

Cambridge National

Sport Science

R041/01: Reducing the risk of sports injuries

Level 1/Level 2

Mark Scheme for January 2021

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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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1. Annotations in RM3

The following annotations are available:

- ✓ = correct response
- ✗ = incorrect response
- BOD** = Benefit of doubt
- BP** = Blank Page
- IRRL** = Irrelevant
- REP** = Repetition
- SEEN** = Noted but no credit given / indicates sub-max reached where relevant
- TV** = Vague
- ?** = Unclear
- L1** = Level 1
- L2** = Level 2
- L3** = Level 3

Highlighting is also available to highlight any particular points on the script.

[The following questions should be annotated with ticks to show where marks have been awarded in the body of the text question 1-14]

Question		Answer	Mark	Guidance
1		One mark for: False	[1]	
2		One mark for: (d) Abrasion	[1]	
3	(a)	One mark for: 1. Protects / stops them getting hit / struck in the head / face or suffering concussion 2. Absorbs impact of collision to the brain / skull	[1]	Accept: Equivalent responses that describe 'how a helmet helps prevent' – links protecting head <u>from</u> impact A helmet can help avoid getting hit by a ball = TV Stops them from having a head injury = TV So you don't get hit in the head = 1 Protects from concussion = 1
	(b)	One mark for one of: Goalkeeper: 1. Can be broken / faulty 2. Cause rubbing / friction 3. Not fitted or worn properly / loose fitting / too tight or not cover the head fully One mark for one of: Other players: 1. Can be thrown / hit an opponent (in ice hockey) 2. Opponent runs / collides into the player wearing the helmet / clashing or banging of heads	[1] [1]	Accept: GK - Not made correctly or no cushioning inside helmet = BOD point 1 Impair vision = BOD GK and other players Do not accept: Drop it on their foot and cause contusion = TV Falls off and someone falls over it = TV

	(c)	<p>One mark for:</p> <p>American football / motor sports / F1 / cricket / baseball / cycling / rock climbing / skiing / horse riding / snowboarding</p>	[1]	<p>Do not accept: Hockey or ice hockey (in question) or boxing or rugby (these sports use soft headgear)</p> <p>Accept: Any suitable sport or physical activity that uses a <u>hard</u> helmet.</p>
4		<p>Four marks for four of:</p> <p>Two marks sub-max:</p> <ol style="list-style-type: none"> Nutrition / diet Fatigued or tired / weak or loss of focus or concentration or no energy to move (quick) or poor decisions / judgments made / fainting <p>Two marks sub-max:</p> <ol style="list-style-type: none"> Sleep <u>Enough</u> / <u>plenty</u> of sleep so focused / able to concentrate / good decision making <u>Not</u> enough / <u>poor</u> sleep so tired or fatigued / poor concentration / poor decision making 	[4]	<p>Do not accept: Any other individual variable eg physical preparation and overtraining = TV</p> <p>Accept: Valid responses for influence of injury even if individual variable is too vague eg not enough rest (Individual variable = TV) so they will get tired (influence = 1)</p> <p>Lack of protein can inhibit recovery = TV point 2 Not enough food so won't be 100% / ready = TV for point 2</p> <p>If response refers to amount of sleep being plenty or not enough for individual variable then take this into account for the influence injury response if amount of sleep missing eg Individual variable = not enough sleep = 1 Influence injury = lack concentration = 1</p>
5	(a)	<p>One mark for:</p> <p>Falling over / tripping up / slipping over / awkward or poor landing / going over on ankle / running into the post / running into another player / stamped on</p>	[1]	<p>Do Not Accept: One word responses = TV or tackling (in question)</p> <p>Accept: Responses specific to rugby terminology e.g. Scrum collapsing</p> <p>Look for the outcome not just the skill – jumping or scrum on it's own = TV</p> <p>Collision into players = BOD</p>

