

GCSE

Physical Education

J587/01: Physical factors affecting performance

General Certificate of Secondary Education

Mark Scheme for June 2022

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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MARKING INSTRUCTIONS

PREPARATION FOR MARKING SCORIS

- 1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: Scoris Assessor Online Training; OCR Essential Guide to Marking.
- 2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are posted on the RM Cambridge Assessment Support Portal http://www.rm.com/support/ca
- 3. Log-in to scoris and mark the 10 practice responses ("scripts") and the 10 standardisation responses

YOU MUST MARK 10 PRACTICE AND 10 STANDARDISATION RESPONSES BEFORE YOU CAN BE APPROVED TO MARK LIVE SCRIPTS.

MARKING

- 1. Mark strictly to the mark scheme.
- 2. Marks awarded must relate directly to the marking criteria.
- 3. The schedule of dates is very important. It is essential that you meet the Scoris 50% and 100% (traditional 40% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
- 4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone, the Scoris messaging system or email.
- 5. Work crossed out:
 - a. where a candidate crosses out an answer and provides an alternative response, the crossed out response is not marked and gains no marks
 - b. if a candidate crosses out an answer to a whole question and makes no second attempt, and if the inclusion of the answer does not cause a rubric infringement, the assessor should attempt to mark the crossed out answer and award marks appropriately.
- 6. Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there then add a tick to confirm that the work has been seen.
- 7. There is a NR (No Response) option. Award NR (No Response)
 - if there is nothing written at all in the answer space

- OR if there is a comment which does not in any way relate to the question (e.g. 'can't do', 'don't know')
- OR if there is a mark (e.g. a dash, a question mark) which isn't an attempt at the question

Note: Award 0 marks - for an attempt that earns no credit (including copying out the question)

8. The scoris **comments box** is used by your team leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.**

If you have any questions or comments for your team leader, use the phone, the scoris messaging system, or e-mail.

- 9. Assistant Examiners will send a brief report on the performance of candidates to your Team Leader (Supervisor) by the end of the marking period. The Assistant Examiner's Report Form (AERF) can be found on the RM Cambridge Assessment Support Portal (and for traditional marking it is in the Instructions for Examiners). Your report should contain notes on particular strength displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.
- 10. For answers marked by levels of response:
 - a. To determine the level start at the highest level and work down until you reach the level that matches the answer
 - b. To determine the mark within the level, consider the following:

Descriptor	Award mark
On the borderline of this level and the one below	At bottom of level
Just enough achievement on balance for this level	Above bottom and either below middle or at middle of level (depending on number of marks available)
Meets the criteria but with some slight inconsistency	Above middle and either below top of level or at middle of level (depending on number of marks available)
Consistently meets the criteria for this level	At top of level

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11. Annotations used in the detailed Mark Scheme

BP	BP	Blank page (for any page with no candidate writing on it)
BOD	BOD	Benefit of doubt (must be accompanied by a tick)
×	Cross	Incorrect answers only
L1	L1	Level 1
L2	L2	Level 2
L3	L3	Level 3
REP	REP	Repeat
	Tick	Correct
TV	TV	Vague
SEEN	SEEN	Noted but no credit given OR no response
5	S	S (indicates 'sub max reached')
EG	EG	Example
К	KU	Knowledge
DEV	DEV	Development

KU, EG and DEV used <u>instead</u> of ticks on the extended response question to indicate where knowledge or development points from the indicative content have been made. On this extended response question, one KU, EG or DEV does not necessarily equate to one mark being awarded. The marking is based on a levels of response mark scheme which awards a level and mark holistically based upon the quality of the response overall against the levels descriptors.

		Section	4	
C	Question	Answer	Marks	Guidance
1		One mark for: long / triple / high jump OR javelin / discus / shot / hammer OR pole vault OR sprint hurdles/hurdles	1 1 x AO2	Answers must be athletic events, not swimming! Do not accept 100m/200m/400m OR any running event longer than 400m.
2	(a)	One mark for: Coordination	1 1 x AO1	
	(b)	One mark for: moving different limbs/body parts to make a tackle in football OR running AND passing a football OR use hands AND eyes to catch the ball in cricket OR putting a racket in the right place to hit the ball	1 1 x AO2	 Answers must be applied to a <u>named skill</u> in sport AND describe an example of coordination Definitions of coordination: moving different limbs at the same time using different body parts together accurately doing more than one task at a time effectively making a decision and putting it into action repeating a sequence of movements fluently If named position in game but no sport (e.g. goalkeeper) and correct description of example (e.g. diving) = BOD Do not accept skill/sport named on its own, e.g. pass in football. Use both feet to score in football = TV
3		One mark for: False	1 1 x AO2	

