



Stockland Green Knowledge Organiser – Sport Science – Sports Injuries Exam Content LO1

Intrinsic factors influencing the risk of injury

Intrinsic factors are factors that come from inside the body which the athlete has some or full control over. There are 3 intrinsic risk factors.

Physical Preparation

A major cause of injury is a lack of physical fitness which sees training not being undertaken causing athletes to not be prepared for the activity/sport. Fatigued muscles can't support the skeleton which causes a poor posture.

A warm-up prevents injury by Preparing the heart, joints and Muscles.

A cool down also helps to reduce injury by gradually lowering body processes back to a resting state helping to reduce muscle soreness.

Overuse injuries are caused through repeated activity when the body is not fully prepared. Also called repetitive injuries they damage tendons, ligaments, muscles and tissue over a period of time.



Muscle imbalances increase the risk of injuries and is where one muscle is larger and stronger than the other. Muscle imbalances cause overuse injuries and are generally suffered by racket sport players as their dominant side of the body is stronger.



Individual Variables

All athletes are unique which sees each athlete have different characteristics. These include:

Age- the elderly and children are not as strong as adults meaning strength training and applying strength would differ else injury chance is raised.



Gender- Men have greater muscle mass Seeing them be stronger and woman are more flexible seeing genders having to train applying progression to improve these components of fitness as they are not as naturally gifted in these areas.

Flexibility- The more flexible an individual is the less likely they are to suffer a strain to muscles or sprain ligaments. A low level of flexibility can cause the wrong technique to be used seeing injury the long term occur. Increased flexibility reduces the risk of injury.



Nutrition- Correct nutrition is vital to An athlete as it supports recovery, Muscle growth, hydration and provides energy. Poor nutrition can cause obesity, weak bones, dehydration, poor concentration.

Sleep- Insufficient sleep increases injury risk. A lack of sleep decreases arousal and motivation, poor decision making and fatigue.

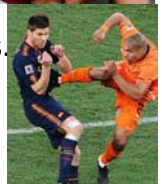


Psychological Factors

Injury risk is increased if an athletes mental state is not right for the activity/sport and not being mentally prepared increases the frequency of injuries. There are 3 main psychological factors:

Motivation is the drive to do something and a lack of motivation causes a lack of commitment which sees the wrong technique being used. Too much motivation increases injury risk due to recklessness.

Aggression- this is the intention to cause harm to others. Being aggressive sees athletes break rules and not being in control of movements. This causes the wrong technique to be used injuring themselves or other players.



Arousal- The level of activation to perform. If arousal is too high or too low performance is decreased. Anxiety can be caused by too high an arousal. Anxiety is an emotional state where an athlete is stressed or worries about their performance. If a performer is too aroused this could lead to over aggressive play and if the athlete is anxious they may not use the correct technique or concentrate enough causing to an increase risk of injury.



Causes of Poor Posture

Posture is the position the body is held in so the position of the body is known as posture. Poor posture is caused by a number of different factors:

- Poor gait
- Learning the a poor sporting technique
- Slouching or slumping when sitting
- Uncomfortable sleeping position
- Physical defect
- Back problems for a long time
- Position of a baby during pregnancy
- Being overweight or obese
- Fatigue
- Emotional factors, i.e. low self-esteem
- Wrong fitting clothes or footwear
- Carrying heavy items



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Extrinsic factors influencing the risk of injury

Extrinsic factors are factors that come from outside the body which the athlete has limited or no control over. There are 5 extrinsic risk factors.

Type of Activity

Some sports are more dangerous than others due to the nature of the activity.

Non-contact sports- this is where performers have no possible risk to touch others, i.e. swimming and cycling. Contact can sometimes happen, i.e. cycling crashes but injury is less likely than in contact sports.



Contact sports- these are sports which require physical contact, i.e. boxing, Rugby, Football, Judo. This is due to tackling or hitting opponent/s. Netball and Basketball may have contact but this is outside of the rules. Contact sports have a higher risk of injury.



Coaching/Supervision

Poor coaching can cause athletes to use the **wrong technique** increasing the risk of injury, i.e. tackling too high in Rugby or the coach to **not correct incorrect techniques**, i.e. heading Football.