	(b)		One mark for: Bone has pierced through skin / bone sticking out of the skin	[1]	Do not accept: Blood or pain (in question) Accept: Visible bone / can see the bone / bone sticking out = BOD Broken bones = TV
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Question		Answer	Mark	Guidance
6	(a)	One mark for: Asthma	[1]	Accept: Phonetic spellings of asthma
	(b)	Three marks for three of: 1. Wheezing / whistling noises 2. Tight chest / chest pains 3. Difficulty / heavy breathing or short of breath / breathless / breathing faster 4. Raised heart rate 5. Drowsiness / dizziness / light headed / confusion 6. Pale / clammy skin 7. Blue lips / fingers 8. Fainting	[3]	Mark first responses only. Do not accept: Coughing (in question) Accept: Panic / anxiety = BOD
	(c)	Two marks for two of: 1. Stay / keep calm / relaxed 2. Reassurance 3. Sit them upright / don't lie them down 4. Encourage them to take slow / steady or deep breaths / control breathing / get their breath / 5. Steroids / (prescribed) medication or tablets / LTRAs 6. Move away from trigger 7. Give a hot / caffeinated beverage	[2]	Do not accept: Inhaler / pump or 999 / emergency services (in question) Accept: Sit them down = BOD Using paper bag for breathing = BOD point 4 Aid / help breathing = BOD point 4 Try to calm the participants breathing = one mark only - point 4 (try to calm is linked to breathing and no additional mark for point 1)

	(d)	<p>One mark for:</p> <p>(Picture of) insulin (pump) / sugar / sweet / bottle of fizzy drink / glucose (tablets)</p>	<p>[1]</p>	<p>Mark first response only (responses to be linked to an item)</p> <p>Blood sugar check = TV</p> <p>Accept: Reference to or eggs of healthy food / exercise = 1</p>
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Question		Answer	Mark	Guidance
7	(a)	<p>Two marks for two of:</p> <p>1. Lengthening / strengthening muscles for next day / work out / use or return muscle back to normal length / resting state</p> <p>2. Maintains or improves flexibility</p> <p>3. <u>Reduces</u> the risk of (muscle) stiffness / soreness / tightness / cramp / pain / injury / DOMS / aches or eases tension</p> <p>4. <u>Removes</u> waste products / lactic acid (from muscles)</p> <p>5. Helps prevent blood pooling</p>	[2]	<p>Do not accept: Increase recovery = TV</p> <p>Loosen muscles = TV</p> <p>Prevents lactic acid build up = TV (needs to be removes / breaks down or equivalent)</p> <p>Relaxes body / muscles = TV</p> <p>Reference to physical benefits that are linked to pulse lowering = TV</p> <p>Accept: Opposites eg you don't do a cool down you have more chance of getting injured</p>
	(b)	<p>One mark for:</p> <p>Maintenance / static / passive (stretching)</p>	[1]	<p>Do not accept: Examples of muscle stretches eg hamstring = TV</p>
	(c)	<p>One mark for:</p> <p>1. Too wet / hot / cold or poor weather conditions so cool down may need to take place indoors or in the shade or cool down can become more dangerous / slippy / increase risk of injury / illness / dehydration / sunstroke / heatstroke</p>	[1]	<p>Only accept responses linked with weather</p> <p>Do not accept:</p> <p>Too hot or wet or any weather condition (on it's own) = TV</p> <p>Reference to surface on it's own = TV</p> <p>Risk of slipping = TV without reference to weather</p>

8	(a)	<p>One mark for:</p> <p>Fracture / cut / abrasion / bruise or contusion / sprain / strain / concussion / dislocation / cramp</p>	[1]	<p>Accept:</p> <p>Twisted / rolled ankle / pulled muscle = BOD Broken bones / wrist / arm = BOD Soft tissue injury = BOD</p>
	(b)	<p>One mark for:</p> <p>Landing awkwardly or hard / collision (with equipment) / falling (off equipment) / overstretching / tripping up</p>	[1]	<p>Example must link to named injury e.g. concussion and running = TV but sprain and running = 1</p> <p>If a candidate has given a chronic injury for 8 (a) then their response for 8 (b) can be credited if they give a correct example of how that chronic injury may occur in gymnastics eg repetitive sequence work</p> <p>E.g. Shin splints is incorrect for 8 (a) and no mark but if an example of repetitive training given for 8 (b) then a mark can be credited</p>