	Section A					
C	Question	estion Answer		Guidance		
4	(a)	One mark for:	1 1 x AO1	Axis must pass through centre of body and match the direction that the arms are pointing on fig. 1 Arrowheads not required Horizontal line = BOD If more than 1 line and it is unclear which line the candidate wants you to mark = TV		
	(b)	One mark for: Somersault OR forward/backward roll OR kicking a ball OR front/back flip OR chest pass	1 1 x AO3	 Accept any correct movements that involve flexion/extension Do not accept named sports, e.g., gymnastics OR practical examples that include movements around other axes, e.g. golf swing, tennis shots, bowling in cricket = TV 'flip' on its own = TV 		

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5	(a)	One mark for:	1 1 x AO1	 Diaphragm must appear flat/almost flat. Ovals/circular shapes = BOD if flattish There should be space between diaphragm and lungs (as in picture) Do not accept a diaphragm that appears to be in a dome shape (question states inhalation) Use of arrows = TV (unless drawn image is correct)
	(b)	One mark for: Relaxes OR goes into a dome shape / domes OR move upwards	1 1 x AO1	Do not accept relaxes and goes down (contradictory) = TV
6		One mark for: Pulmonary (artery)	1 1 x AO1	
7		One mark for: Latissimus dorsi	1 1 x AO1	Accept phonetic spellings of latissimus dorsi Do not accept: Lats = TV
8		One mark for: Advertising boards / fencing / litter / goalposts / other players / weather / poor lighting / inappropriate footwear / lack of supervision / damaged equipment	1 1 x AO1	Mark first response only Accept other suitable hazards Loose / left out equipment = BOD Do not accept references to pitch / surface / ground / floor, e.g., surface is wet or slippery (in question)

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9	 Two marks for explanation (one mark for feature of footwear and one mark for how this feature reduces risk of injury): 1. (feature) surface of sole/studs/spikes (how risk is reduced) reduce slipping / gives more grip 2. (feature) sturdy sides of footwear / high tops / lace ups (how risk is reduced) help prevent ankle / foot injuries 3. (feature) (gel/cushioned) insoles / bubbles / air pockets / arches (how risk is reduced) cushion feet / knees OR act as shock absorbers for the feet / knees 4. (feature) correct-fitting shoes (how risk is reduced) reduce risk of blisters 	2 2 x AO2	Types of footwear include (no mark for type): Trainers / football boots / astros / rock climbing shoes / tennis shoes / basketball shoes 'Gripped tennis shoes' = BOD 1
10	One mark for: (A) The clavicle is an articulating bone at the shoulder when serving in tennis One mark for:	1 1 x AO3 1	Accept Contract to move ribs inwards' = BOD
	(Intercostal muscles) relax OR allow ribs/rib cage to move down/in OR Pull ribs down/in'	1 x AO1	Do not accept lungs relax OR ribs relax OR relax and contract 'They move down to release pressure' = TV

12	(a)	One mark for:	1	
		Fig. 4	1 x AO1	Note: bicuspid valve lies between the left atrium and left ventricle Do not accept X between left ventricle and aorta as this is the aortic pulmonary valve Look for very small X somewhere on heart before giving NR
	(b)	One mark for:	1	Do not accept Atrium on its own
		Left atrium	1 x AO2	•
13	(a)	One mark for:	1	
		Longitudinal	1 x AO3	
13	(b)	One mark for:	1	
		Transverse	1 x AO3	
14	(a)	Two marks for (in any order):	2	
		1. Triceps 2. Biceps	2 x AO2	
	(b)	One mark for:	1	
		Extension	1 x AO3	

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15		One mark for:	1	Do not accept Tibula, fibia, shin bone
		Tibia	1 x AO1	Accept phonetic spellings of tibia
16		One mark for:	1	
		(B) 20m	1 x AO1	
17	(a)	One mark for:	1	
		(D) Femur	1 x AO1	
	(b)	One mark for: Acts as a shock absorber OR cushions impact OR softens landing OR support the joint OR allows (some) flexibility at the joint OR aids movement at the joint OR helps to connect bones (at cartilaginous joints) OR keeps airways / nostrils open	1 1 x AO2	Do not accept protecting bones or friction or equivalent (e.g., wear and tear) (in question) OR one-word answers, e.g., support (explanation needed) Connects bones and muscles together = TV Prevents dislocation = TV
18		Two marks for: (Mobility) e.g. arm swings OR hip circles OR ankle rotations OR open / close the gate OR heel flicks OR high knees OR lunges (Dynamic movement) e.g. shuttle runs / zig zag runs / running in and out of cones	2 2 x AO2	Dynamic movement must suggest speed and changes of direction Accept other suitable warm up exercises if in the correct context Agility runs = BOD Do not accept Agility ladders on its own = TV
19		One mark for:	1	
		True	1 x AO1	
20		One mark for:	1	
		(C) 5600ml	1 x AO3	