Ineffective communication increases Risk of injury as the coach is unable to Explain any issues which could cause wrong techniques to be used.



Not knowing rules or not sticking

To the rules of a sport- injury is increased if the coach does not follow the rules of a sport, i.e. following age and weight categories, not wearing the correct/safe equipment, allowing fouls to occur in games.



Environmental Factors

Weather can cause a range of different issues. Too hot causes heat exhaustion, dehydration and heat stroke. Too cold causes hypothermia. Poor visibility through fog or rain increases the risk of injury due to not being able to see clearly. Weather causes unusual movements that cause increased risk.



Rain causes surfaces to be wet and slippery seeing slips increasing the risk of injury.



Litter on playing surfaces is an issue as is the close proximity of fans, subs and hoardings around the playing area. Other participants increase the risk of risk through collisions and physical contact.



Equipment

Protective equipment helps to prevent injury, i.e. helmet in Skiing and gum shield in Hockey. Ill fitting or worn out equipment increases the risk of injury, i.e. wrong size trainers or shin pads. Mats, barriers and post padding are also protective equipment as they reduce the risk of injury.

Performance equipment is needed in sports, i.e. hockey stick in Hockey, studs on Football boots but can also increase injury risk. Clothing and footwear needs to be of an appropriate size and fit else blisters or abrasions can be caused. Correct fitting footwear support grip to the surface, i.e. astro turf trainers for astro turf.



Safety Hazards

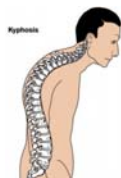
Risk assessments are used to identify the potential hazards and helps to provide alternative methods to decrease the risk of injury. Risk assessments help reduce the potential for injury, i.e. padding on Rugby posts and a Netball umpire checking nail length.

Risk assessments check the surroundings of the pitch/court and the safety of spectators.

Safety checks include checking the playing surface at the start of each Game, i.e. checking football posts, checking surfaces for litter and checking protective equipment being used by athletes, i.e. shin pads in Football and gum shields in Boxing.



Scoliosis- A visible C or S shaped curvature of the spine. Sufferers include- skiers, figure skaters and racket sports (tennis, squash).



Kyphosis- Excessive backward or outward curvature of the upper spine. Sufferers include- cyclists, cricket wicketkeepers due to being hunched over for long periods of time.

Posture Conditions



Lordosis- Excessive forward or inward curving of the lower back. Sufferers include- gymnasts, dancers and overweight men.



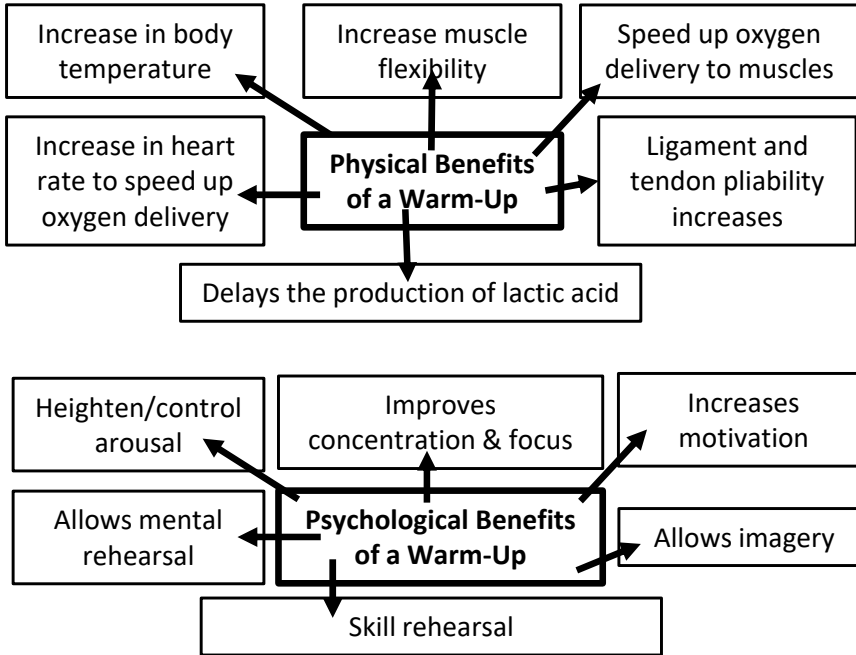
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Self-Quiz Questions	Self-Quiz Questions	Challenge Self-Quiz Quizzing
Define an intrinsic factor.	Describe the 3 posture conditions.	Describe the difference between protective and performance equipment.
Identify the 5 individual variables.	Describe the purpose of a risk assessment.	Explain how coaching the wrong technique increases the risk of injury
Identify the 3 psychological factors that are intrinsic.	Describe, with examples, the difference between contact and non-contact sports.	Explain how risk assessments reduce the risk of injury.
What is the role a cool down provides?	Define the 4 conditions related to temperature.	Explain why safety checks occur before sporting fixtures.
Describe muscle imbalance.	Describe 3 ways the environment increases the risk of injury.	Why are non-contact sports less likely to suffer injury?
Define an extrinsic factor.	Provide a list of 5 sporting example where a helmet is worn.	Explain how gender affects injury.
Define posture.	Define motivation and aggression.	Explain why football players wear studded football boots.
Provide 6 factors that impact on posture.	Describe anxiety.	Why does clothing and footwear need to be of the correct size and in good condition?
What can poor nutrition cause?	Describe how a lack of visibility can affect the risk of injury.	Explain how being over aroused affects the risk of injury.
Define arousal.	Explain how a poor nutrition can affect an individual's injury risk.	Why can ineffective communication by a coach increase the risk onjury?
Total score	Total score	Total score



