

Mark Scheme (Results)

Summer 2022

Pearson Edexcel GCSE In Physical Education (1PE0) Paper 01 Fitness and Body Systems

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question	Answer	Mark
Number	A01 – 1 mark	
Q01 (a)		
	The only correct answer is D – Cranium	
	Incorrect options:	
	A – Carpal - found in the wrist	
	B – Cervical - a region of the vertebral column	
	C – Clavicle joins to the sternum and scapula	
		(1)

Question	Answer	Mark
Number	A01 – 1 mark	
Q01 (b)		
	The only correct answer is C – Tendons join muscle to bone	
	Incorrect options: A – Join bone to bone – this is the role of the ligaments	
	B – Join ligaments to bone – the ligaments join directly to the bones	
	D – Join muscle to muscle – muscles attach to bone rather than another muscle	
		(1)

Question	Answer	Mark
Number	A02 – 1 mark	
Q01 (c)		
	The only correct answer is B - Gluteus maximus	
	Incorrect options:	
	A – Biceps causes movement at the elbow	
	C – Latissimus dorsi causes movement at the shoulder	
	D – Quadriceps causes movement at the knee	
		(1)

Question	Answer	Mark
Number	A01 – 1 mark	
Q01 (d)		
	The only correct answer is C –They produce a large amount of force	
	Incorrect options: All of the other options are characteristics of type I muscle fibres	
		(1)

Question	Answer	Mark
Number	A03 – 1 mark	
Q01 (e)		
	The only correct answer is B – Good	
	Incorrect options:	
	A – would need to score more than 36 to achieve this rating	
	C – would need to score between 25 and 30 to achieve this rating	
	D – would need to score below 25 to achieve this rating	(4)
		(1)

Question	Answer	Mark
Number	A03 – 1 mark	
Q01 (f)		
	The only correct answer is A - Blood is at high pressure	
	as it leaves the heart via the aorta	
	Incorrect options:	
	B – Average blood pressure in arterioles	
	C. Average bleed pressure in conilleries	
	C – Average blood pressure in capillaries	
	D – Average blood pressure in veins	
	2 7.11.01.00,000 p. 00001.01.11.01.110	(1)

Question	Answer	Mark
Number	A01 – 1 mark	
Q01 (g)		
	The only correct answer is A – Cardiac output	
	Incorrect options:	
	B – Stroke volume – amount of blood leaving the heart per beat	
	C – Tidal volume – amount of air breathed in and out during	
	normal breathing	
	D – Vital capacity – maximum volume of air expired following	
	maximum inspiration	(4)
		(1)

Question	Answer	Mark
Number	A03 – 1 mark	
Q01 (h)	The only correct answer is C - O ₂ leaving the alveolus and CO ₂ entering	
	Incorrect options: A – Gases are exchanged so will not both be travelling in the same direction	
	B – Gases are exchanged so will not both be travelling in the same direction	
	D – O ₂ should be entering the blood stream and CO ₂ should be leaving the blood stream to be breathed out	
		(1)

Question	Ar	nswer			Mark
number	A(01 – 4 marks			
Q02 (a&b)	1	1 mark for each correct identification.			
		Labelled muscle	(a) Name of muscle	(b) Function of muscle	
			Deltoid (1)	Abduct the shoulder (1)	
				(Accept <u>any specific</u> joint	
				movement at <u>shoulder</u> , e.g. flex/rotates/ extends	
				circumduction/ adduction)	
			External obliques (1)	Flex the <u>truck/vertebrae</u> (1)	
					(4)

Question	Answer	Mark
number	AO1 – 1 mark	
Q02 (c)		
	For example:	
	Conscious control (1)	
	Accept other appropriate responses	
		(1)

Question	Answer	Mark
number	AO1 – 1 mark; AO2 - 1 mark; AO3 - 1 mark	
Q02 (d)	 Involuntary muscles do not require conscious control (1) which means all the players attention can be on the game (1) e.g., the involuntary muscles in blood/oxygen to circulate (1). Involuntary muscles work automatically without specific instruction from the player (1) e.g., the involuntary muscles in the respiratory system (1) allow increased air flow/flow of oxygen into the lungs (1) Accept other appropriate responses 	
	One mark for reason why involuntary muscles are important (AO1) One mark for example (AO2) One mark for linked expansion to justify why this is important to the performer (AO3)	(3)

Question	Answer	Mark
number	AO2 – 1 mark	
Q03 (ai)		
	1 mark for correct identification	
	• Agility (1)	
	Accept phonetic spelling	
		(1)

