



## **Cambridge National**

## **Sport Science**

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

Level 1/Level 2

## **Mark Scheme for January 2017**

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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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Question	Answer	Marks	Guidance
1. (a)	<p><b>Two marks for two from:</b> <b>(Risk assessments)</b></p> <ol style="list-style-type: none"> <li>1. Minimising the chances of injuries occurring / making equipment/performer/area safer</li> <li>2. Identifies/checks for (potential) hazards/dangers or assessing the possibilities of an accident occurring/potential consequences because they take place <b>before</b> the activity</li> <li>3. Actions to be taken to avoid/<b>prevent</b>/reduce chances of accident happening or helps you to plan an alternative safer sports activity (if risks are identified) or get rid of risks</li> <li>4. Can identify if potential risks are low/medium/high</li> <li>5. Check whether activity/game is safe to go ahead</li> </ol>	[2]	<p>Look for descriptions rather than single word answers for each point Do not accept reduces injury (in question) Do not accept assess risk To see where injuries might happen = Vg</p> <p>Accept examples eg checking for potholes = pt2</p> <p>Know what to do in emergency = vg</p> <p>Tells you anything bad that can happen = vg</p> <p>Prevent injury (on its own) = vg</p>
(b)	<p><b>Three marks for three from:</b> <b>(Environmental factors of <u>fitness suite</u>)</b></p> <ol style="list-style-type: none"> <li>1. Surface or performance area (e.g. weights room) or surrounding area or slippy/wet surfaces/ floors or glass/other weights on floor or equipment</li> <li>2. Temperature / air conditions</li> <li>3. Other participants (e.g. not spotting correctly) or someone dropping a free weight on your foot or not following correct health and safety rules or overcrowding or poor/(dangerous) behaviour</li> <li>4. Electrical equipment or electrical supply or machine wires</li> </ol>	[3]	<p>Accept examples as equivalents Accept one word identification eg 'equipment' (pt2) Accept 'playing surface' (BOD) Weather = Vg (in fitness suite) Surroundings (on its own) = Vg Objects lying around = Vg No supervision = Vg Heat (on its own) = vg</p>

Question	Answer	Marks	Guidance
2.	<p><b>(a) Five marks for five from:</b>  <b>(Table) Four marks for four from:</b>            (i) Mobility            (ii) Change of speed <b>and</b> direction/shuttle runs/side stepping with (quick) changes in direction            (iii) Pulse raiser            (iv) Static/dynamic/open and close the gate/groin walk / lunges or specific stretches such as quad/hamstring stretch</p> <p><b>One mark for one from:</b>  <b>2 (b) (Netball) – Passing/catching/shooting or equivalent skills</b></p>	[5]	<p>Accept any equivalent practical example</p> <p>(iv) touching toes = Vg            (iv) touching toes with legs straight = 1 mark for (iv)            'developmental (stretches)' = Vg            'squats' = Vg</p>
3.	<p><b>Three marks for three from:</b></p> <p>1. Description of <b>age</b> or elderly will require less intense warm up or longer warm up</p> <p>2. Description of <b>experience / ability</b> – The more experience client has the more demanding the warm up may be</p> <p>3. <b>Fitness</b> – The fitter the client is the more challenging/demanding/intense the warm up            Or An <b>individual's needs</b> for a warm up that is at the right level for their fitness / weight            Or <b>previous injuries</b> - should be taken into account</p> <p>4. Description of relevant <b>medical conditions</b> - epilepsy/diabetes/asthma            Or <b>disabilities</b>            Or <b>pregnancy</b></p> <p>5. <b>Psychological issues</b> or high level of anxiety or gets 'nervous'/stressed</p>	[3]	<p>Look for a description rather than single word answers</p> <p>Do not accept size of group (Question relates to client/individual performer)</p> <p>Accept opposites as equivalents e.g. Young children may require a less demanding/intense warm up or more fun based</p> <p>Their limits = Vg            What they are capable of = Vg            Their knowledge of exercise = Vg            Their fitness level or how fit they are = pt 3            If the client is elderly / young or how old they are = pt1</p>