Stockland Green Knowledge Organiser – Sport Science – Sports Injuries Exam Content LO2

LO2- Understand how warm-up and cool down routines can help prevent injury

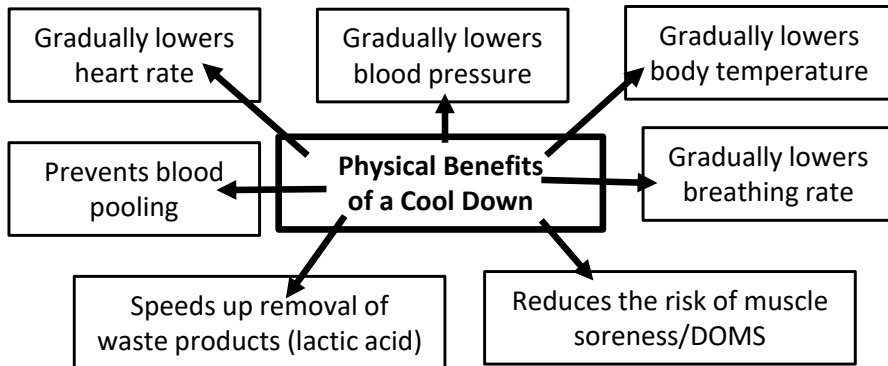


Components of a warm-up

- 1) Pulse Raising-** exercises like jogging, skipping to rise heart rate and body temperature gradually. This needs to be relevant to the activity/sport.
- 2) Mobility-** this is where joints are taken through their full range of motion, i.e. hip rotations, arm circles, ankle rolling, high knees, open the gate.
- 3) Dynamic Movements-** this is where changes in speed and direction take place, i.e. sprinting and changing directions through cones.
- 4) Stretching-** this sees muscles lengthen to reduce injury risk. Stretches can be static, passive, dynamic and ballistic.
- 5) Skill Rehearsal Phase-** practising actions and skills used within the activity/sport, i.e. a GS in Netball practising shooting. This helps to prepare muscles and joints for the activity by repeating movements.

Components of a Cool Down

- 1) Pulse Lowering Exercises-** Movements like jogging or walking that slowly lower in intensity to GRADUALLY lower heart rate and reduce body temperature.
- 2) Stretching-** maintenance or static stretches to return muscles back to their normal length, held for 10-15 seconds.



Considerations for warm-ups and cool downs

Organisers of warm-ups needs to consider the following:

- Age: children need lower intensity
- Experience: higher skills needed for greater experience
- Fitness levels - Motivation - Medical conditions - Group size due to space

A warm-up should be specific to the activity, i.e. swimmers should swim and cyclists cycle to prepare the body physically and mentally for the activity.

