

# Mark Scheme (Results)

June 2011

GCSE Physical Education (5PE01)  
Paper 01

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June 2011

Publications Code UG028519

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Question Number	Answer	Mark
1(a)	B An increase in serotonin	(1)

Question Number	Answer	Mark
1(b)	C Resources	(1)

Question Number	Answer	Mark
1(c)	C Power	(1)

Question Number	Answer	Mark
1(d)	A Sergeant Jump test	(1)

Question Number	Answer	Mark
1(e)	D Two hours	(1)

Question Number	Answer	Mark
1(f)	D High jumper	(1)

Question Number	Answer	Mark
1(g)	C Foods high in saturated fat (e.g. butter, crisps)	(1)

Question Number	Answer	Mark
1(h)	C An increase in vital capacity	(1)

Question Number	Answer	Mark
1(i)	B Hamstrings	(1)

Question Number	Answer	Mark
1(j)	D Vitamin D	(1)

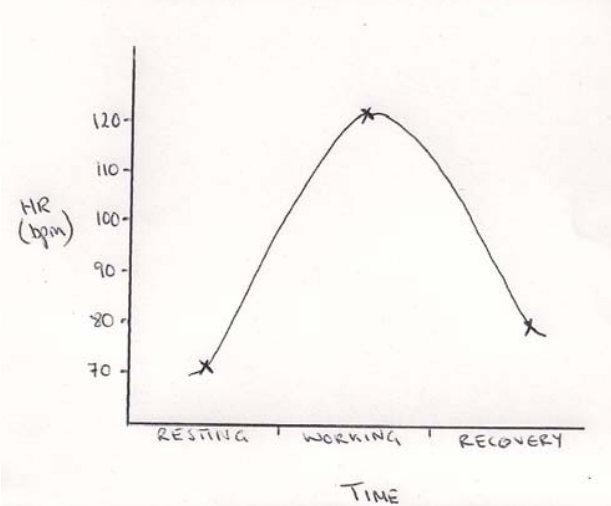
Question Number	Answer	Mark
2(a)	<p>1. Working with a team/ in a team / others / teamwork 2. to achieve <u>common</u> goal/equiv</p> <p>Do not allow any reference to social / friends / helps you cooperate (1 x 1)</p>	(1)

Question Number	Answer	Mark
2(b)	<p>1. Working against an opponent/trying to beat personal best/equiv / trying to win / trying to be the best</p> <p>NB Do not award if reference to standard of competition</p> <p>Do not allow goal setting / targets / personal challenge / playing a match unless qualified (1 x 1)</p>	(1)

Question Number	Answer	Mark
2(c)	<p>Accept any two from the following (max one/line)</p> <p>1. Work body to limit / push yourself <u>harder</u> 2. Because you are working physically hard you need to be mentally tough to keep going/keep motivated/equiv 3. E.g. Not wanting to give up in marathon even though body is tired/Scared of abseiling but overcome fear and complete activity</p> <p>Do not accept target setting (2 x 1)</p>	(2)

Question Number	Answer	Mark
3	<p>Accept any two from the following (max one/line)</p> <ol style="list-style-type: none"> <li>1. Programmes are concerned with participation/getting more involved in sport / providing more opportunities</li> <li>2. This can be a physical health benefit (allow appropriate example: drop in resting blood pressure; reduction in cholesterol / reduction in <u>obesity</u>)</li> <li>3. Mental benefit(allow appropriate example: increased serotonin therefore 'feel good'; fun / increase self-esteem)</li> <li>4. Social benefit (allow appropriate example: social mixing)</li> <li>5. Accept reference to five-a-day / improving diet /</li> <li>6. Educated about diet / reference to raising awareness of healthy lifestyle</li> </ol> <p>Do not accept simple statements, e.g. increased fitness / balanced diet / regular exercise as question asks for explanation</p> <p>Do not credit descriptions of initiatives</p> <p style="text-align: right;">(2 x 1)</p>	(2)