			Section B		
Question		on	Answer		Guidance
21	(a)	(i)	One mark for:	1	
			Noah	1 x AO3	
	(a)	(ii)	One mark for:	1	
			Mia	1 x AO3	
	(a)	(iii)	One mark for:	1	
			Mia	1 x AO3	
21	(b)		 Three marks from three of: Increased muscle mass OR Increased size of muscle fibres OR more muscle fibres greater speed (of contraction) greater muscular endurance OR able to work for longer OR less prone to fatigue OR train for longer greater flexibility OR able to stretch further OR increased elasticity greater rate of removal of lactic acid faster rate of removal of lactic acid larger size / number of mitochondria Increased stores of glycogen / PC more capillaries / more oxygen / more blood (to muscles) less prone to injury / faster recovery from injury / quicker recovery rate / repair faster 	3 3 x AO3	If candidate writes 'Olivia has less strength because' then credit opposites of 1-11 Reduced build-up of lactic acid = BOD 6 Prevent build-up of lactic acid = TV Do not accept Muscular hypertrophy OR muscles get bigger/grow OR increase in strength/force/power

			Section B		
	(c)	(i)	Three marks for:	3	Accept 'class 3', etc.
			(The elbow during a biceps curl) = 3 rd (class)	3 x AO3	Number on its own as BOD
			(The neck when heading a ball) = 1 st (class)		
			(The take-off foot in the long jump) = 2 nd (class)		
	(c)	(ii)	One mark for:	1	
			True	1 x AO1	
22	(a)	(i)	One mark for:	1	One tick ONLY by (C) bronchiole for all 3 in correct
			Nose – bronchi – bronchiole	1 x AO1	order otherwise no marks
			OR A = nose AND B = bronchi AND C = bronchiole		
	(a)	(ii)	Two marks for two of:	2	
			1. Allows gaseous exchange / diffusion into blood	2 x AO1	Do not accept air enters alveoli (in question)
			2. Oxygen / carbon dioxide diffuses		
			 Oxygen diffuses / into blood / capillaries Carbon dioxide from blood / capillaries OR carbon dioxide 		
			into alveoli		

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(b)	Three marks for three of:	3	
	 Causes pain / soreness / discomfort / aches (Lack of oxygen) Causes fatigue (in the muscles) Leads to a poorer swimming technique / reduced quality OR decreased performance OR muscles do not move as freely Causes the performer to slow down / reduce speed / stop 	3 x AO2	 Fatigue on its own = ✓ (muscles implied as mentioned in question) Tiredness / tiring on its own = BOD 2 unable to maintain intensity = BOD 3 less effective / efficient = BOD 3 Do not accept causes cramp OR references to recovery Affects swimmer's performance = TV Causes oxygen debt = TV Delayed onset muscle soreness = TV Stiffness / weakens muscles = TV

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(c)	Four marks for four of:		4	
	(long-term effects on cardiovascular system (s	sub-max. 2 marks)	2 x AO1	Benefit must be specific to the long-term effect to gain credit (see table).
	 Lower resting heart rate OR bradycardia The heart becomes larger OR hypertrophy of the heart The heart becomes stronger OR stronger contractions of heart Increase in stroke volume OR more blood pumped from the heart in one beat Increase in cardiac output OR more blood ejected from left ventricle in one minute (Increased) capillarisation More efficient vascular shunt mechanism Lower blood pressure Increase in red blood cells Decrease in blood viscosity 		2 x AO2	Do not accept effects listed as benefits.
				If effect would not get a mark do not credit benefit. The same benefit may apply to two different
				effects.
				Accept : benefits as effects. The explanation must be different but can be part of the same MP E.g., Effect – increased stamina, benefit – swim for longer = 2 marks (both MP 11)
	(benefits for a long-distance swimmer (sub-max. 2 marks)			(Cardiovascular) hypertrophy = BOD 2 Less likely to fatigue = BOD 11
	11. Increased stamina / cardiovascular endurance / VO ₂ max / swim for longer	valid for all effects		
	12. Reduces how hard the heart must work OR heart rate returns to rest quicker after exercise	valid for all effects		Do not accept long-term effects on skeletal, muscular or respiratory systems
	 13. More oxygen / (oxygenated) blood to (working) muscles / heart OR Increased efficiency of blood to working muscles OR faster removal of waste products 	valid for 2, 3, 4, 5, 6, 7, 9, 10		Lower heart rate = TV Faster speed of blood to muscles = TV
	(from muscles) 14. reduced risk of CHD	valid for 1, 2, 3, 4, 5, 8, 10		

