



## **Cambridge National**

### **Sport Science**

Unit **R041**: Reducing the risk of sports injuries

Level 1/Level 2

### **Mark Scheme for June 2017**

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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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| Annotation  | Meaning of annotation   |
|---|---|
|    | Blank Page – this annotation <b>must</b> be used on all <b>blank</b> pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response. |
|    | Tick – correct answer   |
|    | Cross – incorrect answer  |
| DEV   | Development of point (for use with levels question)   |
|    | Level 1 (for use with levels question)  |
|    | Level 2 (for use with levels question)  |
|    | Level 3 (for use with levels question)  |
|    | Benefit of doubt - but still tick   |
| K   | Knowledge mark (for use with levels question)   |
| VG  | Too vague   |
|    | Repeat  |
|  | Noted but no credit given / zero mark response  |
| EG  | A practical example given that is worth credit  |
| S   | Sub max reached   |

| Question | Answer  | Marks | Guidance  |
|----------|---|-------|---|
| 1.       | <p><b>One mark for:</b></p> <ol style="list-style-type: none"> <li>1. (Body) temperature / get hotter</li> <li>2. Heart rate / pulse / heart pumping</li> <li>3. Flexibility (of muscles / joints) / mobility/muscle length or range of movement (at the joint)</li> <li>4. Pliability of ligaments / tendons / muscles</li> <li>5. Blood flow / blood pressure</li> <li>6. Oxygen <u>to muscles</u></li> <li>7. Speed of muscle contraction</li> <li>8. Breathing (rate/quicker/heavier)</li> <li>9. Sweating</li> </ol> | [4]   | <p><b>Mark first four only</b><br/> <b>Only one mark to be allocated for each answer line</b></p> <p>Gets body to right temperature = Vg pt1</p> <p>Movement = vg pt3</p> <p>Sends signals = vg</p> <p>(More) blood pumping / blood = vg pt5<br/> Oxygen in blood = vg pt6<br/> Oxygen intake = Vg pt6</p>  |
| 2.       | <p><b>Four marks for four from:</b></p> <ol style="list-style-type: none"> <li>1. <b>(Mobility)</b> – exercises that take the joints through their full range of movement (ROM) or moving joints around their full motion</li> <li>2. <b>(Example)</b> – arm swings / hip circles or rotations or open and close the gate</li> <li>3. <b>(Dynamic movement)</b> – changing speed <b>and</b> direction</li> <li>4. <b>(Example)</b> – shuttle runs / running in and out of cones/ zig zag running</li> </ol>               | [4]   | <p><b>One mark</b> for each explanation<br/> <b>One mark</b> for each appropriate example – accept other valid examples<br/> <b>Accept example if valid even if explanation is incorrect</b></p> <p>Moving motion around the joint = vg pt1<br/> Range of motion in joints = vg pt1<br/> Mobility increases range of movement = vg pt1<br/> High knees / heel flicks = vg (must be related to full range of movement) pt2</p> <p>Short sprints = vg (no change of direction) pt4<br/> Side steps = vg pt4<br/> Series of quick movements = vg pt4</p> |

| Question | Answer  | Marks      | Guidance  |
|----------|---|------------|---|
| 3.       | <p><b>Two marks for two from:</b></p> <ol style="list-style-type: none"> <li>1. Equipment / facilities</li> <li>2. Jewellery</li> <li>3. Weather or temperature</li> <li>4. Participants' age / health / medical conditions / previous injuries</li> <li>5. Participants' clothing / footwear or <u>protective</u> equipment</li> <li>6. Environment / (playing) surface / floor or surrounding area or litter</li> </ol>   | <b>[2]</b> | <p><b>Accept examples if valid:</b> eg check if goal posts are safe = pt 1</p> <p>Check if participant has inhaler = BOD pt 4</p> <p>Move clothing/footwear = vg pt6<br/>Safety hazards = vg pt6<br/>Check floor for obstacles/clothing = pt 5</p> <p>Nothing to slip on / nothing to fall over = vg pt6<br/>Wet or dry (surface) = BOD pt 6</p>  |
| 4.       | <p><b>Five marks for five from:</b></p> <ol style="list-style-type: none"> <li>1. <b>(Scoliosis)</b> – A <u>visibly</u> curved spine / 'S' or 'C' shape / one shoulder higher than the other</li> <li>2. <b>(Lordosis)</b> – Forward/inward curving of the <u>lower</u> back/spine (so that stomach sticks out)</li> <li>3. <b>(Kyphosis)</b> – Forward / inward curvature/ hunched / rounded at the top/upper back/spine</li> <li>4. <b>(Pelvic tilt)</b> – One side of the pelvis / hips is higher than the other side / hips not level or pelvis angled forward and back (compared to normal) or one side of the pelvis higher than the other or pelvis is at different <u>angle</u> (than normal)</li> <li>5. <b>(Round shoulder)</b> – Forward curve of the neck / hunching the shoulders forward</li> </ol> | <b>[5]</b> | <p><b>One mark</b> per correct description.<br/><b>For points 2 – 3 look for location (upper/lower) and direction of curve (forward/back) to give a mark</b></p> <p>Hunchback = vg for any points</p> <p>Curving to the side = vg pt1<br/>Curved spine = vg pt1</p> <p>Lumbar section of the spine curves in = pt2 (Has the idea of location <b>and</b> direction)</p> <p>Problem with lower/upper spine = vg pt 2/3<br/>Curving at the lower of spine = vg pt2 (no direction of curve)<br/>Butt stuck out or back curved in = vg pt2</p> <p>Pelvis goes inwards = vg pt4<br/>Anything relating to tilting = vg pt4</p> <p>Anything relating to rounded = vg pt5<br/>Shoulders pop out of back = vg pt5<br/>Shoulders high towards cheeks = BOD pt 5<br/>Circular shoulders = vg pt5<br/>Bending forward = vg pt5</p> |