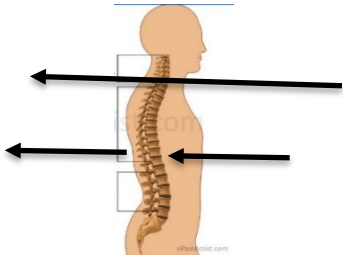
Question		Answer	Mark	Guidance
9	(a)	<p>Four marks for four of:</p> <p>(i) Pulse / heart raiser (ii) Mobility (iii) Stretching (iv) Diving / tumble turns / front crawl</p>	[4]	<p>Mark first response only.</p> <p>Accept: Any recognised swimming strokes (iv) Strokes / leg or arm technique = BOD (iv)</p> <p>Do not accept: (iv) Responses must relate to swimming only swimming lengths / laps / arm movement = TV swimming backwards = TV</p>
	(b)	<p>One mark for:</p> <p>(Exercises that involve) change of speed <u>and</u> direction</p>	[1]	<p>Do not accept: Change of speed <u>or</u> direction = TV (unless supported with valid eg = BOD)</p> <p>Accept: Moving quickly and changing direction = TV (suggests all one speed) but if response gives eg of dribbling in and out of cones = BOD</p>

10	(a)	<p>Four marks for four of:</p> <p>1. Type of activity:</p> <ul style="list-style-type: none"> e.g Football is a contact sport <p>2. Coaching / supervision:</p> <ul style="list-style-type: none"> Poor / incorrect coaching techniques / a coach telling the GK to kick with the wrong technique Poor supervision from coach / a coach not paying attention to the game Ineffective communication from coach / a coach being too quiet in their safety instructions during a corner Importance of adhering to rules and regulations / GK tackling with two feet <p>3. Environmental factors:</p> <ul style="list-style-type: none"> (Weather) sun or fog in goalkeepers eyes and collide with posts or too hot causing sunstroke / dehydration Poor playing surface / too wet / slippy / uneven or holes / litter on pitch Dangerous performance area / surrounding area of pitch / spectators / colliding with advertising boards / fence <p>4. Equipment:</p> <ul style="list-style-type: none"> Protective / performance equipment faulty / not wearing or wearing broken shin pads or being hit by / speed of the ball / running into goalpost / goal collapsing Incorrect clothing / footwear not suitable for playing surface / wearing studs on astroturf <p>5. Safety hazards:</p> <ul style="list-style-type: none"> Risk assessments of ground / safety checks of players / emergency action plan not in place in case of injury to player / lack of or no checks carried out before match 	<p>Do not accept: Reference to other players (in question) or responses without practical example = TV</p> <p>Accept: References to pitch / ball / equipment / match / coach / rules / skills / technique / boots / gloves / activity / sport / goal etc as reference to practical examples</p> <p>Accept: Opposites linked to preventing injury eg wearing studded boots helps prevent slipping</p> <p>Accept: Only accept examples linking to other players <u>if clearly linked</u> with other extrinsic factors (NOT other players) e.g. a coach telling another player to do a dangerous tackle on the GK can be credited under coaching.</p> <p>Other players not playing to the rules = TV (unless linked with coaching / safety hazard)</p> <p>Accept: <u>Too</u> hot / cold / wet = BOD Environmental factor - weather</p> <p>Litter = TV Environment - surface Litter / faeces on pitch = 1 (pitch = practical eg)</p> <p>[4]</p>
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	(b)	(i)	One mark for: Active		Mark first responses only.
		(ii)	One mark for: Strength	[2]	