Question	Answer	Marks	Guidance
4. (a)	<p><b>Two marks for two from:</b>  <b>(Symptoms)</b>            1. Coughing            2. Wheezing            3. Tight chest or chest pain            4. Grey / blue lips (if severe)            5. Pale/clammy skin or change of skin colour</p>	[2]	Do not accept any references to breathing difficulties including: difficulty breathing/shortness of breath/heavy breathing
(b)	<p><b>Two marks for two from:</b>  <b>(Treatment)</b>            1. Reassurance/keep calm or keep participant calm or stay with them            2. Emergency service/phone 999 (if attack severe)            3. Sit them down or don't lie them down / bend them over            4. (Encourage them to) take long/slow/steady/deep breaths            5. Get them away from the trigger (The asthma attack could be triggered by dust, cigarette smoke or the smell of chemicals) or take them to an air-conditioned environment or any place with clean air.            6. Give them a hot/caffeinated beverage (drinks like coffee can help to open up the airways slightly, providing some relief for an hour or two)</p>	[2]	Do not accept spacers/pumps as treatment (repeat of inhaler) Do not accept loosen tight clothing = Vg Do not accept breathing techniques/instructions = Vague

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5. (a)	<p><b>Three marks for three from:</b></p> <p><b>(Symptoms)</b></p> <ol style="list-style-type: none"> <li>1. Tingling/pins and needles</li> <li>2. (Sudden) muscle stiffness</li> <li>3. Spasms/twitching on one side of the body/shaking/eyes rolling or loss of control</li> <li>4. Loss of senses or change in senses/blurred vision / loss of consciousness or dizziness or disorientation/confusion or auras</li> <li>5. Reaction to light</li> <li>6. Not remembering / unable to communicate / slurred speech / unaware of surroundings / blank staring or not responding or vacant episode</li> <li>7. Headaches / sleepiness</li> <li>8. Lip smacking / foaming at mouth/dribbling</li> <li>9. They have a feeling events have happened before or déjà vu</li> <li>10. Sudden intense emotions</li> <li>11. Rubbing hands / fiddling with objects or fidgeting</li> </ol>	[3]	<p>Mark first three responses only.</p> <p>Do not accept: Fits/seizures/fainting Rolling on floor = vg</p>
(b)	<p><b>Two marks for two from:</b></p> <p><b>(Treatment)</b></p> <ol style="list-style-type: none"> <li>1. Call emergency services</li> <li>2. Emergency care plan</li> <li>3. Stay with them</li> <li>4. Give appropriate medication</li> <li>5. Keep them warm</li> <li>6. Support the head or cushion their head</li> <li>7. <u>When fit is over</u> put in recovery position</li> </ol>	[2]	<p>Do not accept: Keep them from harm / keep them safe / move objects or keep everyone else away from spectator (in question)</p> <p>Do not accept keep them calm/reassure for pt 3</p>

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6.	<b>(d)</b> Statements (ii) and (iv) are false	[1]	
7. (a)	<b>Two marks for:</b> <b>(Coaching techniques)</b> 1. Correct instructions / messages / information / correct technique or being observant/attentive can avoid dangerous play or avoid injury 2. (Practical example) Coaching the correct tackling technique in rugby or equivalent can avoid dangerous play	[2]	Answers must have description and example for full marks  Responses must be on reducing injury  Accept opposites as equivalents eg wrong technique can lead to injury (pt1)
7. (b)	<b>Two marks for:</b> <b>(Adhere to rule and regulations)</b> 1. Can avoid danger / injury / stay safe by following/abiding by rules 2. (Practical example) Not making a two-footed tackle in football or equivalent	[2]	Answers must have description and example for full marks Responses must be on reducing injury Accept opposites as equivalents 'Following rules' (on its own) = Vague
8.	<b>Two marks for two from:</b> <b>(a) (Protective equipment)</b> 1. Gum shield/helmet/head guard or shoulder/knee/elbow pad / box/goalkeepers gloves/boxing gloves <b>(b) (Cause injury)</b> 1. Equipment could be broken or not working properly and so not provide protection 2. Equipment doesn't fit properly, causing rubbing/friction (blisters) or not covering/protecting fully	[2]	Do not accept shin pads (in question) Do not accept examples of injury caused to others 'scrumshield = Vg for equipment  Do not accept football boots If equipment incorrect then no marks possible for (b) (b) Look for injury <u>to performer</u> rather than to other opponents/players

