



## **Cambridge National**

## **Sport Science**

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

Level 1/Level 2

## **Mark Scheme for January 2015**

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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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Question		Answer/Indicative content	Mark	Guidance
1	(a)	<p><b>One mark for:</b></p> <ol style="list-style-type: none"> <li>1. Dangerous activities (some activities more dangerous than others).</li> <li>2. Contact sports (may have more risk of injury than non-contact - contusions/concussion could occur)</li> <li>3. Repetitive activities (may cause overuse injuries or strains and sprains may occur from a non-contact sport such as running)</li> <li>4. A description of the activity eg a hard rugby tackle</li> </ol>	1	<p>Allow examples as a description. Must be a description Do not allow single word answers <b>Look for the types of activity rather than the performer</b></p> <ul style="list-style-type: none"> <li>- Long nails = vg</li> <li>- Not wearing a gum shield = vg</li> <li>- Not paying attention = vg</li> </ul> <p><b>Accept:</b></p> <ul style="list-style-type: none"> <li>- Contact sport is dangerous = 1 mark</li> <li>- If a contact sport (then injury can happen) = BOD 1 mark</li> <li>- Dangerous activities or how rough the activity is (BOD)= 1 mark</li> <li>- Repetitive activities = 1 mark</li> <li>- A description of the activity that might cause injury eg if a rugby tackle is hard = 1 mark</li> </ul> <p><b>Do not accept just the activity:</b></p> <ul style="list-style-type: none"> <li>- A rugby tackle = vg</li> <li>- Physical activity = vg</li> <li>- Doing the wrong routine or the wrong technique = vg</li> <li>- Football / rugby etc (name of activity on its own)= vg</li> <li>- No warm up = vg</li> </ul>

Question	Answer/Indicative content	Mark	Guidance
(b)	<p><b>One mark for:</b></p> <ol style="list-style-type: none"> <li>1. Wrong instructions / messages / information / wrong technique can lead to dangerous play or lead to injury</li> <li>2. Effective communication by a coach can reduce risk as participants know how to perform the skill/routine etc...</li> <li>3. Poor communication - will not know the rules / cause non-adherence to rules and regulations that are there to ensure safety (e.g. not raising the hockey stick above the head/no 2 footed challenges in football/not doing a high tackle in rugby).</li> <li>4. Correct information that is communicated can lead to following the rules / safety requirements.</li> <li>5. The coach may be too quiet / not clear or you may not hear the instructions which might lead to dangerous play</li> </ol>	1	<p>Allow examples as a description. Must be a description Do not allow single word answers</p> <p>Do not accept:</p> <ul style="list-style-type: none"> <li>- Teach the wrong things = vg</li> <li>- Not telling instructions = vg</li> <li>- Poor coaching = vg</li> <li>- Coach telling you the right things but you ignore them = vg</li> </ul> <p>Accept:</p> <ul style="list-style-type: none"> <li>- Coach the wrong type of stretch = BOD</li> <li>- Giving the wrong instructions that leads to injury = 1 mark</li> </ul>
(c)	<p><b>One mark for:</b></p> <ol style="list-style-type: none"> <li>1. Playing surface is wet/frozen/muddy and therefore is a slip hazard.</li> <li>2. Pot holes / uneven ground can cause trips / falls</li> <li>3. Litter/ broken glass / needles can cause cuts/abrasions</li> </ol>	1	<p>Allow examples as a description. Must be a description Do not allow single word answers Do not accept:</p> <ul style="list-style-type: none"> <li>- Pot holes / wet ground etc without a description</li> <li>- Bad weather / surface = vg</li> <li>- Hard surface = vg</li> </ul> <p>Accept:</p> <ul style="list-style-type: none"> <li>- Rubbish can cause hazards for players = BOD</li> <li>- Concrete can cut your leg = 1 mark</li> <li>- Slippery surface = BOD</li> </ul>