Question		Answer	Mark	Guidance
11	(a)	<p>One mark for:</p> <p>False</p>	[1]	
	(b)	<p>One mark for:</p> <p>False</p>	[1]	
	(c)	<p>One mark for:</p> <p>Plaster / bandages / anti-septic wipes</p>	[1]	<p>Mark first equipment response only</p> <p>Accept: Clean and plaster = 1 (clean is not a piece of equipment)</p>
12		<p>Two marks for two of:</p> <p>Following the identification of an error in Q12, this question will be discounted from the question paper. Please credit [2] marks for all candidates, irrespective of whether they have correctly answered the question, incorrectly answered the question, or offered no response.</p>	[2]	Use SEEN and enter two marks.
13	(a)	<p>Three marks for three of:</p> <ol style="list-style-type: none"> 1. Prepares (muscles) body for physical activity / exercise / game 2. Increase in temperature (of muscles) 3. Increase in flexibility / elasticity / pliability (of muscles) or <u>reduces</u> stiffness (before exercise) 4. Increase in speed / strength of (muscular) contractions / quicker movements 5. <u>Reduced</u> chance of (muscle) injury 6. Delay onset of lactic acid (building up in muscles) / work for longer 	[3]	<p>Do not accept: Increase heart rate which then delivers more blood and oxygen to the muscles (in question) or any responses that don't relate to muscular benefits</p> <p>Do not accept: One word answers Warm muscles up = TV Don't injure or stops / prevents injury = TV Point 5</p> <p>Accept: Stretches the muscles = BOD</p>

	(b)	<p>Three marks for three of:</p> <ol style="list-style-type: none"> 1. <u>Increase</u> motivation or the player will be more determined / committed / have more self-belief / competitive / drive 2. Use of mental rehearsal / mentally prepared or ready or the player will visualise themselves / imagery helps make the correct decisions 3. <u>Increases</u> confidence / increase positive thoughts or decrease negative thoughts or reduces nerves / worry / stress / anxiety / calms you down 4. Reaction time is improved / quicker 5. <u>Improve</u> concentration / selective attention / focus / less distractions 	[3]	<p>Do not accept: to 'get in the zone' and control their arousal levels (in question) or control aggression = TV</p> <p>Do not accept: One word answers eg motivation (on it's own) = TV Get the right mindset / mind in the right place = TV Pumped up = TV</p> <p>Accept: Maintain / keep as equivalent for increase / improve</p>
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Question		Answer	Mark	Guidance
14	(a)	<p>One mark for:</p> 	[1]	<p>Arrow must show location (towards the top of the spine) and direction (moving outwards from back).</p> <p>Do not accept: arrows that appear below/above the lines in MS.</p>
	(b)	<p>Four marks for four of:</p> <p><u>Poor posture:</u></p> <ol style="list-style-type: none"> 1. Lower self-esteem / lack of or low confidence / shy or is nervous / upset / worried / depressed / sad / anxious / scared 2. (Impact) Causes people to look down / hunch forward or cause round shoulder or slouch <p><u>Good posture:</u></p> <ol style="list-style-type: none"> 1. Confident/high self-esteem / happy 2. (Impact) Walking tall/standing straight/head up 	[4]	<p>Accept: opposites e.g. not slouching for impact good posture e.g. low confidence bad posture/ high confidence good posture</p> <p>Accept: One word responses e.g. slouching = BOD</p> <p>Negative /positive emotional factors = TV</p>