The environment needs to be considered as in hot temperatures shaded areas could be used to reduce heat stroke and dehydration, cold temperatures could use indoor, warmer environments to reduce risk of hypothermia.

Facilities need to be suitable, i.e. space needs to be large enough to reduce the risk of collisions, surface needs to be safe to reduce slips, collisions and litter.





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Self-Quiz Questions	Self-Quiz Questions	Challenge Self-Quiz Quizzing
Identify the first component of a warm-up.	Describe the purpose of pulse lowering exercises in a cool down.	Compare what happens to body temperature in a warm-up and a cool down.
What happens to body temperature in a warm-up?	Describe the role of dynamic movements in a warm ups.	Identify the fifth component of a warm-up.
Describe the role the mobility component performs in a warm-up	Identify the third component of a warm-up.	How does the body speed up the delivery of oxygen to working muscles in a warm-up?
How long should a maintenance stretch be held for?	Provide an example for the skill rehearsal phase for a Netballer.	Explain the main benefit of the skill rehearsal phase in a warm-up.
Identify the 3 psychological aspects improved in a cool down.	Why is it important to stretch in a warm-up?	Why are maintenance stretches important in a cool down?
Identify the second component of a warm-up.	What is delayed when a warm-up is carried out?	Explain why a warm-up should be specific to the sport being performed.
Identify the 2 components in a cool down.	What happens to ligaments and tendons by performing a warm-up?	What role does the skill rehearsal phase perform in a warm-up?
Provide 2 examples of what could be used for a pulse raiser exercise in a warm up.	Identify the fourth component of a warm-up.	In warm temperatures why are shaded areas needed to be used? What conditions would be reduced if shade was used?
What happens to heart rate during a cool down?	Describe the role of a pulse raiser in a warm-up.	Explain why stretching is important in a warm-up.
Identify the 6 aspects that need to be considered in warm-ups and cool downs.	Provide 3 examples of mobility exercises.	Explain how the environment can effect a warm-up and cool down.
Total score	Total score	Total score



Stockland Green Knowledge Organiser – Sport Science – Sports Injuries Exam Content LO3

Acute Injury- Injuries that happen quickly due to trauma by impacts or collisions causing immediate pain – tackles in Rugby and Football, hit by a ball in Cricket or Hockey, sprained ankles and Hamstring tears and strains.

Chronic Injury- Injuries caused by continuous or repeated stress on a bone, muscle, ligament or tendon. Often called overuse injuries that develop over time. Examples include shin splints, tennis elbow, tendonitis and golfer’s elbow.

Soft Tissue Injuries- These can be chronic and acute and are trauma to muscles, tendons and ligaments.



Common Sports Injuries and Treatments

Overuse Injury- A chronic injury that occur over time caused by repetitive minor damage to tendons, bones and muscles. Examples are stated above. Treatment= RICE

Concussion- caused by impacts to the head through a collision or contact with ground or equipment. An acute injury. Symptoms are dizziness, loss of memory, headaches. Treatment = Hospital and rest.



Abrasion- Acute injury involving damage to the skin – known as a graze. Caused by trip or falling onto hard surfaces or rough ground or rubbing against equipment. Treatment = cleaning/sterilising area, plaster/bandage.

Contusion- Acute injury. Known as a bruise caused by colliding with others or equipment, falling, tackling or tripping. Treatment = RICE.



Blisters- A bag of fluid to protect tissue from skin damage caused by friction. Caused by skin rubbing on surfaces, i.e. ill fitting footwear, foot sweating seeing the foot move in a sock and trainer. Treatment = clean, sterilise and cover with a plaster.

Cramp- Involuntary painful contraction caused by a lack of water or salt to muscles. Caused by excessive exercise, overuse or overstretching of muscles or dehydration. Treatment= stretching/massaging the muscle and hydrating.



Fractures- Acute injury. A fracture is partial or complete break in a bone. 2 types:



Open fracture

Closed Fracture- a fracture to the bone where there is little damage to surrounding tissue as the bone has hardly moved. The bone does not break through the skin.