Question		Answer/Indicative content	Mark	Guidance
	(d)	<p><b>One mark for:</b></p> <ol style="list-style-type: none"> <li>Participants may run into one another/ collide.</li> <li>Too rough or too aggressive or over-competitive or being silly</li> <li>Foul play by one participant against another or don't know the rules</li> <li>Different abilities / levels of experience or males and females playing together or different ages</li> </ol>	1	<p>Allow examples as a description. Must be a description Do not allow single word answers Do not accept:</p> <ul style="list-style-type: none"> <li>- Not listening/paying attention</li> </ul> <p>Accept:</p> <ul style="list-style-type: none"> <li>- Not playing to rules or not playing the same rules = BOD</li> <li>- Making a dirty tackle</li> </ul>
2	(a)	<p><b>One mark for :</b></p> <ol style="list-style-type: none"> <li>Hockey stick/ball / football studs / running spikes / cricket bat / ice skates / helmet</li> <li>Football / rugby /hockey / netball posts</li> <li>Ball / puck</li> </ol>	1	<p>Give credit for other suitable examples <b>Mark the first example only</b> Do not accept:</p> <ul style="list-style-type: none"> <li>- Unnecessary equipment = vg</li> <li>- Football boots = vg</li> <li>- Pads = vg</li> </ul>
	(b) (i)	<p><b>One mark for :</b></p> <ol style="list-style-type: none"> <li>Gum shield/goggles/helmet/scrum cap/shin pads/box/shoulder pads/knee pads/gloves/post protectors/mats</li> </ol>	1	<p>Give credit for other suitable examples <b>Mark the first example only</b> Do not accept:</p> <ul style="list-style-type: none"> <li>- Cones = vg</li> <li>- Football boots = vg</li> </ul>
	(b) (ii)	<p><b>One mark for :</b></p> <ol style="list-style-type: none"> <li>Padded clothing / shoulder pads / chest guard / body armour</li> <li>Boots (football/hockey etc) or studs/spikes/trainers</li> <li>Gloves</li> <li>Socks</li> </ol>	1	<p>Give credit for other suitable examples <b>Mark the first example only</b> Do not accept:</p> <ul style="list-style-type: none"> <li>- Hat = vg</li> <li>- Knee pads</li> <li>- Pads(cricket/football/boxing)</li> <li>- Cricket box / cup</li> <li>- Helmet</li> </ul>

Question		Answer/Indicative content	Mark	Guidance
3		<p><b>Two marks for two from:</b></p> <ol style="list-style-type: none"> <li>1. Increased risk of dehydration if hot/humid/sunny which can lead to a decrease in performance/fainting and collapse in extreme situations</li> <li>2. (Risk of) sunstroke/heat stroke/burning if hot/sunny</li> <li>3. (Risk of) accident/collision if sun/fog/hailstones gets in performers eyes due to participants running into one another or into an object such as a goal post.</li> <li>4. (Risk of) hypothermia if weather very cold</li> <li>5. Increased risk of muscle injuries in very cold weather as harder to get muscles warmed up leading to muscle strains and tears</li> <li>6. Could slip or twist on playing surface/terrain if wet/icy/boggy causing bruising/cuts and grazes/concussion/broken bones</li> <li>7. Hard ground (e.g. frozen or baked dry) could cause injury if you fall on it.</li> <li>8. (Extreme) wind / gales may be more dangerous, (e.g. rock climbing, sailing).</li> <li>9. Lightning dangerous for personal safety</li> </ol>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>Accept dehydration / sunstroke / hypothermia etc as injuries</p> <p>Do not accept:</p> <ul style="list-style-type: none"> <li>- Rained so pitch in bad condition = vg ( no description of how weather can influence risk of injury)</li> <li>- Sun gets in your eyes = vg</li> </ul>
4	(a)	<p><b>One mark for:</b></p> <ol style="list-style-type: none"> <li>1. Poor nutrition can affect concentration and focus or a performer may become distracted (which might cause them to use poor &amp; dangerous technique/mistime a challenge or tackle).</li> <li>2. A poor diet or a diet/nutrition lacking in enough calories/carbohydrates may cause a performer to be too tired/too lacking in energy (to complete a session or could lead to fainting/illness)</li> <li>3. Too much fat / poor nutrition can lead to obesity / overweight (that might lead to more injuries).</li> <li>4. Lack of minerals or vitamins could lead to weak bones / muscles (that could lead to more injuries)</li> <li>5. Lack of water leads to dehydration/weakness</li> </ol>	<p>1</p>	<p>Do not accept:</p> <ul style="list-style-type: none"> <li>- Cramp = vg</li> <li>- Eat too much / unhealthy eating makes you fat = vg</li> </ul>

