



OCR Sport Science Knowledge Organiser



R180 TA1 Different factors which influence the risk and severity of injury

Extrinsic Factors	Intrinsic Factors	Psychological factors
Type of sporting activity The nature of the sport can influence the type of injury. Contact sports such as rugby risk of abrasions Non contact sport such as gymnastics risk of sprains/dislocations. Combat sports such as boxing risk of concussion. Coaching/instructing/leading Knowledge of techniques/ rules/ regulations. Experience of the coach/instructor/leader Quality of communication by the coach/instructor/leader Suitable supervision by the coach/instructor/leader Ethical standards/behaviour management Environment Weather/temperature conditions- E.g. hot weather can lead to dehydration/heat exhaustion Playing surface (natural and artificial) and surrounding area E.g holes in the ground Human interaction Spectators E.g. verbally abusing players. Other performers/participants E.g acting aggressively in the game Officials- E.g not being trained correctly Equipment: Protective equipment E.g. helmet and goggles in skiing. Performance equipment E.g. hockey stick Clothing E.g ski jackets to stop hypothermia Footwear E.g studs on rugby boots	Gender Men tend to be stronger than women. Women tend to be more flexible than men so can move their joints through a wider range of movements. Age Age can affect how much and the type of exercise you do. Generally older people are not as strong as younger people and are more at risk of suffering injuries. Experience In experienced performer would have less practice of skill/rules/tactics and may react slower increasing risk of injury. Weight Being overweight can place extra stress on the joints and body. Being underweight can cause the bones to be more fragile. Fitness levels Lack of fitness due to lack of training means more at risk to a number of injuries as tired and tight muscles caused by fatigue causes incorrect standing or sitting position causing injury. Technique/ability Poor technique can result in injury. Medical conditions If not managed correctly can cause the performer to feel unwell. Sleep/Tiredness Insufficient/lack of sleep before exercise can cause fatigue & increase the chance of injury. Can cause poor decisions to be made; resulting in dangerous play or poor reaction times. Nutrition/hydration A balanced diet and the right nutrients in the body allow enough energy to take part in sport and to allow the body to recover properly. Poor nutrition can lead to: Dehydration and muscle fatigue/loss of concentration. Previous/recurring injuries If a player has a history of injuries or recurring injuries fitness may be lost, muscles and tendons will become weaker causing flexibility and strength to be lost.	Motivation- Having the drive to succeed E.g. A footballer being over motivated and performing a dangerous tackle/rugby player being undermotivated and pulling out of a tackle. Arousal Is the level of excitement of a performer. E.g A gymnast with high arousal could cause them to land awkwardly off s vault routine. Anxiety/stress- Negative emotional state feeling worried. E.g. A dancer with high levels of stress my slip during the performance and fall. Confidence- Self belief in themselves to succeed. E.g a batter in cricket who doesn't have confidence may get hit by the ball. Aggression (Direct/channelled) Channelled aggression involves playing within the rules whereas direct aggression is the intention to harm others.E.g a boxer jabbing the opposition in the body in a fair fight. E.g. a rugby player deliberately punching a player in the scrum.
		Reasons for aggression
		Level of performance E.g basketballer pushing over a player making many mistakes. Retaliation E.g In football fouling a player that fouled them earlier in the game Pressures to win (performer/coach/spectators) E.g. A golfer throwing their club down due to missing a shot. Decisions of officials E.g. A hockey player hitting the ball away due to disagreeing with referees decision. Performance enhancing drugs E.g A weightlifter using steroids having side effects such as mood swings and aggression.
		Mental strategies
		Mental rehearsal E.g A cricket player rehearsing their pull shot to better technique. Imagery E.g. A goalkeeper imagining players taking a penalty against them. Selective attention E.g. A kicker in rugby blocking out the crowd and focusing on the kick.