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9.	<p><b>Three marks for three from:</b>  <b>(Example) sub max 1</b>            1. Long distance runners or equivalent  <b>(Cause of cramp) sub max 1</b>            1. Caused by (excessive muscle) strain (of muscle contractions)/excessive exercise or overuse (of muscles) or over stretching            2. Lack of fluids / minerals / salt in body or poor hydration            3. Sudden restriction to the muscles blood supply            4. Other underlying conditions or infection/pregnancy/medication  <b>(Treatment) sub max 1</b>            1. Stretching            2. Massage            3. Medication/painkillers/quinine</p>	[3]	<p>Answer requires example, cause and treatment for max marks</p> <p>Do not accept named sports on their own eg football and tennis            Accept examples that indicate long periods of exercise eg a long tennis match            Accept marks for cause and treatment even if example is missing or incorrect            Running too much = Vg Pt1</p> <p>(Treatment) = Description of a player pushing down on leg = BOD</p>
10.	<p><b>Four marks for four from:</b>  <b>(a) (Example) 1 mark max for one from:</b>            1. Shoulder surgery or broken shoulder/collar bone or dislocated shoulder            2. Broken arm / wrist / hand/elbow            3. Sprained your shoulder/arm/wrist/elbow/hand  <b>(b) (Aid recovery) 3 marks for 3 from:</b>            1. Supports / immobilise / rests the joint/injury or holds in place the injured part/ keeps secure            2. Relieve pain            3. Reduces stress around injured part or prevents bumping/impact            4. Elevates injured part or reduces swelling            5. Promotes correct healing position or so it can heal properly or to prevent further injury</p>	[4]	<p>Do not accept fracture/dislocation/break/sprain unless linked to shoulder/arm/hand            (a) broken bone = Vg</p> <p>(b) Repair faster = vg</p>



Question	Answer	Marks	Guidance
11.	<p><b>Three marks for three from:</b></p> <p><b>(a) sub max 1</b> SALTAPS or SEE,ASK,LOOK,TOUCH,ACTIVE,PASSIVE,STRENGTH</p> <p><b>(b) (Injury type) sub max 1</b> 1. Acute or soft tissue (injury) or ligament damage</p> <p><b>(c) (Treatment) sub max 1</b> 1. RICE or apply ice or compress/bandage or elevate/lift (to the ankle)</p>	[3]	<p>Answer requires routine, type and treatment for max marks</p> <p>(a) Do not accept RICE</p> <p>(b) Do not accept 'sprained ankle' (in question) Do not accept 'internal injury' (too vague)</p> <p>(c) 'Rest' (on its own) = Vg (looking for treatment by physio) Put 'leg up' = BOD</p>
12.	<p><b>Two marks for two from:</b></p> <ol style="list-style-type: none"> <li>1. Physical defects or previous injuries (e.g. muscles weaken around an injured area) or lordosis or pelvic tilt or kyphosis or round shoulder or scoliosis or muscle imbalance</li> <li>2. Lack of exercise (e.g. lack of core muscle strength means less support or being overweight/obesity puts strain on posture)</li> <li>3. Fatigue (e.g. tired muscles will be unable to support the skeleton properly) or <u>prolonged</u> carrying/lifting</li> <li>4. Emotional factors (e.g. having low self-esteem/lack of confidence/anxiety can influence posture)</li> <li>5. Clothing/footwear (e.g. wearing shoes with high heels can affect posture)</li> <li>6. Genetics (eg back condition/ weakness that you are born with)</li> <li>7. Age (risk of osteoporosis increases with age)</li> </ol>	[2]	<p>Do not accept sitting, standing or sleeping positions (in question)</p>