Question Number	Answer	Mark																	
4	<p>Only credit each component once</p> <table border="1"> <thead> <tr> <th></th> <th>Long Distance Runner</th> <th colspan="2">Sprinter</th> </tr> </thead> <tbody> <tr> <td>Component used by performer</td> <td>Cardiovascular fitness/Muscular endurance (accept CV / stamina if given)</td> <td colspan="2">Power/Strength</td> </tr> <tr> <td>Component used by performer</td> <td>Cardiovascular fitness/ Muscular endurance (accept CV / stamina if given)</td> <td colspan="2">Power/Strength</td> </tr> <tr> <td>How one of components is used by performer</td> <td>CV Maintain pace/ allows them to run long distances without <u>tiring</u> / oxygen delivery/CO2 removal</td> <td>ME Repeated muscle contractions <u>to</u> maintain performance/speed / work <u>muscles</u> for a long time <u>without tiring</u></td> <td>Power For effective / good start/ leave blocks quickly / generate force to move quickly/ run faster  Do not accept answers related to energy</td> <td>Strength Combine with speed to provide power/ equiv / push off blocks harder</td> </tr> </tbody> </table> <p>NB If choice is incorrect, no access to explanation NB If explanation does not match first choice, no credit given.</p> <p>(6 x 1)</p>		Long Distance Runner	Sprinter		Component used by performer	Cardiovascular fitness/Muscular endurance (accept CV / stamina if given)	Power/Strength		Component used by performer	Cardiovascular fitness/ Muscular endurance (accept CV / stamina if given)	Power/Strength		How one of components is used by performer	CV Maintain pace/ allows them to run long distances without <u>tiring</u> / oxygen delivery/CO2 removal	ME Repeated muscle contractions <u>to</u> maintain performance/speed / work <u>muscles</u> for a long time <u>without tiring</u>	Power For effective / good start/ leave blocks quickly / generate force to move quickly/ run faster  Do not accept answers related to energy	Strength Combine with speed to provide power/ equiv / push off blocks harder	(6)
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Question Number	Answer	Mark
5(a)	<p>1. One mark for resting HR lower than recovery rate</p> <p>2. One mark for correct style (line graph) and shape as shown below</p>  <p>If bar chart / no line, can access point 1 but no access to point 2.</p> <p style="text-align: right;">(2 x 1)</p>	(2)

Question Number	Answer	Mark
5(b)	<p>Working - highest value, (as heart has to work harder to supply more blood carrying oxygen to working muscles / heart beats faster when working)</p> <p>Recovery - higher than <u>resting</u> HR / as insufficient time to return to resting HR/not enough time to recover /repaying oxygen debt / equiv</p> <p style="text-align: right;">(2 x 1)</p>	(2)

Question Number	Answer	Mark
6(ai)	<p>1. Accept specific comment e.g. Eat too much become overweight / places strain on vital organs/equiv</p> <p>2. E.g. Don't eat enough become anorexic/equiv</p> <p>3. E.g. Eating wrong diet can cause health problems, e.g. heart attack</p> <p>Do not accept eat right nutrients for exercise / energy / protein for recovery / must be a healthy diet / not diet as in dieting.</p> <p>Do not accept one-word answers</p> <p style="text-align: right;">(1 x 1)</p>	(1)

Question Number	Answer	Mark
6(aii)	<p>Allows recovery / less prone to illness/injury / mental health issues / stress / exhaustion / equiv</p> <p>Accept reverse, i.e. insufficient time for recovery/more prone to illness / mental health issues / stress / exhaustion / equiv</p> <p style="text-align: right;">(1 x 1)</p>	(1)

Question Number	Answer	Mark
6(b)	<p>1. Accept reference to protein if related to muscle / repair / food for energy / equiv</p> <p>2. Accept reference to carbohydrates/fats for energy for activity</p> <p>3. Accept reference to balance between input - output / eat calories - burning off / eat in ratio to exercise / activity</p> <p>4. Balance diet <u>therefore</u> well enough to exercise</p> <p style="text-align: right;">(1 x 1)</p>	(1)



Question Number	Answer	Mark
7(a)	<p>Any two from following:</p> <ol style="list-style-type: none"> <li>1. Fractured cheek/cranium/skull/jaw / broken teeth/nose</li> <li>2. Dislocated jaw/ (accept nose)</li> <li>3. Bruising / black eye</li> <li>4. Cuts/abrasions/friction burns/nose bleed</li> <li>5. Concussion</li> <li>6. Although not on specification accept detached retina/equiv / whiplash</li> </ol> <p>NB maximum one injury per line, e.g. 1 mark for broken nose / broken jaw</p> <p>Do not accept swollen eye / head injury / shock Do not accept brain damage / soft tissue injury / neck injury / dizziness Do not accept fracture/dislocation on their own</p> <p style="text-align: right;">(2 x 1)</p>	(2)