Question	Answer	Mark
number	AO1 – 1 mark	
Q03 (aii)		
	1 mark for correct identification	
	Illinois agility run test (1)Illinois agility test (1)	
	Accept phonetic spelling	
		(1)

Question	Answer	Mark
number	AO1 – 1 mark; AO2 – 1 mark	
Q03 (b)	 Ligaments stabilise the joint (1) to allow dislocation when dodging (1) Ligaments join bone to bone/connect bones (1) reducing the risk of dislocation/injury during play (1) 	
	Accept other appropriate responses	
	One mark for role (AO1) One mark for link of need for this role in sport (AO2)	(2)

Question	Answer	Mark
number	AO2 – 3 marks; AO3 – 1 mark	
Q03 (c)	• Work rate increases during exercise (1) therefore the performer will get hot (1) so the performer's CV system will redistribute blood flow to remove excess heat (1) to allow them to maintain quality of performance /to	
	Accept other appropriate responses Up to three marks for applying knowledge to show the need for temperature regulation during exercise (AO2) One mark for justifying why this is an issue to the performer (AO3)	(4)

Question	Answer	Mark
number	AO2 – 1 mark	
Q03 (di)		
	For example:	
	 Jogging/walking back to position (1) When they are recovering during a break in play (1) 	
	Accept other appropriate responses	
		(1)

Question	Answer	Mark
number	AO2 – 1 mark	
Q03 (dii)		
	For example:	
	 Sprinting to a loose ball (1) Jumping to catch/head a ball (1) Serving in tennis (1) GK diving to make a save (1) 	
	Accept other appropriate responses	(1)

Question	Answer	Mark
number	AO1 – 1 mark	
Q03 (e)		
	1 mark for correct identification.	
	Carbon dioxide/CO ₂ (1)	
	Water/H ₂ O (1)	
		(1)

Question	Answer	Mark
number	AO3 – 2 marks	
Q04 (a)	1 mark for each correct identification. Mark to a maximum of 2	
	marks.	
	Plane	
	• Frontal	
	Axis	
	• Sagittal	
	Accept other appropriate responses	
		(2)

Question	Answer		Mark	
number	AO1 – 2 mark	S		
Q04 (b)	1 mark for each correct identification. Mark to a maximum of 2 marks.			
	Agonist	Triceps/Triceps brachii (1)		
	Antagonist	Biceps/Biceps brachii (1)		
			(2)	

Question	Answer	
number	AO1 – 1 mark	
Q04 (c)		
	1 mark for correct identification.	
	Ball and socket (1)	(1)

Question	Answer	Mark
number	AO3 – 1 mark	
Q04 (d)		
	1 mark for correct identification.	
	Abduction (1)	
		(1)

Question	Answer	Mark
number	AO1 – 1 mark; AO2 - 1 mark	
Q04 (e)	 For example: The short bones are very strong (1) therefore they allow the gymnast to place weight on the hands during the movement (1) They are needed to take the gymnast's body weight/they are weight bearing (1) so the gymnast can go upside down/take his weight on his hands/wrists during the movement (1) 	
	Accept other appropriate responses	
	One mark for reason (AO1) One mark for linking function to importance to gymnast (AO2)	
	one mark for mixing function to importance to gymnast (AO2)	(2)

Question	Answer	Mark
number	AO1 – 3 marks	
Q04 (f)	1 mark for each descriptive point.	
	For example:	
	Three from the following:	
	These joints allow circumduction (1)	
	Which is a circular/conical shape movement (1)	
	 Combining flexion <u>and</u> extension (1) 	
	 and adduction <u>and</u> abduction (1) 	
	Accept other appropriate responses	(3)

Question	Answer	Mark
number	AO1 – 2 marks; AO2 – 2 marks; AO3 - 2 marks	
Q05	For example: Knee Extension has occurred at the right knee (1) due to the contraction of the quadriceps (1) allowable due to the relaxation of the hamstrings (1) Ankle Plantar-flexion has occurred at the right ankle (1) due to the contraction of the gastrocnemius (1) allowable due	
	Accept other appropriate responses One mark for analysis of joint action in image (AO3) One mark for linking joint action to antagonistic muscle action required (AO2) One mark for reason for movement (AO1)	(6)

Question	Answer	Mark
number	AO1 – 1 mark	
Q06 (a)		
	1 mark for correct identification.	
	• Emotional (1)	
	Accept phonetic spelling	(1)

Question	Answer	Mark
number	AO2 – 1 mark	
Q06 (bi)	 1 mark for correct identification. For example: Appropriate levels of exercise can lead to better performance (1) Too much exercise can be bad for performance (1) 	
	Accept other appropriate responses	(1)