23	(a)	Four marks for:	4	
		 Warm / waterproof / outdoor clothing OR clothing that prevents heatstroke / sunburn Warm up OR cool down Make sure you are fit enough OR have good techniques to play football OR same weight / age / gender categories Lifting / using equipment safely OR use correct techniques OR trainer / coach / spotter being present 	2 x AO1 2 x AO2	Accept other suitable practical examples for MP 1 and 3 but answers must show how they minimise the risk of injury Running shorts reduce blisters / friction = BOD 1 Do a risk assessment = BOD 4 Do not accept footwear / protective equipment / wear running shorts / avoid baggy clothing = TV 1 Having a coach / supervision / appropriate equipment / exercise = TV 4

Level 3	(5-6	marks)
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- detailed knowledge & understanding
- clear and consistent practical application of knowledge & understanding
- effective analysis/evaluation and/or discussion/explanation/development
- relevant information drawn upon from other areas of the specification
- accurate use of technical and specialist vocabulary
- there is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.

Level 2 (3-4 marks)

- satisfactory knowledge & understanding
- some success in practical application of knowledge & understanding
- analysis/ evaluation and/or discussion/explanation/development attempted with some success
- some relevant information drawn from other areas of the specification
- technical and specialist vocabulary used with some accuracy
- there is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.

Level 1 (1-2 marks)

- basic knowledge & understanding
- little or no attempt at practical application of knowledge & understanding
- little or no attempt to analyse/ evaluate and/or discuss/explain/develop
- little or no relevant information drawn from other areas of the specification
- technical and specialist vocabulary used with limited success
- the information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.

(0 marks)

• no response or no response worthy of credit.

Highlight type of training and social factors

Annotate best 2 types of training ONLY with KU, EG and DEV **AO1 = KU = bullets; AO2 = EG = examples; AO3 are stated = DEV** Social factors must be explained in terms of encouraging participation. Do not credit opposites

Level 3 Discriminators

- detailed knowledge & understanding two types of training (AO1 / AO2)
- several social factors that can encourage participation are explained and applied to training (AO3)
- both types of training and social factors that encourage participation are well covered for Level 3; some imbalance between the two may be present for 5 marks. At 6 marks, both are equally well addressed.

Level 2 Discriminators

- satisfactory knowledge & understanding **two** types of training (AO1/ AO2)
- social factors that can encourage participation may be **explained** (AO3)
- There may be some attempt to apply social factors to training (AO2)
- some success at more developed AO2 and/or AO3 points moves the response into Level 2 (AO2 or AO3 would be 3 marks; both attempted with some success = 4 marks)

Level 1 Discriminators

- basic knowledge & understanding of types of training (AO1 / AO2)
- social factor(s) that can encourage participation may be **identified** with little development (AO3)
- the information is basic and communicated in an unstructured way
- responses only demonstrating AO1 knowledge and understanding are Level 1

6 marks in total 2 x AO1, 2 x AO2, 2 x AO3

AO2 (award from e.g.) 1. Circuit training 7. Ec	cial factors for AO3 (award from bullets) Education
1. Circuit training 7. Ec	Education
Series of exercises or stations arranged in a particular order	
I - Ochos of exercises of stations analysed in a particular of the station of the	schools teach benefits of physical fitness
(stations / exercises) target different muscle groups • c	opportunities in schools / shared facilities / community use
Involves sets / repetitions and periods of rest	
	Self-esteem / self-confidence
(e.g.) 30 seconds work and 30 seconds rest, press up to sit up or sport related activities	High self-esteem encourages participation and to try new training methods Less worried about body image / making mistakes
2. Weight training	
	Media coverage / role models
Involves sets / repetitions and periods of rest	More role models / media coverage for benefits of training
High resistance AND low reps for strength	
	Family / friends / peers
	Encouraged by family / friends who are members of fitness clubs
	Loneliness / wanting to meet people may encourage joining a gym
3. Plyometrics	
	Age
5	Importance of fitness for all ages
	Older people may have more opportunities to take part
(e.g.) bounding, hopping, jumping (on and off boxes), depth jumping	
	Gender
	Single-sex sessions encourage participation
	Lots of opportunities for males OR focus on increasing opportunities for
	females OR more female sports teams / leagues
Recovery period is equal or longer than the work interval	The first second to the second s
	Time / work commitments / opportunity / access
	Having enough free time to train regularly
•	More flexible working hours
Steady-state training OR training with no changes of intensity	Cast / dispassible income
	Cost / disposable income
	Having enough money means increased opportunity to participate
	reduced joining fees are available for some groups
6.Fartlek training / speed play	Disability / discrimination / religion / culture
5 5	Improved access / opportunity / esteem
e e e e e e e e e e e e e e e e e e e	
(e.g.) road / hill running / jogging with fast sprints	

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