Open Fracture- a fracture to the bone with significant damage to surrounding tissues as the fracture has broken through the skin.

Fractures are caused by sudden trauma such as falling or impact from others, i.e. tackle. Fractures are more common in contact sports. Treatment= Hospital/medical advice. Plaster casts, splints or slings may be used.

RICE Treatment- For acute injuries that do not require medical treatment – for acute injuries. RICE aims to reduce swelling, ease pain and prevent further damage.

Rest- stop activity and allow the injured area to not be used or load any weight.

Compression- bandage the area to reduce swelling and support the injury.

Ice- apply ice to reduce swelling and pain

Elevate- raise the injury above the heart to restrict blood flow and reduce swelling



Acute Injury- Injuries that happen quickly due to trauma by impacts or collisions causing immediate pain – tackles in Rugby and Football, hit by a ball in Cricket or Hockey, sprained ankles and Hamstring tears and strains.

Chronic Injury- Injuries caused by continuous or repeated stress on a bone, muscle, ligament or tendon. Often called overuse injuries that develop over time. Examples include shin splints, tennis elbow, tendonitis.

Soft Tissue Injuries- These can be chronic and acute and are trauma to muscles, tendons and ligaments.

Child Related Injuries- these are only related to child!

Sever’s disease- Pain in the heel due to inflammation of the growth plate. Caused by repetitive stress seeing active children suffer from it. It often cures itself but hamstring and calf stretches and RICE help.



Osgood-Schlatter’s disease- pain in the knee due to growth spurts where the bones in the knee grow quicker than the tendons. Could be caused by repeated stress or overuse. Treatment = RICE and medical advice.



Responding to injuries and medical conditions – SALTAPS

SALTAPS allows assessment of injuries and medical conditions to see if performance can continue or what treatment is required.

See- see what happened, stop activity and look at the athlete’s behaviour

Ask- ask the person what happened, their feeling, where it hurts and pain type.

Look- look for injury signs (bleeding, swelling) compare to other body part if can.

Touch- examine the injury for pain and/or abnormalities.

Active- is the athlete able to move their injured area? Does it hurt/painful?

Passive- can the injury/joint move with support through the full range of movement.

Strength- can they support their won weight – can they continue to perform?

If the injury is serious medical treatment needs to be sort.



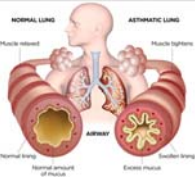
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Self-Quiz Questions	Self-Quiz Questions	Challenge Self-Quiz Quizzing
Identify the 4 parts of R.I.C.E.	Describe what an acute injury is.	Explain the difference between Passive and Active in SALTAPS.
Identify the 2 types of fractures.	Describe how a contusion is caused.	Explain the difference between Osgood-Schlatter's disease and Sever's disease.
What causes a blister?	Identify the 3 parts of the body that can be effected by overuse injury.	Which type of fracture is more serious? Why?
Identify the 2 child related injuries.	What causes a blister?	Describe the difference between treatment for an abrasion and a contusion.
Define a soft tissue injury.	Describe what a chronic injury is.	What is the treatment for an overuse injury?
Define a fracture.	Provide 3 examples of a chronic injury.	Explain the difference between acute and chronic injuries.
Identify the 7 aspects of SALTAPS.	How does an athlete suffer a concussion?	Why should we elevate an injury?
What causes cramp?	What is the role of SALTAPS?	Provide the two muscles that can be stretched to help with Sever's disease.
Identify the joint associated with Sever's disease.	Identify the treatment for a blister.	Explain why Osgood-Schlatter's disease sees pain in the knee occur.
What type of injury is a fracture?	What function does Compression perform in RICE?	When undertaking the SALTAPS process what should you do if you realise the injury is serious?
Total score	Total score	Total score



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Responding to Common Medical Conditions



Asthma

A common long-term lung condition causing occasional breathing difficulties.

Symptoms: Coughing during exercise, shortness of breath, tightness in the chest and wheezing.

There is no cure for asthma at the moment.