| Question | Answer  | Marks | Guidance   |
|----------|---|-------|--|
| 5.       | <p><b>Two marks for two from:</b></p> <ol style="list-style-type: none"> <li>1. Contact sport</li> <li>2. ... because of (bad/dangerous) tackles / collisions</li> <li>3. Dangerous sports</li> <li>4. ... because of risk of fractures /falls</li> <li>5. Striking sports</li> <li>6. ... because of being hit by ball / sticks / equipment</li> <li>7. High impact/jumping sports</li> <li>8. ... because of damage/stress on joints</li> </ol>   | [2]   | <p><b>One mark for <u>type</u> of activity</b><br/> <b>One mark for explanation/examples of <u>causes</u> of injury</b><br/> <b>Give a mark for explanation of cause even if type of activity is incorrect</b></p> <p>Physical activity causes broken bones = vg<br/> Do not accept weather / environment</p>                            |
| 6.       | <p><b>Three marks for three from:</b></p> <ol style="list-style-type: none"> <li>1. Rugby – (boots with) studs</li> <li>2. Football – (boots with) studs</li> <li>3. Running – spikes / trainers that support the ankle</li> <li>4. Cricket – spikes/studs / blades</li> <li>5. Hockey – spikes/studs / blades</li> <li>6. Ice hockey – blades/skates</li> <li>7. Ice skating – blades/skates</li> <li>8. Skiing – (ski) (boots with) straps/support</li> <li>9. Basketball – ankle support footwear</li> <li>10. Boxing – ankle support footwear</li> <li>11. Climbing – climbing shoes with grips</li> <li>12. Trampolining – socks with grips (on the bottom)</li> </ol> | [3]   | <p><b>Accept other sports and their examples</b><br/> <b>One mark per sport with correct example</b></p> <p>Shoes/boots (on their own) for any activity = vague</p> <p>Football/rugby boots = vg<br/> Bowling / ballet shoes = vg (must be related to helping prevent injury)<br/> Trainers = vg</p> <p>Rugby – toe protectors = BOD</p> |

| Question | Answer  | Marks | Guidance  |
|----------|---|-------|---|
| 7.       | <p><b>Two marks for two from:</b></p> <ol style="list-style-type: none"> <li>Low self-esteem / lack of confidence / shy or has low confidence or is anxious/nervous / upset / depressed / sad</li> <li>....can cause someone to look down / hunch forward or leading to round shoulder / poor posture (in the upper body) or slouching</li> </ol>   | [2]   | <p><b>One mark</b> per valid comment</p> <p>It lowers your confidence = x (not crediting result of poor posture <b>but how emotions can affect posture</b>)</p> <p>Sad &amp; not focus on posture = pt1 and BOD pt2<br/>Hunchback = vg pt2</p>  |
| 8.       | <p><b>Two marks for two from:</b></p> <ol style="list-style-type: none"> <li><b>(Fracture)</b> – bad or land or fall (awkward) / tackled / trauma / impact (by an opponent) / collision</li> <li><b>(Treatment)</b> – Splint / sling / 999 or medical assistance / <u>put in</u> plaster / cast / pot</li> <li><b>(Concussion)</b> – (hard) impact <u>to head</u> (by a piece of sports equipment or another player or with the ground) or banged head</li> <li><b>(Treatment)</b> – apply cold compress / ice / rest or medical assistance or 999</li> <li><b>(Abrasion)</b> – falling or tripping over onto (hard/rough) ground / hit by a piece of equipment / broken equipment / rubbing (against equipment) or sliding on ground/AstroTurf or being kicked / hit / punched / scraped / tackling / friction</li> <li><b>(Treatment)</b> - bandage / plaster / compression / elevate / rest or clean / sterilise (area)</li> <li><b>(Contusion)</b> – colliding with a player or piece of equipment or falling or tackling or tripping</li> <li><b>(Treatment)</b> – rest / elevate / ice /R.I.C.E</li> <li><b>(Osgood Schlatter’s)</b> – during a growth spurt as a child or (bone) growing too quickly or bone growing faster than tendons or repeated stress or overuse or too much running/jumping or play too much</li> <li><b>(Treatment)</b> - R.I.C.E. / rest or bandage or seek medical advice</li> </ol> | [10]  | <p><b>One mark</b> for each correct description<br/><b>One mark</b> for each correct treatment</p> <p>Caused by sudden force on bone – BOD pt 1<br/>Collision (on its own) = vg pt 1</p> <p>Rest / RICE / Taping – vg pt2<br/>Just plaster = vg pt2</p> <p>Head injury = vg pt 3<br/>Sudden (violent) movement of head = BOD Pt3</p> <p>Wet tissue – vg pt4</p> <p>Cut = vg pt 5<br/>hitting hard ground = BOD pt5<br/>Trip/fall (on own) = vg pt5<br/>Dangerous surface = vg pt5</p> <p>Hitting yourself hard = BOD pt7</p> <p>Physiotherapy = BOD pt10</p> <p><b>Give mark for treatment of named injury on QP even if description is incorrect</b></p> |