Question		Answer/Indicative content	Mark	Guidance
	(b)	<p><b>One mark for:</b></p> <ol style="list-style-type: none"> <li>1. Fatigue through lack of sleep (– poor judgement and decisions made – inappropriate/dangerous play or poor reaction times).</li> <li>2. May also affect focus and concentration or poor /incorrect decision making(causing poor technique and injuries such as strains and sprains to occur).</li> <li>3. Might affect motivation (may lead to injury by pulling out of a tackle)</li> <li>4. Lack of sleep might cause irritability / aggression</li> </ol>	1	<p>Do not accept:</p> <ul style="list-style-type: none"> <li>- Having enough sleep enables you to concentrate / be aware of dangers / be more motivated</li> </ul>
	(c)	<p><b>One mark for:</b></p> <ol style="list-style-type: none"> <li>1. If a person is inflexible they are more likely to strain/tear/pull/sprain muscles/tendons/ligaments</li> <li>2. Poor flexibility may cause a performer to use poor technique which could then lead to an injury in the longer term.</li> </ol>	1	<p>Do not accept:</p> <ul style="list-style-type: none"> <li>- Poor flexibility leads to cramp = vg</li> <li>- May not have stretched...more likely to pull something = vg</li> <li>- If no warm up then you might pull a muscle = vg</li> </ul>
5		<p><b>One mark for:</b></p> <p>b - Wet playing surface</p>	1	
6		<p><b>Three marks for three of:</b></p> <p>Hockey/Rugby/Boxing/Cage Fighting/UFC/Karate/Martial Arts/Ice Hockey/Lacrosse/American Football/Gaelic Football/Baseball/Softball/Gymnastics/Judo</p>	3	<p>Look for three <b>different</b> sports. Accept other relevant sports</p>

Question		Answer/Indicative content	Mark	Guidance
7	(a)	<p><b>(Size of group)</b>  <b>One mark for each correct explanation, one mark for a suitable example:</b>            Injury can be caused by the space being too small / or group too big or crowded for the number of people in the group (people bumping into each other / equipment / surrounding area or group too large so cannot hear instructions / can't concentrate / focus on task  <b>E.g.</b> Example: When warming up on a badminton court with the racquet – too many people on a single badminton court may lead to someone being hit in the face by the racquet.</p>	1  1	One mark for an appropriate example One mark for a suitable explanation Do not accept: - Size of group is too big = vg (need for space available)
	(b)	<p><b>(Age)</b>  <b>One mark for each correct explanation, one mark for a suitable example:</b>            The activity needs to be appropriate to the age of the participants and in particular sports (eg contact) or the same age groups should be competing against each other.  <b>E.g.</b> Example: children playing contact rugby against adults.</p>	1  1	One mark for an appropriate example One mark for a suitable explanation
	(c)	<p><b>(Fitness)</b>  <b>One mark for each correct explanation, one mark for a suitable example:</b>            An individual needs to be set a warm up/cool down that is at the right level for their fitness.  <b>E.g.</b> Example: If a person is overweight and doesn't exercise a warm up pulse raiser should not include running that is too fast for them, walking/faster walk may be more suitable</p>	1  1	One mark for an appropriate example One mark for a suitable explanation