Treatment/Responding to an Asthma attack:

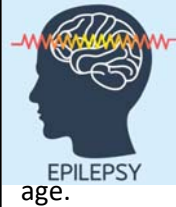
- Provide reassurance.
- Keep the person calm.
- Locate inhaler for them to use.
- Emergency services in severe attacks.



Key Words

Hyperglycaemic- when a diabetic person has a high blood sugar level.

Hypoglycaemic- when a diabetic person has a low blood sugar level.



Epilepsy

A condition causing abnormal brain activity leading to seizures or periods of unusual behaviour. Anyone can suffer from Epilepsy of any age.

Symptoms: staring into space blankly, arms and legs shaking, falling unconscious, losing bowel control, falling down suddenly, muscles becoming stiff, eyes rolling the head, foaming at the mouth, body shaking.

Treatment/Responding to an Epileptic seizure:

- Guide the individual away from danger
- Keep them calm
- Cushion the head if individual is fitting.
- Remove any objects that could be dangerous to the individual.
- Once jerking has stopped place the individual in the recovery position.
- If the seizure lasts more than 5 minutes contact 999.



Diabetes

Diabetes is a condition causing blood sugar to be too high. There are two types of diabetes:

Type 1- Insulin dependent diabetes: this is where individuals are unable to make insulin to lower blood sugar levels so require insulin injections – this is normally genetic.

Type 2- insulin resistant diabetes: This is where the individual can not produce enough insulin or their insulin is not effective. This type can be controlled by diet. Type 2 is linked to poor lifestyle choices and diet/nutrition.

Symptoms: frequent urinating, feeling thirsty, tiredness, losing weight, cuts taking longer to heal. Long term damage can be heart, kidney. Eye and feet damage. Dizziness, sweating, hunger, drowsiness, slurred speech and unconsciousness.

Treatment/Responding to a Diabetic episode:

Type 1- if hyperglycaemic (high blood sugar) they need to inject insulin; if hypoglycaemic (low blood sugar) they need to eat simple sugars or drinks, i.e. sweets or fruit juices.



Type 2- diet control and medicines.

When to refer to professionals? Medical treatment should sort when:

- Consciousness is lost or has a clear concussion
- Severe pain
- Struggling to breathe
- Partial or suspected fractures
- The coach is unqualified to deal with the injury.
- A recurring injury

Professionals should be referred to medical professionals if:

- Asthma signs continue to be severe
- Type 1 Diabetic does not have access to insulin or enter into a coma
- It is the first Epileptic fit or the fit lasts longer than 5 minutes or is repeated.



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Self-Quiz Questions	Self-Quiz Questions	Challenge Self-Quiz Quizzing
What is asthma?	Who can suffer from epilepsy?	Explain the difference between type 1 and type 2 diabetes.
Coughing during exercise is the symptom of which medical condition.	When should an individual suffering an epileptic seizure be placed in the recovery position?	Explain the difference between epilepsy and asthma.
Define hyperglycaemia.	Describe what causes type 1 diabetes.	Which type of diabetes is linked to genetics?
If a fracture is suspected what should you do?	If a person has fallen unconscious during a diabetic episode what should you do?	Why does type 2 diabetes not always need insulin injections?
Identify the organ that is effected by asthma.	Identify 4 symptoms of asthma.	Describe what happens at mouth during an epileptic seizure.
Which 1 common treatment should you do in an asthma attack and an epileptic fit?	Other than injecting insulin how can an individual treat type 2 diabetes?	If a type 1 diabetic is hypoglycaemic what is the treatment?
What should you do to the head of a person suffering an epileptic fit?	A symptom of feeling thirsty often and losing weight is a sign of what medical condition?	Can a type 1 diabetic produce their own insulin?
Losing bowel and bladder control is a symptom of which medical condition?	Describe what diabetes is.	If a type 1 diabetic is hyperglycaemic what is the treatment?
Define hypoglycaemia.	Identify what 2 body organs can suffer long term damage due to having diabetes.	When should a coach refer an individual to medical professionals?
Describe what epilepsy is.	When should the emergency services be called during an asthma attack?	Describe the 4 treatments for an asthma attack.
Total score	Total score	Total score