Question	Answer	Mark
number	AO2 – 1 mark	
Q06 (bii)	1 mark for correct identification.	
	For example:	
	Exercise:	
	• can improve health (1)	
	 Too much exercise can be bad for health (1) 	
	Fitness:	
	• can improve health (1)	
	Health:	
	 Need to be healthy to exercise (1) 	
	Accept other appropriate responses	(1)

Question	Answer		Mark
number	AO2 – 2 marks		
Q06 (c)	I train 4 times a Each of my train I work at 60% of	ing sessions are in a gym. f my maximum heart rate in my aerobic target zone. a lasts 60 minutes.	
	For example:	Figure 7	
	Principle of training	(c) Example to show application of principle of training to the training programme outlined in Figure 7	
	Time	 60 minute session (1) Increase session to 65 minutes (1) 	
	Progressive overload	Train 5 times a week (1)Work at 65% HRmax (1)	
	Accept other app	ropriate responses	(2)

Question	Answer	Mark
number	AO1 – 1 mark; AO2 – 1 mark; AO3 - 1 mark	
Q06 (d)	For example:	
	 Increased <u>resting</u> stroke volume (1) so more blood leaving the heart /so increased oxygen delivery (1) so they can work aerobically for longer/delay fatigue (1) Faster recovery (1) due to increased oxygen delivery/quicker removal of waste products (1) so ready to train/exercise again at a quicker rate (1) 	
	Accept other appropriate responses	
	One mark for identification of long-term training effect on CV system (AO1)	
	One mark for effect that would benefit a long-distance runner (AO2)	
	One mark for linked reasoning why this is a benefit to the long- distance runner (AO3)	
		(3)

Question	Answer					Mark
number	AO3 – 1 mark					
Q07 (a)	Table 4 shows the fitness test re	esults for four a	thletes.			
	Fitness test	Athlete 1	Athlete 2	Athlete 3	Athlete 4	
	Vertical jump	Very good	Average	Poor	Very good	
	30m sprint	Very good	Average	Excellent	Good	
	Sit and reach	Very good	Good	Average	Average	
	Cooper 12-minute run	Poor	Excellent	Average	Poor	
	One mark for correct ide • Athlete 3	entification.				
						(1)

Question	Answer					Mark
number	AO2 – 1 mark; AO3 –	- 1 mark				
Q07 (b)						
	Fitness test	Athlete 1	Athlete 2	Athlete 3	Athlete 4	
	Vertical jump	Very good	Average	Poor	Very good	
	30m sprint	Very good	Average	Excellent	Good	
	Sit and reach	Very good	Good	Average	Average	
	Cooper 12-minute run	Poor	Excellent	Average	Poor	
	For example:					
	 They have very good ratings for power and speed (1) needed to clear/jump the hurdle and run fast in-between (1) They have the highest/very good rating for flexibility (1) which they need to get low/correct shape/correct technique over the hurdle (1) 					
	Accept other appropriate responses					
	One mark for analys One mark for applie (AO2)				hurdler	(2)

Question	Answer					Mark
number	AO2 – 1 mark; AO3 -	2 marks				
Q07 (c)						
	Fitness test	Athlete 1	Athlete 2	Athlete 3	Athlete 4	
	Vertical jump	Very good	Average	Poor	Very good	
	30m sprint	Very good	Average	Excellent	Good	
	Sit and reach	Very good	Good	Average	Average	
	Cooper 12-minute run	Poor	Excellent	Average	Poor	
	For example:					
	Athlete 2 (1) as they have the highest/excellent rating for aerobic endurance/CV fitness (1) which they will need to delay fatigue/work aerobically (1)					
	Accept other appropriate responses					
	One mark for analysis of data in table (AO3) One mark for reason for selection of athlete based on table (AO3) One mark for applied reason/use of component by 3000m					
	runner (AO2)	u 18asoii/u	se oi comp	Joneth by	3000111	
						(3)

Question	Answer	Mark
number	AO2 – 2 marks	
Q08	 For example: Hit head on board (1) if poor technique/not far enough from the board (1) Landing head first (1) would cause impact on the brain /high force on the brain (1) Poor technique/land wrong/hit the water wrong/makes a mistake (1) causing them to hit head on water (1) 	
	Accept other appropriate responses	(2)

Question	Answer	Mark
number	AO1 – 1 mark	
Q09 (ai)		
	1 mark for correct identification.	
	Anabolic steroids	
	Human growth hormone	(1)

Question	Answer	Mark
number	AO1 – 1 mark	
Q09 (aii)		
	1 mark for correct identification.	
	• Diuretics	
		(1)

