
E.	Creates excitement in crowd waiting for decision/allows	
	players to officially challenge decisions	
Dis	advantages	
F.	Officials using technology can still be wrong/technology can't	
	be used for everything/officials are an integral part of the	
	sporting contest/over reliance on technology/lose respect of	
-	official's decision being final	
G.	Specific technology used must be accurate/high level of reliability	
Н.	Changes the nature of the sport	Not the values of sport
Ι.	Cost limits use of technology at events/not consistent for all	
	players or spectators	
J.	Breaks in play can be disruptive for spectators if too long	

Question 11

To maximise the chances of winning medals at major championships, such as the Olympic Games, performers need the support of many organisations.

17 Outline and explain the structure of the World Class Performance Pathway. (3 marks)

Α.	Organised by <u>UK Sport</u>	
В.	Podium - supporting athletes chance of winning medal at the	Correct term must be
	next Olympic/ Paralympic Games (ie a maximum of four years	named and explained
	away from the podium)	
C.	Development – comprising of athletes whose performances	
	have suggested that they have realistic medal winning	
	capabilities for 2012 and newly funded sports that are	
	demonstrating the ability to be competitive by $2012/next 4 - 6$	
	years	
D.	Talent – designed to support the identification and confirmation	
	of athletes who have the potential to progress through the	
	World Class pathway with the help of targeted investment	
Ε.	3 terms named but not explained	

18 Explain the support structures for elite performers provided by the National Institutes of Excellence, such as the English Institute of Sport. (4 marks)

4 marks for 4 of:

Α.	Regional or satellite centres/hubs	
В.	High quality facilities/coaches	
C.	(Sports science support) – biomechanics/ strength and conditioning/psychology/talent identification/physiology/performance analysis/ nutrition	C – must give examples of support
D. E. F. G.	(Sports medicine) – physiotherapy/soft tissue therapy Performance lifestyle/ Athlete Advisors/ ACE Research and innovation Athlete Zone	D – must give examples of support

Question 12

In today's society the majority of people have access to a variety of sporting activities.

19 Explain how the leisure opportunities for the working classes improved during the 19th century in terms of provision. (7 marks)

Α.	(Increased time) Factory Reform Acts/more time	A – 'time' must be
	available/shorter working hours/Saturday half day/Wednesday	qualified to credit mark
	early closing/Bank Holidays/ machine time	
В.	(More money) increased wages/broken time payments/ access	B – 'money' must be
	to professional sport	qualified to credit mark
C.	Factory owners established clubs/facilities	
D.	Churches/Youth Movements established clubs/	
	teams/scouts/Boys Brigade/facilities or eq.	
		'More facilities' – too
Ε.	Public provision/parks/public baths/Municipal Reform	vague – need examples
	Act/Government provision	
F.	Philanthropists provided new facilities/libraries/ working men's	
	clubs or eq./Muscular Christianity/social reform	Not 'social control'
G.	Better communication links/trains easier to visit	
	areas/matches/events	
Η.	New towns developed eg seaside resorts/ countryside	
Ι.	New sports developed/rational sports/structured sport/codified	
J.	National Governing body established/formation of leagues and	
	cup competitions/regular competition	
K.	(Social class changes) more working class allowed access to	K – need to quality
	previously restricted competition/lifting of Manual Labour	'social class changes'
	Clause/ Middle class encouraged working class sport	
L.	Increased opportunity for spectatorism	L/M – not access to TV
М.	Increased media coverage/newspapers led to greater	and internet
	knowledge and awareness	