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R180 TA2 Warm up and cool down routines

Key components of a warm up
Pulse Raiser Exercises that slowly increase heart rate and body temperature. <i>E.g. A X country runner jogging for 5 minutes before a race.</i>
Static Stretching Placing the body into a position where the muscle or group of muscles is put under tension. <i>E.g A hockey player doing lateral lunges</i>
Mobility Exercises that take the joints through their full range of movement (ROM). <i>E.g. A swimmer carrying out arm rotations</i>
Skill Rehearsal Rehearsing common movement patterns and skills which will be used in the activity <i>E.g. dribbling drills for football.</i>

Key components of a cool down
Pulse lowering light exercises <i>E.g. jog to walk</i>
Maintenance stretches returns muscle back to pre exercise state and helps maintain ROM <i>E.g quadricep stretch</i>
Static stretches holding a stationary position for 15-30 seconds <i>E.g. lunges</i>
Proprioceptive Neuromuscular Facilitation (PNF) stretches that have some resistance <i>E.g Hamstring stretch with a partner holding limb</i>

Physiological benefits of a warm up
Pulse raising Increase in heart rate the delivery of oxygen to working muscles is increased. Increase in body temperature which releases adrenaline and increases the blood flow
Mobility and Dynamic stretching Increase in the speed of muscle contraction which improves reaction time Increase in flexibility of muscles and joints to allow for bigger range of movement. Increase in pliability of ligaments and tendons
Skill rehearsal Practising the techniques that will be used by performer.

Physiological benefits of a cool down
Gradually lowers heart rate Gradually reduces breathing rate Gradually lowers temperature Circulates blood & oxygen around the body Helps prevent blood pooling Removes waste products such as lactic acid Reduces risk of Delayed Onset of Muscle Soreness (DOMS)

Psychological benefits of a warm up
Heighten or control arousal levels 'get in the zone' and forget about any worries you had before event. <i>E.g. A F1 driver being alert at other drivers turning into their path.</i>
Improve concentration/focus visualising certain parts of your performance. <i>E.g 100m sprinters visualising themselves running the race from the start position.</i>
Increase motivation Try to achieve an optimum arousal. <i>E.g A rugby player fully committed to tackle</i>
Mental rehearsal involves visualising the aspect of the activity <i>E.g a skier rehearsing the difficult part of course in their head.</i>

How a coach reduces risk of injury during a warm up and cool down
Communication- by planning an effective and suitable warm up and explaining the correct way to use equipment. <i>E.g. Coach demonstrating the correct way to lunge.</i>
Supervision organise the group to reduce risk of collisions and ensure exercises are carried out safely. <i>E.g. Coach ensuring that they are always facing the group and have split them up accordingly.</i>
Ethical standards and behaviour ensure performers are not using any PEDs and behaviour is in line with the rules. <i>E.g. Coach not acting aggressively so the players don't copy.</i>
Safety checks monitor safety of players throughout and check equipment and playing surface before. <i>E.g. Coach checking there are no divots in the pitch before starting the session.</i>



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R180 TA3 Different types and causes of sports injuries

Acute Sports injuries- Soft tissue

Injuries affect the soft tissue parts of the body (muscles, tendons, ligaments)

Sprain A torn ligament from a fall. *E.g a gymnast landing awkwardly and rolling their ankle.*

Treatment: PRICE

Strain Often known as a pulled muscle resulted from overstretching or tearing a muscle/tendon. *E.g a goalkeeper overstretching their hamstring saving a goal.* Treatment: PRICE

Acute Injuries- Hard tissue

Fractures (open-through skin) *E.g a jockey falling from the horse and fracturing their leg.* Treatment: X-ray/surgery/splints/casts

Fractures (closed-under skin) *E.g a rugby player being tackled badly and fracturing their radius/ulna.* Treatment: X-ray/surgery/splints/casts

Dislocations -injury that occurs at the joint. *E.g A basketball player changing direction and dislocating their patella.* Treatment: Xray/put back in by doctor

Chronic Injuries

Tendonitis (achilles, rotator cuff, patellar) occurs when the body repeats the same sporting action. *E.g a swimmer using it for front crawl/butterfly over and over.* Treatment: PRICE/Physio

Epicondylitis (overuse of the tendon in elbow) caused by repeating same action. Treatment: PRICE/Physio

Lateral epicondylitis - *E.g Serving in tennis* (Tennis elbow)

Medial epicondylitis - *E.g Swinging clubs in golf* (Golfer's elbow)

Shin splints pain and tenderness in tibia due to overuse. *E.g a long distance runner running lots.* Treatment: PRICE

Stress fractures tiny crack in the bone from repeated stress. *E.g A marathon runner overtraining.* Treatment: PRICE/Physio

Acute Sports injuries- Skin damage

Injuries from coming into contact with an object/person.