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8		<b>One mark for each example of how it might occur and one mark for acute or chronic correctly identified:</b>		8	<p><b>For Fracture</b> - Accept 'chronic' if stress fracture given as answer Accept:</p> <ul style="list-style-type: none"> <li>- Fracture – Running and falling on a stone</li> <li>- Concussion - Climbing and falling</li> <li>- Abrasion – fall over and graze your leg</li> <li>- Tendonitis – too much running</li> </ul> <p>Do not accept:</p> <ul style="list-style-type: none"> <li>- Concussion – bad tackle = vg</li> <li>- Abrasions – falling over / jumping and cutting themselves</li> <li>- Tendonitis – stress = vg</li> </ul>	
		<b>Injury type</b>	<b>How?</b>			<b>Chronic or acute</b>
		Fracture	being kicked/(poorly) tackled/falling awkwardly			Acute
		Concussion	Bang to the head (from an opponent's elbow, head or foot/colliding with a post)/falling over and hitting the head on the ground			Acute
		Abrasions	Falling over onto a hard/rough surface/object			Acute
		Tendonitis	(Achilles/elbow/shoulder/hip) – poor technique or overuse			Chronic
9		<b>Two marks for an explanation from the following:</b>		1	<p>Accept:</p> <ul style="list-style-type: none"> <li>- (Point 1) Psyching or pumping up = 1 mark</li> </ul>	
		1. Heightens/controls arousal levels/'get in the zone'/settles nerves/calms you down/reduces anxiety				1
		2. Improves concentration/focus (selective attention)				1
		3. Increases motivation/drive				1
		4. Mental rehearsal or mental preparation/part of their routine/think through parts of their performance/imagery/visualise or think through the game				1
		5. Increases confidence.				

Question	Answer/Indicative content	Mark	Guidance
10	<b>Two marks from two of:</b> 1. (Heat) pads 2. (Deep heat) cream 3. Hot water bottles 4. (Heat) lamps 5. (Heat) blankets (can be used to treat hypothermia) 6. Massage/friction can be used as a heat treatment (to improve rehabilitation) 7. Hot tub / hot bath	1 1 1 1 1 1	Do not accept: - Sauna - Heat compression = vg
11	<b>One mark for correct name and one mark for correct accompanying description:</b> 1. Osgood Schlatter's  2. Pain in the knee or a sports-related overuse injury in adolescents/teenagers, or occurs in some children who don't do a lot of sport but may be growing at a more rapid rate than average, or during a growth spurt, or a pulling away of the patella tendon from the tibia 3. Severs disease  4. Pain in the heel / inflammation in the heel	2	Accept other appropriate conditions/injuries  Accept description only if injury is named  Do not accept: - Abrasions / fractures / bruises  Accept phonetic misspelling of Osgood Schlatter's = BOD

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12	<p><b>Six marks for six from::</b></p> <p>R.I.C.E. – Rest, Ice, Compression, Elevation</p> <p><b>Rest –</b></p> <ol style="list-style-type: none"> <li>1. avoid regular impact upon/use of the injured limb or area / reduces pressure (on the limb) / don't put weight on it/ reduce your daily physical activity/ exercise / stop the activity.</li> <li>2. To prevent further injury.</li> </ol> <p><b>Ice –</b></p> <ol style="list-style-type: none"> <li>3. apply an ice pack/ice/frozen peas to the affected area (for 10–30 minutes).</li> <li>4. This reduces swelling/pain</li> </ol> <p><b>Compression –</b></p> <ol style="list-style-type: none"> <li>5. use (elastic) (compression) bandages/tape</li> <li>6. to reduce swelling / gives support to the injured area.</li> </ol> <p><b>Elevation –</b></p> <ol style="list-style-type: none"> <li>7. keep the injured leg, knee, arm, elbow or wrist raised (above the level of the heart).</li> <li>8. This reduces blood flow to the injured area</li> </ol>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>1 mark for correct identification of the words which make up the acronym.</p> <p>Accept:</p> <p>- (Ice) calms any swelling = BOD</p>

Question		Answer/Indicative content	Mark	Guidance
13	(a)	<p><b>Two marks for two of the following:</b></p> <ol style="list-style-type: none"> <li>1. (Type 2 is) influenced by lifestyle</li> <li>2. Poor diet / eating too much sugary food</li> <li>3. Lack of exercise</li> <li>4. Overweight or obesity</li> </ol>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>Do not accept:</p> <ul style="list-style-type: none"> <li>- Not enough insulin</li> <li>- Overeating = vg</li> </ul>
	(b)	<p><b>Two marks for two of the following:</b></p> <ol style="list-style-type: none"> <li>1. Monitoring of blood sugar levels (through blood tests)</li> <li>2. Provide/inject insulin (if the blood sugar is too high)</li> <li>3. Give the individual sugar if blood sugar is too low (e.g. fruit juice or sweets)</li> </ol>	<p>1</p> <p>1</p> <p>1</p>	<p>Do not accept one word answers as description.</p> <p>Do not accept:</p> <ul style="list-style-type: none"> <li>- Give sugar = vg</li> <li>- Dial 999 / reassure = vg (looking for treatment)</li> <li>- Good diet = vg</li> <li>- Drink water = vg</li> <li>- Insulin dependent (on its own) = vg</li> </ul>