Question Number	Answer	Mark
7(b)	<ol style="list-style-type: none"> <li>1. RICE</li> <li>2. rest, ice, compression, elevation</li> <li>3. rest, ice, comfortable support, elevation</li> </ol> <p style="text-align: right;">(1 x 1)</p>	(1)

Question Number	Answer	Mark
7(c)	<p>Any three from following:</p> <ol style="list-style-type: none"> <li>1. Warm up</li> <li>2. Application of rules (e.g. studs not showing in tackle / remove jewellery) / officials / lifeguards</li> <li>3. Correct fitness level/PAR-Q/adequate recovery allowed</li> <li>4. Correct clothing/footwear/personal effects (allow shin pads, helmets, gum shields i.e. things you put on)</li> <li>5. Balanced competition/all aspects</li> <li>6. Correct equipment (e.g. crash mats/padding around posts) / resources (e.g. spotters)</li> <li>7. Check grounds / performance area / risk assessment/ equiv</li> </ol> <p>NB. If activity not stated use first answer to establish nature of activity on which to base relevance of response. If applicable to any activity credit, e.g. warm-up</p> <p>Do not accept cool-down</p> <p style="text-align: right;">(3 x 1)</p>	(3)

Question Number	Answer	Mark
8(ai)	Peptide hormones/EPO	(1)

Question Number	Answer	Mark
8(aii)	<p>Narcotic analgesics</p> <p>Do not accept narcotic(s)</p>	(1)

Question Number	Answer	Mark
8(aiii)	Beta blockers	(1)

Question Number	Answer	Mark
8(aiv)	Diuretics	(1)

Question Number	Answer	Mark
8(b)	Pressure/to win/wants to be the best/prize money/fame/improve performance/gain advantage/train harder (or longer)/gain outweighs risks / quicker recovery from injury/equiv  Do not accept addictive / won't get caught	(1)

Question Number	Answer	Mark
8(c)	Any one from: Dehydration Nausea/sickness Kidney/liver failure/damage  Do not accept damage to organs / heart problems / death	(1)

Question Number	Answer	Mark						
9(a)	<table border="1"> <thead> <tr> <th>Body System damaged by smoking</th> <th>Health risk associated with smoking for this system</th> </tr> </thead> <tbody> <tr> <td>Cardiovascular (system) Accept circulatory Do not accept heart / CV</td> <td>increase chance of heart attack/failure/CHD/heart disease/stroke/angina/blood clots Max 1</td> </tr> <tr> <td>Respiratory (system) Do not accept lungs</td> <td>increase chance of lung cancer/lung disease/respiratory disease/ emphysema/ bronchitis / increased chance of asthma Max 1</td> </tr> </tbody> </table> <p>Systems can be in any order - only credit each system once</p> <p>Do not accept high blood pressure/heart problems/breathing difficulty/lung failure/clogs up arteries/throat cancer</p> <p>NB can credit risk if system not stated in first column ONLY if obvious which system referred to in second column. E.g. cancer too vague; lung cancer is OK.</p> <p style="text-align: right;">(4 x 1)</p>	Body System damaged by smoking	Health risk associated with smoking for this system	Cardiovascular (system) Accept circulatory Do not accept heart / CV	increase chance of heart attack/failure/CHD/heart disease/stroke/angina/blood clots Max 1	Respiratory (system) Do not accept lungs	increase chance of lung cancer/lung disease/respiratory disease/ emphysema/ bronchitis / increased chance of asthma Max 1	(4)
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Respiratory (system) Do not accept lungs	increase chance of lung cancer/lung disease/respiratory disease/ emphysema/ bronchitis / increased chance of asthma Max 1							

Question Number	Answer	Mark
9(b)	<p>Any one of following:</p> <ol style="list-style-type: none"> <li><u>Decrease</u> (accept alternative words but must imply decrease) in performance in practical activity (e.g. <u>decrease</u> in stamina)/ reduction in oxygen carrying capacity of blood</li> <li>role model/bad image/bad example</li> </ol> <p>Do not accept health risks</p> <p style="text-align: right;">(1 x 1)</p>	(1)

Question Number	Answer	Mark
10	<p>Any three of the following:</p> <ol style="list-style-type: none"> <li>1. (Amount of) oxygen consumed / used / needed / paying back / replaced.</li> </ol> <p>Do not credit if in context of exercising/during exercise</p> <ol style="list-style-type: none"> <li>2. during recovery / <u>after</u> exercise / <u>after</u> anaerobic work</li> <li>3. above that normally used at rest</li> <li>4. <u>shortfall</u> in the available oxygen</li> </ol> <p style="text-align: right;">(3 x 1)</p>	(3)