Abrasions/grazes - top layer of skin scraped off. *E.g. A 100m sprinter falling on the track and grazing knee.* Treatment: Sterile dressing/plaster

Cuts/lacerations - opening in the skin caused by sharp object. *E.g Lacrosse player being hit by a stick and cutting their arm.* Treatment: Sterile dressing/plaster

Contusions (bruise) - discolouration of the skin caused by a bump. *E.g A footballer getting studded in the thigh causing a bruise.* Treatment: Ice

Blisters - small pockets of fluid that form under the skin. *E.g A runner's shoes being too small and rubbing, causing blisters.* Treatment: antiseptic, deodorant

Acute Injuries- Hard tissue (Head injuries)

Head injuries may result from direct or indirect impact which can cause nausea, memory loss, headaches, dizziness.

Concussion - where the brain has been shaken inside the cranium. *E.g a boxer getting punched in the head by their opponent.* Treatment: Rest, Ice/medical attention if symptoms worsen or persist

Possible link with dementia and Alzheimers

The FA research found footballers 3.5 times more likely to die from dementia. Develops with every year they play.

Other contact sports such as boxing, ice hockey and rugby have increased risk of dementia and Alzheimer's disease.

PRICE Therapy

PROTECTION - Protect the injured body part to reduce risk of further damage. *E.g Putting a rugby player in a sling if they have injured their arm.*

REST - Immobilising the injury and resting the injury for the first 2-3 days. Then reintroduce movement gradually. *E.g. A netball player using crutches to avoid putting weight on their injured knee.*

ICE - Apply an ice to the painful area for 15-20 minutes. repeat every 2-3 hours. Don't apply directly to the skin as it can damage it.

COMPRESS - Apply pressure to the injured area with to help limit the swelling. *E.g. a hockey player using a compression bandage on their injured ankle.*

ELEVATE - Elevate the injury by resting it above the level of your heart and keep it supported. *E.g A runner that has injured their ankle raising it up on a pillow while lying down.*



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R180 TA3 Different types and causes of sports injuries

Extrinsic factors	Risk of injury occurring
Type of activity	Acute injuries Cuts/lacerations-getting hit with a stick in ice hockey Contusions-getting punched in the ribs in boxing Concussion- colliding heads in rugby Chronic injuries Shin splints-marathon runners
Coaching	Acute injuries Fractures- encouraging 2 footed tackles in football Chronic injuries Epicondylitis- serving incorrectly in tennis
Environment	Acute injuries Grazes/abrasions- falling over on the astro in hockey. Chronic injuries Shin splints-basketballers jumping for shots repetitively
Equipment	Acute injuries Fractures- from not wearing shin pads in football Chronic injuries Tendonitis- from not wearing taping or support during weight lifting.

Ways of reducing risk of acute injuries
• Warm up properly before the sporting activity • Ensure joints,muscles,ligaments are strong and build up exercise gradually • Maintain a healthy weight • Develop components of fitness such as balance and coordination • Wear appropriate footwear and clothing • Wear appropriate protective equipment for the sporting activity

Ways of reducing risk of chronic Injuries
• Avoid overtraining • Develop good sporting techniques • Avoid training on hard/uneven surfaces • Wear appropriate footwear and clothing • Avoid returning to exercise too soon after a previous injury • Build up training overtime

Individual variables	Risk of injury occurring
Age	The older you get the bones weaken causing fractures to become more likely. Contusions and abrasions are also more likely due to losing coordination as you get older
Nutrition	Lack of calcium in the body can cause bones to be more prone to fractures Being underweight can cause more of a risk of fractures. Being overweight can cause too much pressure on the joints and cause a stress fracture or be more prone to dislocation.
Previous injuries	With any injury the area that was injured is more prone to reinjury of any acute/ chronic injury.
Aggression	A player whom is intending to harm another player could cause any acute injury,
Selective attention	A player that is tired or not focused due to lack of arousal/motivation is more at risk of acute injuries.



OCR Sport Science Knowledge Organiser



R180 TA4 Reducing risk, treatment of and rehabilitation of sports injuries and medical conditions

Safety checks

Risk assessments - These assess the level of risk and identify the chance of the injury occurring and the severity of the injury should it happen.