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15	<p><b>Levels of response:</b></p> <p><b>0 = nil response or response not worthy of credit</b></p> <p><b>MB1 (1 – 3 marks)</b></p> <ul style="list-style-type: none"> <li>- The response shows a limited understanding of the key components of a cool down or the benefits.</li> <li>- Candidates provide simple bullet points and limited descriptions of a few points from the indicative content.</li> <li>- No attempt is made at evaluation and there may be some irrelevant material in the answer.</li> <li>- There is little or no use of technical vocabulary and sentences have limited coherence and structure.</li> <li>- Errors in grammar, punctuation and spelling may be noticeable and intrusive.</li> </ul> <p><b>MB2 (4 – 6 marks)</b></p> <ul style="list-style-type: none"> <li>- The response shows an understanding of the key components of a cool down and the physical benefits a cool down can bring.</li> <li>- Some attempt at evaluation is made, which may include the use of one or more of the developed points in order to show understanding of the topic area.</li> <li>- There is some use of technical vocabulary and sentences for the most part are relevant and are coherent.</li> <li>- There are occasional errors in grammar, punctuation and spelling.</li> </ul> <p><b>MB3 (7 - 8 marks)</b></p> <ul style="list-style-type: none"> <li>- The response shows a detailed understanding with detailed discussion.</li> <li>- Candidates make many points from the indicative content, several of which may be developed, leading to an evaluation being clearly made.</li> </ul>	8	<p><i>In differentiating between levels look for:</i></p> <p><i>MB1: -Simple description rather than explanation.</i></p> <p><i>More information on the components rather than benefits (mainly heart rate and temperature)</i></p> <p><i>MB2: - May be one or more developed points</i></p> <ul style="list-style-type: none"> <li>- <i>Some explanation</i></li> <li>- <i>Shows understanding of <b>gradual</b> change of system</i></li> <li>- <i>Benefits more than merely related to heart rate and temperature</i></li> </ul> <p><i>MB3: - Points are developed / expanded in more than one area of the answer</i></p> <ul style="list-style-type: none"> <li>- <i>Clear explanations</i></li> <li>- <i>Includes gradual changes</i></li> <li>- <i>Very few QWC errors</i></li> </ul> <p><b><i>Indicate the level at the end of the response</i></b></p>

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	<ul style="list-style-type: none"> <li>- The answer is well structured and uses appropriate terminology and technical vocabulary.</li> <li>- There are few if any errors in grammar, punctuation and spelling.</li> </ul> <p><b>Indicative Content</b></p> <p><u>Components of a cool down:</u></p> <ul style="list-style-type: none"> <li>-<b>pulse lowering</b>, i.e. exercises which gradually lower heart rate and reduce temperature (e.g. easy movements, light running, stretching)</li> <li>-<b>stretching</b>, i.e. maintenance stretches, static stretches (e.g. hamstring stretches)</li> </ul> <p><u>Physical benefits of a cool down</u></p> <ul style="list-style-type: none"> <li>-helping the body's transition back to a resting state</li> <li>-gradually lower heart rate</li> <li>-gradually lower temperature</li> <li>-circulate blood and oxygen</li> <li>-gradually reduce breathing rate</li> <li>-remove waste products such as lactic acid</li> <li>-reduce the risk of muscle soreness and stiffness</li> <li>-reduces the risk of blood pooling</li> <li>-reduces risk of damage to joints</li> <li>-aid recovery by stretching muscles, i.e. lengthening and strengthening muscles for next work-out/use</li> </ul>		

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