Question	Answer	
number	AO1 – 1 mark	
Q09 (b)		
	For example:	
	 Inject stored blood back into the body (1) Adding/increasing red blood cells to the blood/body (1) 	
	Accept other appropriate responses	
		(1)

Question	Answer	Mark
number	AO2 – 1 mark	
Q09 (c)	For example: Tour de France (1) Long distance running (3000m/3k +) (1) Marathon (1) Triathlon (1) Iron man (1) Cross-country running (1) Long-distance swimming (1)	
	Accept other appropriate responses	(1)

Question	Answer			
number	AO1 – 1 mark			
Q10 (a)				
	1 mark for correct identification.			
	Aerobic enduranceCardiovascular endurance			
	Accept other appropriate responses			
		(1)		

Question	Answer			
Number	AO1 – 3 marks			
Q10 (b)	1 mark for each descriptive linked point to a maximum of 3 marks:			
	 Any three from: Take shoes off (1) and place feet against the box (1) lean forward/reach forward/reach as far as possible (1) Warm up/stretch (1) sit down, keeping legs straight/legs extended (1) reach forward and hold for 2/3 seconds (1) 			
	Accept other appropriate responses	(3)		

Question	Answer	Mark
number	AO1 – 1 mark; AO2 - 1 mark	
Q10 (c)		
	For example:	
	 It is a test of power (1) which the shot putter needs to throw the shot a long way (1) 	
	Accept other appropriate responses	
	One mark for identification (AO1) One mark for applied reasoning to use by shot putter (AO2)	(2)

Question	Answer	Mark
number	AO2 – 1 mark; AO3 – 1 mark	
Q10 (d)	 For example: He doesn't need CV fitness (1) he should test for strength/power instead (1) He doesn't need CV fitness (1) therefore he should change to the grip dynamometer_test/use the vertical jump test (1) It tests CV fitness/the test is water based (1) meaning the test is not sport specific (1) 	
	Accept other appropriate responses	
	One mark for identification of reason (AO2) One mark for linked reasoning why this test is not suitable (AO3)	
		(2)

Question	Indicative content	Mark
Number	(A01 – 3 marks; A02 - 3 marks for application; A03 - 3 marks for evaluation)	
Q11	Reward acceptable answers. Responses may include, but are not limited to, the	
	following:	
	Manage Landard and American Manage Called all and American (NOA)	
	Knowledge and understanding of the short-term effects (A01).	
	Lactate accumulates when there is insufficient oxygen (AO1)	
	Lactate builds up in the muscle (AO1)	
	An increased depth of breathing increases the amount of air entering the	
	body/CO ₂ leaving the body (AO1)	
	An increased heart rate will speed up/increase blood flow (AO1)	
	Application of knowledge, linking the short-term effect to participation in	
	handball (A02).	
	Lactate accumulates when there is insufficient oxygen (AO1) this will happen	
	when the player works anaerobically/sprints during the game (AO2)	
	• An increased depth of breathing increases the amount of air entering the body	
	(AO1) this means the player has more oxygen coming into the body so they	
	can play for the 60-minute game (AO2)	
	An increased heart rate will speed up blood flow (AO1) which means An increased heart rate will speed up blood flow (AO1) which means An increased heart rate will speed up blood flow (AO1) which means	
	oxygen/nutrients can be transported at a faster rate to the player's working muscles (AO2)	
	Evaluation of topic – making reasoned judgments about the importance of	
	the short-term effect to the handball player (A03).	
	Lactate accumulates when there is insufficient oxygen (AO1) this will happen	
	when the player works anaerobically/sprints during the game (AO2) but it	
	needs removing to allow the player to continue to make fast runs/throw hard	
	shots/otherwise their muscles will fatigue (AO3)	
	An increased depth of breathing increases the amount of air entering the body	
	(AO1) this means the player has more oxygen to work at a moderate intensity	
	throughout the game (AO2), without this additional oxygen there would not be	
	enough oxygen for recovery/to continue to work aerobically (AO3)	
	An increased heart rate will speed up blood flow around the body (AO1) which	
	means nutrients can be transported at a faster rate to the player's working	
	muscles for energy (AO2) without this increased access to energy the player	
	will need to work at a lower intensity and therefore not perform as well during	
	the game.	
	Although lactate accumulation can lead to muscle fatigue it does allow the	
	player to work at a higher level during the game to make essential plays, the	
	other two short-term effects help the player prevent lactate accumulation	
	making sure the player can play well throughout the duration of the game	
	(AO3)	

Students who only show achievement against A01 will not be able to gain marks	
beyond level 1.	(9)