<p>15.</p>	<p><u>Levels of response</u></p> <p>Level 3 (7-8 marks) A comprehensive response: - shows detailed knowledge and understanding - makes many points, many of which are well developed. - is well structured and consistently uses appropriate terminology. - there are few if any errors in grammar, punctuation and spelling.</p> <p>Level 2 (4-6 marks) A competent response: - shows good knowledge and understanding. - makes some valid points a few of which may be developed. - is reasonably well structured and uses some appropriate terminology. - there are occasional errors in grammar, punctuation and spelling.</p> <p>Level 1 (1-3 marks) A basic response: - shows limited knowledge and understanding. - makes some basic points which are rarely developed. - has limited coherence and structure with little or no use of appropriate terminology. - errors in grammar, punctuation and spelling may be noticeable and intrusive.</p> <p>0 = nil response or no response worthy of credit.</p> <p><u>Indicative content</u> Candidate responses are likely to include: (relevant responses not listed should be acknowledged)</p> <p>Numbered points = knowledge / understanding Bullet points = likely to be development of knowledge</p>	<p>Differentiating between levels look for:</p> <p style="text-align: center;">MB3:</p> <ul style="list-style-type: none"> • Overuse injuries are clearly developed • At the top of this level injuries (three +) are named (for both tennis player and marathon runner) and clear symptoms and R.I.C.E. treatment clearly explained • Very few QWC errors <p style="text-align: center;">MB2:</p> <ul style="list-style-type: none"> • Some explanation • May be two or more developed points • Maybe one full description (example, symptom and some of R.I.C.E. treatment identified) of an chronic injury • At the top of this level maybe two full explanations (examples, symptoms and some development of R.I.C.E. treatment) of chronic injury for tennis player and marathon runner <p style="text-align: center;">MB1:</p> <ul style="list-style-type: none"> • Simple identification rather than explanation • Most responses are examples rather than symptoms and treatment (or treatment may be simple identification eg Rest, ice, compression and elevation) • One mark for one example/symptom/R.IC.E. identification • At the top of this level there maybe two examples with some reference to symptoms or R.I.C.E. <p>Always indicate the level at the end of the response.</p> <p style="text-align: center;">[8]</p>
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	<p><u>Marathon Runner Examples (EG):</u> Runner's Knee</p> <p><u>Tennis Player Examples (EG):</u> Tennis elbow (Chronic) shoulder / hip injury</p> <p><u>Both (EG):</u> Tendonitis Shin splints. Repetitive strain injury (RSI) / stress fractures.</p> <p><u>Symptoms</u></p> <ol style="list-style-type: none"> 1. Pain / ache / tenderness 2. Swelling (over a period of time) / inflammation 3. Lasts a long time or keeps reoccurring 4. Gradual loss of function or increase in weakness 5. Warmth to the touch 6. Redness 7. Impaired function of the part 8. Damage to connective tissue <p><u>(Development of chronic injuries):</u></p> <ul style="list-style-type: none"> • caused by overuse • continuous stress / movement on an area • too much activity or not enough rest • training on hard surfaces • (eg) repetitive serving / forehand strokes in tennis • (eg) continuous running of long distances on the road • develop gradually over a period of time • incorrect training programmes or training beyond capabilities • lack of appropriate muscle strength or endurance - find it difficult to last duration of match and tiredness alters technique • poor core stability - unable to support body upright/slouching • muscle imbalance - strong tight muscles versus weak stretched muscles 	<ul style="list-style-type: none"> • inflexibility - tennis player / runner's muscles unable to stretch as far • malalignment or Biomechanical issues - flat footed, squinting patellae of tennis player / runner • faulty technique - poor serving / running action • weight – running / playing being overweight • wearing incorrect footwear <p>Also credit correct reference to symptoms and development of: Osgood-Schlatter's Severs disease Blisters</p> <p><u>Treatment</u></p> <ol style="list-style-type: none"> 1. R – Rest the injury <ul style="list-style-type: none"> • stop the activity / don't put your weight on it / use crutches (legs) or splints (arms) • continued activity can cause further harm / injury 2. I – Apply ice to injury <ul style="list-style-type: none"> • 10-20 mins / every 2/3 hours or at regular intervals or using an ice pack/pack of frozen peas • to stop internal bleeding / contracts blood vessels to stop swelling / to relieve pain 3. C – Compress the injury <ul style="list-style-type: none"> • bandage the injured part (not too tight) • to prevent swelling / movement or to support (the limb) or to protect 4. E – Elevate the injury <ul style="list-style-type: none"> • above level of heart / keep limb up / put leg on chair • to reduce swelling / pain / direct blood flow away. <p>Don't credit same DEV points for different parts of R.I.C.E so if DEV is given for ice and pain relief another DEV is not required for a response that states compressing the injury relieves pain.</p>
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