Question Number	Answer	Mark
11	<p>Any two of the following:</p> <ol style="list-style-type: none"> <li>1. Allows movement (through the use of joints)/equiv</li> <li>2. Provides a place for muscle attachment/equiv</li> <li>3. Protects vital <u>organs</u> (so can play sport) /protection to reduce chances of injury/equiv</li> <li>4. Provides shape/support <u>for</u> an upright position/equiv (eg support for a balance)</li> </ol> <p>Accept answers relating to blood production (although not on spec) <u>IF</u> related to O<sub>2</sub> carrying energy production.</p> <p style="text-align: right;">(2 x 1)</p>	(2)

Question Number	Answer	Mark
12(a)	Bicep/s Bicep brachii	(1)

Question Number	Answer	Mark
12(b)	Abduction  NOT adduction	(1)

Question Number	Answer	Mark
13(a)	Any one of following: 1. Improve fitness (eg increased strength / increased muscular endurance) 2. Accept any fitness adaptation - e.g drop in <u>resting</u> heart rate / cardiac hypertrophy 3. Accept any possible physical health gain - e.g reduction in risk of osteoporosis / weight loss if <u>overweight</u>  Accept any regular or long-term effects identified in Q15.  Do not accept mental / social benefits  <p style="text-align: right;">(1 x 1)</p>	(1)

Question Number	Answer	Mark
13(b)	Performance, Elite, Professional, Excellence  Do not accept Performer, Performs, Performing, Participant, Semi-pro	(1)

Question Number	Answer	Mark										
13(c)	<table border="1"> <thead> <tr> <th></th> <th>Tick most relevant fitness test for football player</th> <th>Explanation why fitness test is relevant to football player</th> </tr> </thead> <tbody> <tr> <td>Illinois Agility Run</td> <td>✓</td> <td rowspan="3">           1. Measures fitness that is used in game (e.g have to change direction quickly to beat opponent)/ equiv             2. Accept reasons why others not valid, e.g. components not used as much in game         </td> </tr> <tr> <td>Hand grip strength test</td> <td style="background-color: #cccccc;"></td> </tr> <tr> <td>Standing Stork test</td> <td style="background-color: #cccccc;"></td> </tr> </tbody> </table> <p style="text-align: right;">(2 x 1)</p>		Tick most relevant fitness test for football player	Explanation why fitness test is relevant to football player	Illinois Agility Run	✓	1. Measures fitness that is used in game (e.g have to change direction quickly to beat opponent)/ equiv  2. Accept reasons why others not valid, e.g. components not used as much in game	Hand grip strength test		Standing Stork test		(2)
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Hand grip strength test												
Standing Stork test												

Question Number	Answer	Mark
13(d)	<p>Specificity</p> <p>Do not accept specific / specify</p>	(1)

Question Number	Answer	Mark									
13(e)	<table border="1"> <thead> <tr> <th></th> <th>Cross-country runner</th> <th>Footballer</th> </tr> </thead> <tbody> <tr> <td>Training Method that can be used by both boys</td> <td>How training method would be adapted by Rob</td> <td>How training method would be adapted by Imran</td> </tr> <tr> <td>           Accept any:            Interval            Continuous            Fartlek            Circuit            Weight            Cross             Do not accept            Cooper run         </td> <td>           How training method implemented by long distance runner eg if fartlek - running over different terrains             Identifies specific components of fitness required in activity eg circuit includes exercises for muscular endurance             Accept specific examples of training sessions eg if weight training, high reps, low weights.         </td> <td>           How training method implemented by footballer eg if fartlek - focus on change of pace             Identifies specific components of fitness required in activity eg circuit includes exercises for muscular strength             Accept specific examples of training sessions eg if weight training, low reps, high weights         </td> </tr> </tbody> </table> <p>           NB Answers need to relate to IMPLEMENTATION of training method not why the method benefits the performer            NB If training method incorrect, do not accept anything else            NB The method of training has to be consistent with both performers         </p>		Cross-country runner	Footballer	Training Method that can be used by both boys	How training method would be adapted by Rob	How training method would be adapted by Imran	Accept any: Interval Continuous Fartlek Circuit Weight Cross  Do not accept Cooper run	How training method implemented by long distance runner eg if fartlek - running over different terrains  Identifies specific components of fitness required in activity eg circuit includes exercises for muscular endurance  Accept specific examples of training sessions eg if weight training, high reps, low weights.	How training method implemented by footballer eg if fartlek - focus on change of pace  Identifies specific components of fitness required in activity eg circuit includes exercises for muscular strength  Accept specific examples of training sessions eg if weight training, low reps, high weights	(3)
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(3 x 1)