| Question | Answer   | Marks      | Guidance  |
|----------|--|------------|---|
| 9.       | <p><b>Two marks for two from:</b></p> <ol style="list-style-type: none"> <li>1. First aid kit or bandages / slings / plasters / ice pack</li> <li>2. Evacuation chair or wheelchair or evacuation chair</li> <li>3. Stretcher</li> <li>4. Defibrillator</li> <li>5. EpiPen / inhaler / insulin</li> <li>6. Blanket/s</li> <li>7. Telephone / mobile</li> </ol> | <b>[2]</b> | <p>Accept 'evac chair' = pt2<br/>First aid chair = vg pt2</p>                     |
| 10.      | <p><b>Three marks for three from:</b></p> <ol style="list-style-type: none"> <li>a. Closed / simple fracture/break</li> <li>b. Open / compound fracture/break</li> <li>c. Blister / contusion / abrasion / bruise / cut / friction burn / graze</li> </ol>   | <b>[3]</b> | <p>Fracture / broken bones / hairline = vg pt 1 &amp; 2</p>                       |
| 11.      | <p><b>Three marks for three from:</b></p> <ol style="list-style-type: none"> <li>1. Tendonitis (Achilles / Patella)</li> <li>2. Shin splints</li> <li>3. Tennis elbow</li> <li>4. Golfer's elbow</li> <li>5. Swimmer's shoulder</li> <li>6. Jumper's knee</li> <li>7. Osgood Schlatter's</li> <li>8. Bowler's shoulder</li> <li>9. Runner's knee</li> </ol>    | <b>[3]</b> | <p>Accept any other recognised chronic injury</p> <p>Blister / arthritis = vg</p> |



| Question | Answer   | Marks | Guidance  |
|----------|--|-------|---|
| 12.      | <b>Two marks for two from:</b><br>1. (Immediate) pain<br>2. Swelling or redness<br>3. Contusion / bruising<br>4. Loss of function or can't run / walk<br>5. Deformity/ disfigurement or bone out of place or broken bone/limb<br>6. Loss of consciousness<br>7. Abrasion / bleeding or cut | [2]   | <b>Mark first response only on each answer line</b><br><br>Sudden trauma = vg pt5<br><br>Fracture / concussion = vg pt5 / pt6 |
| 13.      | <b>Five marks for five from:</b><br>1. Type 1<br>2. Was a child<br>3. Extreme thirst / frequent visits to the toilet<br>4. Extreme thirst / frequent visits to the toilet<br>5. A sugary drink / sugar   | [5]   | Accept first response on line only  |
| 14.      | <b>1 mark per correct identification:</b><br><br>a) False<br>b) False<br>c) True<br>d) False<br>e) True  | [5]   |   |