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13. (a)	<p><b>Two marks for two from:</b></p> <p><b>(Hypoglycaemia)</b></p> <ol style="list-style-type: none"> <li>1. Low blood glucose/sugar levels (fall below 4 mmol/L (72mg/dL)</li> <li>2. Sweating</li> <li>3. Fatigue/weakness/tired/headaches/drowsy</li> <li>4. Feeling dizzy or nausea or sickness</li> <li>5. Being pale</li> <li>6. Feeling hungry</li> <li>7. A higher heart rate than usual</li> <li>8. Blurred vision</li> <li>9. Confusion</li> <li>10. Shaking or convulsions</li> <li>11. Loss of consciousness / fainting</li> </ol>	[2]	Do not accept thirsty/needing the toilet a lot / weight loss (symptoms of hyperglycaemia)
13. (b)	<p><b>Two marks for two from:</b></p> <p><b>(Responses)</b></p> <ol style="list-style-type: none"> <li>1. Eating or drinking glucose tablets or sweets or sugary fizzy drinks or fruit juice or eat/take sugar.</li> <li>2. Take glucose gel (smear inside cheeks)</li> <li>3. A blood test should be taken (after 15-20 minutes to check whether blood glucose levels have recovered).</li> <li>4. Call an ambulance or call 999</li> <li>5. Take glucogen (hormone) (if severe)</li> </ol>	[2]	<p>If more info required for different responses:  <a href="http://www.diabetes.co.uk/diabetes-medication/glucagon-injection-kit.html">http://www.diabetes.co.uk/diabetes-medication/glucagon-injection-kit.html</a></p> <p>Do not accept 'take medication' or take steroids</p>

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14. (a)	<p><b>Three marks for three from:</b> <b>(Psychological) sub max 3</b></p> <ol style="list-style-type: none"> <li>1. Heightens/control arousal levels/'get in the zone'/settle nerves or gets you in the right frame of mind/mentally prepares/increase aggression/calming down or reduces worry</li> <li>2. Concentration/focus /selective attention</li> <li>3. Motivation/drive</li> <li>4. Mental rehearsal or know what to do</li> <li>5. Raises/increases confidence / self-esteem</li> <li>6. Reduce reaction time</li> </ol>	<b>[3]</b>	<p>Do not accept physical benefits Do not accept prepare for the game 'Gets into right mind set' = Vg</p>
(b)	<p><b>(Example) sub max 1</b></p> <ol style="list-style-type: none"> <li>1. Visualise/picture set routines in free hits or dribbling past players or equivalent or go through tactics / short corner drills before a hockey competition etc</li> </ol>	<b>[1]</b>	<p>Must use a practical example / situation / scenario <b>related to hockey</b> to score the mark Accept equivalent examples</p>
(c)	<p><b>Three marks for three from:</b> <b>(Environmental factors) sub max 3</b></p> <ol style="list-style-type: none"> <li>1. Weather – if too wet/windy <b>then</b> cool down for hockey may need to take place indoors</li> <li>2. Temperature - if too cold/hot <b>then</b> cool down may need to take place indoors or in the shade</li> <li>3. Available facilities – equipment/resources available or whether an indoor hockey area is available or availability of an Astroturf or enough hockey sticks/balls/cones etc are available</li> <li>4. Available space / suitable surface / area – if plenty of space then cool down may consist of longer jogs or a variety of cool down stations or if no space <b>then</b> simple jogging on the spot or stretching</li> <li>5. Surrounding area or anything else that may cause injury or influence cool down e.g. fencing around the hockey pitch</li> </ol>	<b>[3]</b>	<p>Each point made must have an associated practical example or practical scenario/application to score a mark</p> <p>BOD if practical scenario is implicit eg fencing around hockey pitch can cause an injury = pt 5</p>