(3)



Question Number	Answer	Mark
13(f)	(i) Aerobic / Aerobically (ii) Anaerobic / Anaerobically (iii) Anaerobic / Anaerobically (iv) Aerobic / Aerobically  (4 x 1)	(4)

Question Number	Answer	Mark
13(gi)	Any two from: 1. Motivates therefore likely to continue to train / push / makes them work harder / reduces boredom / task persistence / challenge yourself / increase self-esteem when achieved. 2. Gives clear/specific goals / aims to achieve so once achieved can aim higher / gives focus / something to work towards 3. Allows them to monitor progress / analyse progress / decrease stress / know that you have improved 4. Encourages training to be planned/structured to achieve targets so therefore more effective training  Do not accept improves performance unless qualified  (2 x 1)	(2)

Question Number	Answer	Mark
13(gii)	Credit any appropriate example, e.g. beat PB by 10 seconds/ complete race within 25 min/equiv  NB. Need to consider individual candidate response as alternative acceptable answers could be given based on distance of race NB Needs numbers/ equivalent NB Accept answers relating to Imran  Do not accept measure how fast he can run	(1)

## Question 14

Use indicative content on next page to place into correct level

Level	Mark	Descriptor
Level 0	0	No rewardable material
Level 1	1-2 max (including QWC)	<p><i>Candidates will produce brief and narrative responses, making a limited number of simple statements, probably with limited reference to the question.</i></p> <p><i>Candidate's writing communicates ideas using everyday language, but lacks clarity and organisation. There will be frequent errors in candidates' spelling, grammar and punctuation.</i></p> <p>1 or 2 content marks, no need for balance 0 or 1 QWC (insufficient correct content to award 2 for QWC)</p>
Level 2	3-4 max (including QWC)	<p><i>Candidates' responses will be mostly accurate and include relevant factual material. Shows some understanding through description and explanation, although content more reflective of description than explanation</i></p> <p><i>Candidate's writing communicates with accurate use of appropriate terminology, and the organisation of the response shows some direction and control. There will be few errors in candidates' spelling, grammar and punctuation.</i></p> <p>2 or 3 content marks If 3 content must span two aspects of question 0,1 or 2 for QWC</p>
Level 3	5-6 max (including QWC)	<p><i>Candidates will offer factually accurate and sustained responses that relate well to the focus of the question and have successfully addressed all aspects of the question. Shows sound understanding and can provide a clear description and explanation.</i></p> <p><i>Candidate's writing communicates ideas effectively using appropriate terminology, and organises material clearly and coherently. Spelling, punctuation and grammar will be accurate throughout the response.</i></p> <p>4 or 5 content marks Content must span all three aspects of question, if not remains in Level 2. 1 or 2 for QWC</p> <p>NB Can only credit maximum of 5 content marks regardless of indicative content achieved</p>

NB To access QWC marks-

1. 4 lines of text minimum (to give sufficient text to access)
2. Must also have minimum of one relevant content mark
3. Must be continuous writing, not bullet points / lists of text (unless in level 3 where 1 mark can be awarded for QWC)

Question Number	Indicative content
14	<p><b>Types of roles</b></p> <p>1. Participant/performer/player/competitor/equiv</p> <p>Do not accept reference to different player positions as a role as wrong context</p> <p>2. Leadership/manager/captain/equiv</p> <p>3. Official/equiv</p> <p>4. Coach/play worker/assistant/volunteer/sports coordinator/personal trainer/ teacher/equiv</p> <p>Maximum two content marks Do not accept spectator</p> <p><b>Personal qualities for each role</b> Do not credit if not achieved any from points 1 - 4</p> <p>5. Type 1 - fitness; motivation; determination; ability; opportunity; knowledge of activity; allow other appropriate attribute / skilled / focused on improving</p> <p>6. Type 2 - motivational; organised; good communicator; ability; enthusiastic; committed; ability to analyse performance; allow other appropriate attribute</p> <p>7. Type 3 - fair; fit; calm; knowledgeable about the rules; confident; patient; good communicator; allow other appropriate attribute / authoritative</p> <p>8. Type 4 - knowledge of activity; ability to analyse performance; patient; good communicator; enthusiastic; committed; motivator; allow other appropriate attribute / organised</p> <p>NB personal qualities must be linked to specific role Do not accept qualities such as good leadership / management / coaching skills</p> <p><b>How this provides opportunity for all</b> Can access points 9 - 11 even if no previous points accessed</p> <p>9. (Become) If not good enough to perform or doesn't like to perform to get involved in physical activity / Don't all have to be good at sport to get involved / wouldn't make it as a player but can still be involved / Might know a lot about the sport but unable to participate so could take on role</p>