Control measures- These are actions for the removal of hazards and reduction of risks.

Characteristics of the individual/group- These are the variables that could influence the risk of injury.

Group Size- This affects the amount of space needed for the sporting activity in order for it to be carried out safely.

Strategies to help reduce the risk of sports injuries and medical conditions

Medicals- An examination of a person's body to see how physically fit they are

Screening- An examination used to discover underlying health issues/medical conditions such as diabetes.

National governing body policies- Policies that ensure that the sport is carried out safely.

Emergency Action Plans (EAP)

A document that sets out the procedures to be followed when a sporting injury requires emergency treatment.

Emergency personnel - People who respond first to the incident first aider/coach/official.

Emergency communication- Emergency numbers to call in the event of an incident (999/111/emergency contact)

Emergency equipment- Location of the nearest first aid kit/defibrillator/stretchers.

SALTAPS (on field assessment routine)

SEE- Did anyone see the injury occur?

ASK -How did it happen? Where does it hurt?

LOOK- for signs of bleeding, deformity of limbs, inflammation, swelling or redness.

TOUCH- the injury for signs of heat, tenderness, loss or change of sensation/pain.

ACTIVE- Ask injured person to move the injured area if possible. Does this hurt?

PASSIVE- Try to move the injured area only if good range of movement is possible. Does it have full range of movement?

STRENGTH- If no pain during, use resisted movement to assess further loss of function. Can they put weight on it?

DRABC

Danger-Make sure the area is safe before approaching the injured person

Response- Is the casualty responsive or not? Are they moving or speaking?

Airway- Is it clear or blocked? If not responding move to next step.

Breathing - Are they breathing normally? Can you see their chest moving?

Circulation- If they are breathing check for bleeding. If they aren't = CPR.

Recovery position

1. DRABC
2. Check and tilt head to open airway
3. Kneel to the side of the person
4. Place arm closest 90 degrees with palm facing up
5. Place the person's other hand against the back of their cheek that is closest to you
6. Bend person's furthest knee
7. Roll on to their side using bent knee
8. Open person's airway
9. Stay with casualty and monitor

PRICE Therapy

PROTECTION -Protect the injured body part to reduce risk of further damage.

REST- Immobilising the injury and resting the injury for the first 2-3 days. Then reintroduce movement gradually.

ICE- Apply an ice to the painful area for 15-20 minutes. repeat every 2-3 hours. Don't apply directly to the skin as it can damage it.

COMPRESS -Apply pressure to the injured area with to help limit the swelling.

ELEVATE- Elevate the injury by resting it above the level of your heart and keep it supported.

X-rays

Provide medical professionals with images of inside the body. Used for detecting fractures, or medical conditions that can affect heart or lungs. Brain scans (CT) uses x-ray and computers to create a detailed image.



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R180 TA4 Reducing risk, treatment of and rehabilitation of sports injuries and medical conditions

Massage Pressure applied to the area of injury to relieve tension. Use on: Sprains and strains Rotator cuff tendonitis, achilles tendonitis, patellar tendonitis Benefits: - Reduces muscle tension - Increases mobility /circulation/ healing process - Helps break down scar tissues	Electrotherapy Use of electrical stimulation on nerves and muscles Use on: Sprains and strains Rotator cuff tendonitis, achilles tendonitis, patellar tendonitis Some brain injuries Fractures and dislocations Benefits: - Reduces pain/inflammation - Improves healing/strengthens muscles	Ultrasound therapy Mechanical vibrations Use on: Sprains and strains Rotator cuff tendonitis, achilles tendonitis, patellar tendonitis Benefits: - Reduces pain/inflammation - Increases mobility/circulation/ healing process - Helps break down scar tissues/improve tissue repair	Contrast therapy Use of alternating hot and cold treatments Use on: Soft tissue injuries Chronic injuries Benefits: - Reduces pain/inflammation - Increases mobility/circulation/ healing process - Increases range of movement	Support Kinesiology taping Used to keep joints in place to decompress injury Neoprene Used to support the injury and give it heat to soothe pain Bandaging Used to help compress injury and stabilise or prevent infection.
Ultrasound scan Use on: Sprains and strains (injuries relating to tendons, muscles, joints, internal organs) Benefits: - Aids a diagnosis of what the injury is	Hydrotherapy Exercising in water Use on: Fractures ACL injuries Rotator cuff tendonitis, achilles tendonitis, patellar tendonitis Benefits: - Relieves pain -- Improves healing/strengthens muscles - Increases range of movement and flexibility - Increases mobility/circulation /healing process	Cryotherapy Use of extreme cold treatment where injury is exposed to freezing temperatures Use on: Sprains and strains Shin splints Fractures and dislocations Contusions Benefits: - Reduces pain/inflammation - Increases mobility/circulation/ healing process - Relieves pain	Stretching Different types of stretching can be encouraged to help rehabilitate injury. Some static stretching maybe used. Benefits: - Increases range of movement - Strengthens muscles	Immobilisation Casts Used to protect and support fractures keeping it in immobilise and in right place while it heals. Splints Used to support fracture and adjusted as injury heals Slings Used to support and immobilise sprain/fracture/dislocation until it heals.
			Painkillers Helps manage pain can be ibuprofen tablets or gels. Benefits: - Reduces pain/inflammation	