Level	Mark	Descriptor	
	0	No rewardable material	
1	1-3	 Demonstrates isolated elements of knowledge and understanding, with limited technical language used (AO1). Limited attempt to apply knowledge to question context (AO2). Generic assertions may be presented (AO3 - evaluation). 	
2	4-6	 Demonstrates mostly accurate knowledge and understanding, including appropriate use of technical language in places (AO1). Applied knowledge to question context (AO2). Attempts at drawing conclusion, with some support from relevant evidence (AO3 – evaluation). 	
3	7-9	 Demonstrates accurate knowledge and understanding throughout, including appropriate use of technical language (AO1). Applied detailed knowledge to question context throughout (AO2). Reaches a valid and well-reasoned conclusion supported by relevant evidence (AO3 – evaluation). 	

 Number (A01 - 3 marks; A02 - 3 marks for application; A03 - 3 marks for evaluation) Reward acceptable answers. Responses may include, but are not limited to, the following: Knowledge and understanding of the training methods (A01). Interval training is repeated sets of work followed by rest/recovery (AO1) Plyometric training involves leaping and bounding/box jumping (AO1) Continuous training involves non-stop running at a sub-maximal pace (AO1) Application of knowledge, linking the training method to the needs of the sprinter (A02). Interval training is repeated sets of work followed by rest/recovery (AO1) which Mason will use to increase his speed to run quickly/Mason would use short but intense work periods followed by recovery periods before sprinting again (AO2) Plyometric training involves leaping and bounding/box jumping (AO1) which Mason would use to develop the power he requires to accelerate (AO2) Continuous training involves non-stop running at a sub-maximal pace (AO1) this would improve aerobic endurance rather than the reaction time Mason needs to get away as soon as the gun has sounded (AO2) 	
 Interval training is repeated sets of work followed by rest/recovery (AO1) Plyometric training involves leaping and bounding/box jumping (AO1) Continuous training involves non-stop running at a sub-maximal pace (AO1) Application of knowledge, linking the training method to the needs of the sprinter (AO2). Interval training is repeated sets of work followed by rest/recovery (AO1) which Mason will use to increase his speed to run quickly/Mason would use short but intense work periods followed by recovery periods before sprinting again (AO2) Plyometric training involves leaping and bounding/box jumping (AO1) which Mason would use to develop the power he requires to accelerate (AO2) Continuous training involves non-stop running at a sub-maximal pace (AO1) this would improve aerobic endurance rather than the reaction 	
 the sprinter (A02). Interval training is repeated sets of work followed by rest/recovery (AO1) which Mason will use to increase his speed to run quickly/Mason would use short but intense work periods followed by recovery periods before sprinting again (AO2) Plyometric training involves leaping and bounding/box jumping (AO1) which Mason would use to develop the power he requires to accelerate (AO2) Continuous training involves non-stop running at a sub-maximal pace (AO1) this would improve aerobic endurance rather than the reaction 	
tille Mason needs to get away as soon as the gun has sounded (AO2)	
 Evaluation of topic - making reasoned judgments about the importance of the training method to the sprinter (A03). Interval training is repeated sets of work followed by rest/recovery (AO1) which Mason will use to increase his speed to run quickly/Mason would use short but intense work periods followed by recovery periods before sprinting again (AO2) This is essential to Mason as the race is so short/over so quickly (AO3) Plyometric training involves leaping and bounding/box jumping (AO1) which Mason would use to develop the power he requires to accelerate (AO2) this is also essential if Mason is to push away from the blocks quickly as the greater force he exerts, the faster he will go (AO3) Continuous training involves non-stop running at a sub-maximal pace (AO1) this would improve aerobic endurance rather than the reaction time Mason needs to get away as soon as the gun has sounded (AO2) therefore this training method is of limited/no value to Mason and he should change it to something more relevant to his sport (AO3) 	
Students who only show achievement against A01 will not be able to gain marks beyond level 1.	

Level	Mark	Descriptor	
	0	No rewardable material	
1	1-3	 Demonstrates isolated elements of knowledge and understanding, with limited technical language used (AO1). Limited attempt to apply knowledge to question context (AO2). Generic assertions may be presented (AO3 - evaluation). 	
2	4-6	 Demonstrates mostly accurate knowledge and understanding, including appropriate use of technical language in places (AO1). Applied knowledge to question context (AO2). Attempts at drawing conclusion, with some support from relevant evidence (AO3 – evaluation). 	
3	7-9	 Demonstrates accurate knowledge and understanding throughout, including appropriate use of technical language (AO1). Applied detailed knowledge to question context throughout (AO2). Reaches a valid and well-reasoned conclusion supported by relevant evidence (AO3 – evaluation). 	

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