	<p>of coach/manager/  10. (Remain) Variety of roles over time (e.g. was a player, now too old, so becomes a coach) / equiv  11. Accept response that identifies range of roles gives people <u>choice/preference</u> about how they want to become involved</p> <p>Do not accept still involved in sport</p>
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**Question 15**

Use indicative content on next page to place into correct level

Level	Mark	Descriptor
Level 0	0	No rewardable material
Level 1	1-2	<p><i>Candidates will produce brief and narrative responses, making a limited number of simple statements, probably with limited reference to the question.</i></p> <p><i>Candidate's writing communicates ideas using everyday language, but lacks clarity and organisation. There will be frequent errors in candidates' spelling, grammar and punctuation.</i></p> <p>1 or 2 content marks, no need for balance  0 or 1 QWC (insufficient correct content to award 2 for QWC)</p>
Level 2	3-4	<p><i>Candidates' responses will be mostly accurate and include relevant factual material. Shows some understanding through description and explanation, although content more reflective of description than explanation</i></p> <p><i>Candidate's writing communicates with accurate use of appropriate terminology, and the organisation of the response shows some direction and control. There will be few errors in candidates' spelling, grammar and punctuation.</i></p> <p>2 or 3 content marks  If 3 content must span both aspects of question  0,1 or 2 for QWC</p>

Level 3	5-6	<p><i>Candidates will offer factually accurate and sustained responses that relate well to the focus of the question and have successfully addressed all aspects of the question. Shows sound understanding and can provide a clear description and explanation.</i></p> <p><i>Candidate's writing communicates ideas effectively using appropriate terminology, and organises material clearly and coherently. Spelling, punctuation and grammar will be accurate throughout the response.</i></p> <p>4 or 5 content marks Content must span both aspects of question, if not remains in Level 2 1 or 2 for QWC</p>
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NB To access QWC marks-

4. 4 lines of text minimum (to give sufficient text to access)
5. Must also have minimum of one relevant content mark
6. Must be continuous writing, not bullet points / lists of text (unless in level 3 where 1 mark can be awarded for QWC)

Question Number	Indicative content
15	<p><b>Aspect 1 - covers points 1-8</b></p> <p><b>Immediate/short-term effects (cardiovascular system)</b></p> <ol style="list-style-type: none"> <li>1. Increased heart rate</li> <li>2. Increased <u>systolic</u> blood pressure (if stated credit point 3 as well)</li> <li>3. Increased blood pressure</li> </ol> <p><b>Immediate/short-term effects (muscular system)</b></p> <ol style="list-style-type: none"> <li>4. increased demand for oxygen/energy for muscular work</li> <li>5. increased carbon dioxide production</li> <li>6. increased temperature</li> <li>7. lactic acid production (during anaerobic work) (energy conversion)</li> <li>8. muscle fatigue</li> </ol> <p>Do not accept tire/ache</p> <p><b>Aspect 2 - covers points 9 - 18</b></p> <p><b>Regular participation/long term effects (cardiovascular system)</b></p> <ol style="list-style-type: none"> <li>9. increased strength / size of heart muscle</li> <li>10. increased <u>stroke volume</u> (due to increased strength of cardiac muscle)</li> <li>11. increased <u>maximum</u> cardiac output</li> <li>12. increased capillarisation (accept increased capillaries)</li> <li>13. increase in number of red blood cells</li> <li>14. drop in <u>resting</u> heart rate (due to increased stroke volume)</li> </ol> <p>(accept quicker return to RHR for same reason)</p> <p><b>Regular participation/long term effects (muscular system)</b></p> <ol style="list-style-type: none"> <li>15. increased strength of ligaments/tendons</li> <li>16. increased size/strength of skeletal muscle / muscular endurance</li> <li>17. increased mitochondria (site of aerobic respiration)</li> <li>18. increased myoglobin (equivalent to an oxygen 'store' in the muscle).</li> </ol> <p>NB must be clear whether candidate is referencing immediate or long-term effects  NB if system not stated can still gain credit</p>



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