OCR Sport Studies Knowledge Organiser

R184 Causes, symptoms and treatment of medical conditions

Asthma Causes/symptoms		Asthma Treatments		Epilepsy Causes/symptoms		Epilepsy Treatments		Other medical conditions	
Causes Family history of asthma Allergies such as hay fever/animals Exposure to cigarette smoke growing up Exercise-intensity, chemicals Common symptoms: Wheezing when breathing Tightness of chest (making it difficult to breathe) Breathlessness Coughing		Reassurance- If having an asthma attack it important to keep the person calm with slow steady breaths. Inhalers- most common form of treatment Reliever- helps relieve symptoms Preventer- stops symptoms occurring in the 1st place Nebuliser- used by hospitals change the liquid into mist that helps breathing Steroid tablets- given to people with severe asthma to help reduce inflammation of airways		Causes Family history of epilepsy Severe head injuries Triggers Anxiety/stress Tiredness/lack of sleep Common symptoms: Rapid blinking/eyes rolling in back of head/staring blankly Slurred speech/strange tastes Stiffness of limbs/shaking/uncontrollable twitching		Anti-epileptic drugs (AED's) Most common form of treatment tablets or injections changing the chemical levels in the brain. Ketogenic diet Consists of foods high in fat and low in carbohydrates and protein. Helps maintain chemicals within the liver. Used when people don't find AED's effective.		Hypothermia- Dangerously low body temperature Causes- exposure to extremely cold weather or wearing wet clothing for a long period of time in cold weather. Symptoms Slurred speech/confusion Breathing slow/blue lips/shivering Treatment- slowly warm up, seek shelter, remove wet clothing. Heat exhaustion- when the body temperature is too high Causes: lack of water/heat Symptoms Feeling sick, headache, very thirsty High body temperature Excessive sweating, dizziness Treatment- drinking plenty of water and cold compress Dehydration- when the body loses too much water through sweat and is not replaced Symptoms Feeling thirsty, fatigue, dry ,mouth, infrequent urination Treatment- drinking plenty of water before/during/after sporting activities	
Diabetes Causes/symptoms		Diabetes Treatments		SCA Causes/symptoms		SCA Treatments			
Type 1- body is unable to produce insulin (born with it) Type 2- body does not produce enough insulin (overweight and lack of exercise) Common Symptoms Blurred vision Feeling very thirsty all the time Cuts taking a long time to heal Urinating more often Feeling tired Losing weight for no reason		Type 1 Treatment - May use an insulin pen and inject themselves or an insulin pump (electronic pump) that ensures the body gets enough insulin. Type 2 Treatment- Use of insulin, either tablets or injection Eating healthily and avoiding food/drinks Regular physical activity Hyperglycemia Low blood sugar levels Hypoglycemia High blood sugar levels		Causes Underlying heart conditions Family history of heart conditions Intense physical activity Sudden trauma Common symptoms: Person collapses Unconscious/unresponsive Not breathing/gasping		CPR- chest compressions until emergency services arrive Defibrillator- can be used to restart the heart. Prevention Maintaining a healthy weight Regular exercise Good management of diabetes			