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15.	<p><b><u>Levels of response</u></b></p> <p><b>Level 3 (7-8 marks)</b> The response shows a detailed understanding of overuse injuries. Candidates make many valid points, most of which include causes, symptoms <b>and</b> treatments. Candidates are likely to give examples from a range of different sports.</p> <p>The answer is well structured and uses appropriate terminology. There are few if any errors in grammar, punctuation and spelling.</p> <p><b>Level 2 (4-6 marks)</b> The response shows a good understanding of overuse injuries. Candidates make many points, many of which include causes, symptoms <b>and</b> treatments. Candidates are likely to give examples from different sports.</p> <p>Sentences for the most part are relevant and coherent. There are occasional errors in grammar, punctuation and spelling.</p> <p><b>Level 1 (1-3 marks)</b> The response shows a limited understanding of overuse injuries. Candidates make some points, which include may include some but not all of causes, symptoms and treatments. Candidates give few if any examples from sports.</p> <p>Sentences have limited coherence and structure. Errors in grammar, punctuation and spelling may be noticeable and intrusive.</p> <p><b>0 = nil response or no response worthy of credit.</b></p>	[8]	<p>Differentiating between levels look for:</p> <p><b>MB3:</b></p> <ul style="list-style-type: none"> <li>• <i>Most overuse injuries are clearly developed</i></li> <li>• <i>At the top of this level injuries (three +) are named with range of causes and clear symptoms and treatment described</i></li> <li>• <i>Very few QWC errors</i></li> </ul> <p><b>MB2:</b></p> <ul style="list-style-type: none"> <li>• <i>Some description rather than identification</i></li> <li>• <i>May be two or more developed points for a range of examples and causes</i></li> <li>• <i>At least one full description (example, cause symptom and treatment) of an overuse injury</i></li> <li>• <i>At the top of this level at least two full descriptions (example, cause symptom and treatment) of different overuse injuries</i></li> </ul> <p><b>MB1:</b></p> <ul style="list-style-type: none"> <li>• <i>Simple identification rather than description</i></li> <li>• <i>Most of response on examples and causes rather than symptoms and treatment (or treatment may be simple identification eg RICE)</i></li> <li>• <i>One mark for one example/cause</i></li> <li>• <i>At the top of this level more than two examples and causes</i></li> </ul>

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	<p><b><u>Indicative content</u></b></p> <p><b><u>Examples:</u></b></p> <ol style="list-style-type: none"> <li>1. Tendonitis</li> <li>2. Tennis elbow</li> <li>3. Golfer's elbow</li> <li>4. Golfer's knee</li> <li>5. Shin splints.</li> <li>6. Repetitive strain injury (RSI)</li> <li>7. Osgood-Schlatter (Disease)</li> <li>8. Runner's Knee</li> <li>9. Dancer's Hip</li> <li>10. Example of (chronic) shoulder injury/bowler's shoulder</li> </ol> <p><b><u>Symptoms</u></b></p> <ol style="list-style-type: none"> <li>1. Pain</li> <li>2. Swelling (over a period of time)</li> <li>3. Lasts a long time or keeps reoccurring</li> <li>4. Gradual loss of function or increase in weakness.</li> <li>5. Warmth to the touch</li> <li>6. Redness</li> <li>7. Impaired function of the part.</li> </ol> <p><b><u>Causes</u></b></p> <ol style="list-style-type: none"> <li>1. Chronic injuries</li> <li>2. Caused by continuous stress/movement on an area or too much activity or not enough rest</li> <li>3. These injuries tend to develop gradually over a period of time</li> <li>4. Damages muscles/tendons/bones/joints over time</li> <li>5. Incorrect training programmes or training beyond capabilities</li> </ol>		<p><b>Always indicate the level at the end of the response.</b></p>

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	<p>6. Lack of appropriate muscle strength or endurance  7. Poor core stability  8. Muscle imbalance (strong tight muscles versus weak stretched muscles)  9. Inflexibility  10. Malalignment or Biomechanical issues (e.g. flat foot, squinting patellae)  11. Faulty technique  12. Incorrect equipment.</p> <p><b><u>Treatment</u></b></p> <p>1. R – Rest the injured part/stop the activity/don't put your weight on it  - use crutches(legs) use splints (arms)/putting their feet up or continued activity can cause further harm/injury  2. I – Apply ice  - 15/20 mins every 2/3 hours or at regular intervals or using an ice pack/pack of frozen peas or to stop internal bleeding/contracts blood vessels to stop swelling/to relieve pain  3. C – Compress  - bandage the injured part (not too tight) or to prevent swelling/movement or to stop/control bleeding or to support (the limb) or to protect  4. E – Elevate  - above level of heart/keep limb up/put leg on chair or to reduce swelling/pain/direct blood flow away.  5. Stretching  6. Massage  7. Taping  8. Bandaging  9. Physiotherapist  10. Pain killers / medication  11. Heat packs</p>		

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