| Question | Answer   | Marks | Guidance  |
|----------|--|-------|---|
| 15.      | <p><b><u>Levels of response</u></b></p> <p><b>Level 3 (7-8 marks)</b><br/>A comprehensive response:</p> <ul style="list-style-type: none"> <li>- shows detailed knowledge and understanding</li> <li>- makes many points, many of which are well developed.</li> <li>- is well structured and consistently uses appropriate terminology.</li> <li>- there are few if any errors in grammar, punctuation and spelling.</li> </ul> <p><b>Level 2 (4-6 marks)</b><br/>A competent response:</p> <ul style="list-style-type: none"> <li>- shows good knowledge and understanding.</li> <li>- makes some valid points a few of which may be developed.</li> <li>- is reasonably well structured and uses some appropriate terminology.</li> <li>- there are occasional errors in grammar, punctuation and spelling.</li> </ul> <p><b>Level 1 (1-3 marks)</b><br/>A basic response:</p> <ul style="list-style-type: none"> <li>- shows limited knowledge and understanding.</li> <li>- makes some basic points which are rarely developed.</li> <li>- has limited coherence and structure with little or no use of appropriate terminology.</li> <li>- errors in grammar, punctuation and spelling may be noticeable and intrusive.</li> </ul> <p><b>0 = nil response or no response worthy of credit.</b></p> | [8]   | <p><b>Differentiating between levels look for:</b></p> <p><b>Level 3 (7-8)</b></p> <ul style="list-style-type: none"> <li>• Most well explained points are clearly developed</li> <li>• At the top of this level at least 4 specific needs are well explained and then well developed using examples where relevant.</li> <li>• At the bottom of this level at least 4 points are likely to be developed</li> <li>• Very few QWC errors</li> </ul> <p><b>Level 2 (4-6)</b></p> <ul style="list-style-type: none"> <li>• Some explanation rather than description. The more explanation that is provided, the more marks gained at this level.</li> <li>• At the top of this level there is likely to be three developed points with valid examples where relevant</li> <li>• At the bottom of this level there is likely to be three points but they are underdeveloped and mainly descriptive</li> <li>• Some QWC errors</li> </ul> <p><b>Level 1 (1-3):</b></p> <ul style="list-style-type: none"> <li>• If only one or two needs have been listed – only one mark should be given</li> <li>• Where there are several specific needs covered but listed only this gains 2 marks.</li> <li>• Some description/explanation but 2 well developed points will gain 3 marks.</li> <li>• If solely on benefits / components of a warm up cool down or simply to ‘get you ready’ then give 1 mark for relating to point 6</li> <li>• Many QWC errors</li> </ul> <p><b>Do not accept gender</b></p> |

| Question | Answer  | Marks | Guidance  |
|----------|---|-------|---|
|          | <p><b>Indicative content</b> Candidate responses are likely to include:<br/> <b>Numbered points</b> = knowledge / understanding<br/> <b>Bullet points</b> = likely to be development of knowledge</p> <ol style="list-style-type: none"> <li>1. <b>Size of the group</b> <ul style="list-style-type: none"> <li>• Must ensure there is enough space for the size of the group otherwise injuries may occur through people bumping into one-another.</li> </ul> </li> <li>2. <b>Age of the participants</b> <ul style="list-style-type: none"> <li>• Young children will require a lower intensity and shorter warm up compare to adults.</li> </ul> </li> <li>3. <b>Experience of the participants</b> <ul style="list-style-type: none"> <li>• More experienced participants may need a warm up involving a higher level of skill in the skill rehearsal phase compared to someone of lower ability.</li> <li>• Individuals' strengths / weaknesses</li> </ul> </li> <li>4. <b>Individual fitness levels</b> <ul style="list-style-type: none"> <li>• Not everyone may be at the same level of fitness due to illness etc.</li> <li>• Flexibility</li> <li>• Strength</li> <li>• Overweight</li> </ul> </li> <li>5. <b>Health or any medical conditions participants may have</b> <ul style="list-style-type: none"> <li>• Need to consider the level/type of warm up if an individual in the group has a previous injury e.g. a broken leg or a medical / health issue e.g. asthma</li> <li>• Mental state</li> <li>• Consider those with disabilities</li> </ul> </li> </ol> |       | <p><b>General guidance:</b></p> <ul style="list-style-type: none"> <li>➤ <b>Give a K for a main (numbered) point</b></li> <li>➤ <b>Give DEV for a point that has been developed (use Vg if development is vague)</b></li> <li>➤ <b>Always put the level at the bottom LHS of the question response</b></li> </ul> |

| Question | Answer   | Marks | Guidance |
|----------|--|-------|----------|
|          | <p>6. <b>Suitability as preparation for a particular activity/sport</b></p> <ul style="list-style-type: none"><li>• The warm up / drills used needs to match or be suitable for the actual activity taking place</li><li>• e.g. a warm up for badminton might involve lots of running backwards, forwards, side-to-side.</li></ul> <p>7. <b>Time available</b></p> <ul style="list-style-type: none"><li>• How long before match starts or whether there is time for an extended cool down</li></ul> <p>8. <b>Environmental factors</b></p> <ul style="list-style-type: none"><li>• Weather</li><li>• Temperature if outdoors</li><li>• Available facilities / equipment</li></ul> |       |          |

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