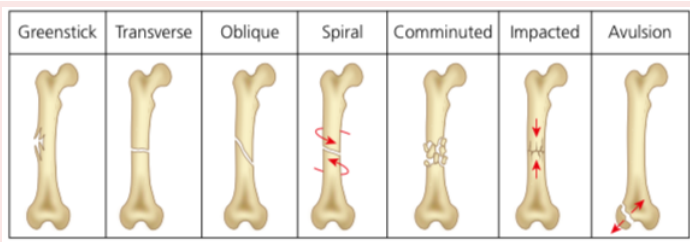


Common Sporting Injuries	
Acute Injuries	Chronic Injuries
Occur at a specific moment in time; this is caused by a sudden traumatic event	Occur over a period of time after repeated or continual stress on hard or soft tissue
Common causes are collisions between two players or of a body part against a hard object	These are commonly associated with overuse or excessive training and insufficient recovery time
They can also be associated with movements when parts of the body are out of alignment or technique is poorly learned	Common causes are: Sudden increase in intensity or frequency of training, Reduction in recovery time, Poor technique, Inadequate equipment, Poor flexibility of associated joints, Inadequate warm up/cool down protocols in place

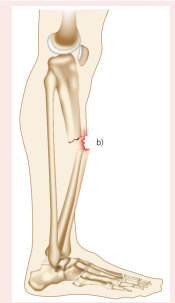
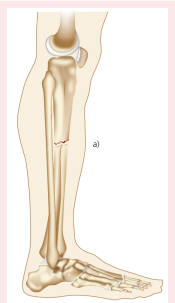
### Hard Tissue Injuries

Involves damage to the bone, joint or cartilage and includes fractures and dislocations



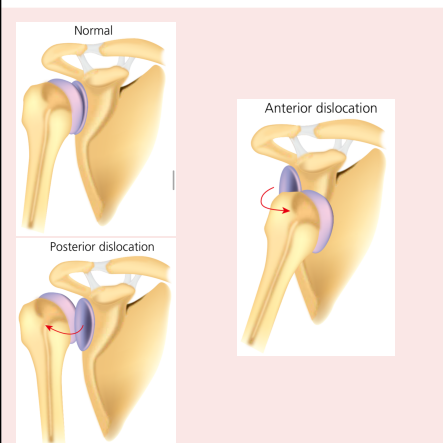
Transverse, Oblique, Spiral	Greenstick	Comminuted	Impacted	Avulsion
A crack perpendicular, diagonal or twisting diagonal respectively across the length of the bone	A splitting partial break in the bone resulting from a bending action	A crack producing multiple fragments of bone and a long recovery process	A break caused by the ends of a bone being compressed together	A bone fragment detached at the site of connective tissue attachment

Simple Fracture	Compound Fracture
The skin remains unbroken as the fracture causes little movement of the bone and therefore minimises the damage to the soft tissue surrounding it	The fractured bones themselves break through the skin, creating an open wound with a high risk of infection



Incomplete Fracture	Complete Fracture
A partial crack in the bone that doesn't completely separate the bone	A total break in the bone which separates the bone into one or more fragments

### Dislocation



- Dislocation** – The displacement of one bone from another out of their original position

Typical sites for dislocation are the shoulder, hip, knee, ankle, elbow, fingers and toes

Common indications of a dislocation are severe pain at the injury site, loss of movement, deformity, swelling or a 'pop' feeling

Dislocations require treatment by medical practitioner

- Subluxation** – An incomplete or partial dislocation, often causes damage to the ligaments that connect bone to bone

When overstretched, ligaments can permanently lengthen, which decreases joint stability and increases the likelihood of recurrent dislocations

Soft Tissue Injuries	
Contusion	Haematoma
An area of skin or tissue in which the blood vessels have ruptured, usually caused by a fall, the damaged tissue leads to a haematoma	Localised congealed bleeding from the ruptured blood vessels, which is relatively or totally confined to a tissue
Sprain	Strain
Overstretch or a tear in the ligament that connects bone to bone, usually caused by a sudden twist, impact or fall that forces the joint beyond its extreme range of motions	Overstretch or tear in the muscle or tendon that connects muscle to bone
	Minor damage to the fibres (grade 1) Extensive damage but not completely ruptured (grade 2) Complete rupture (grade 3)
Abrasion	Blister
Superficial damage to the skin caused by a scraping action against a surface	Friction forming separation of layers of skin where a pocket of fluid forms
Shin Splints	Tendinosis
Chronic shin pain due to the inflammation of muscles and stress on the tendon attachments to the surface of the tibia	The deterioration of a tendon in response to chronic overuse and repetitive strain
Achilles Tendinosis	Tennis Elbow
Pain and deterioration of the tendon in the heel due to overuse and repetitive strain	Strenuous overuse of the tendons in the forearm during repeated twisting actions can lead to microscopic tears, pain and tightness that limit movement

### Hard Tissue Injuries

#### Stress Fracture

A tiny crack in the surface of a bone, usually caused by fatigued muscles transferring their stress overload to the bone tissue

## Exercise Physiology

### - Injury prevention and the Rehabilitation of Injury

#### Concussion

A traumatic brain injury resulting in a disturbance of brain function

If an athlete is concussed they may...

- Become unconscious
- Feel sick, dizzy or drowsy
- Get confused, stare and suffer memory loss

Symptoms clearly indicate concussion	Symptoms may indicate concussion
Post-traumatic seizure Loss of consciousness Balance problems Disorientation and confusion Dazed or blank expression	Lying motionless Slow to get up Grabbing or clutching head Headache Dizziness Visual problems Nausea or vomiting Fatigue Light sensitivity

#### Injury Prevention

Identifying and minimising risks in sport will help prevent injury and ensure training is of a high quality and performance is at its peak

Intrinsic risk factors (within the body)	Extrinsic risk factors (outside the body)
<ul style="list-style-type: none"> <li>- Physical make up</li> <li>- Posture</li> <li>- Inadequate range of movement at each joint</li> <li>- Inadequate nutrition</li> <li>- Lack of recovery time</li> <li>- Strength imbalances</li> </ul>	<ul style="list-style-type: none"> <li>- Improper technique</li> <li>- Incorrect clothing/footwear</li> <li>- Rapid overload in training</li> <li>- Overuse/inadequate variance in training</li> <li>- Inadequate warm-up or cool down</li> </ul>

#### Reducing Risk Factors

**Wearing correct equipment**

Players should ensure the protective clothing they wear follows the regulations of the sport, fits correctly and has no defects, footwear should fit the performer well and provide the correct shock absorption and foot / ankle protection for the sport.

Intrinsic Risk Factors	
Individual Variables	
<b>Previous injuries</b> – an athlete should not return to training until fully fit or can cause a loss of strength, decreased joint stability and altered biomechanics	
<b>Posture and alignment</b> – different limb length or curvature of the spine can increase the risk of injury	
<b>Nutrition</b> – levels of carbohydrate and protein will ensure sufficient energy production and reduce the onset of	
Training Effects	
<b>Poor preparation</b> – both the correct warm up and sufficient training are a vital part of any programme	
<b>Poor fitness level</b> – Early fatigue can cause poor technique, inaccurate decision making and a drop in performance	
<b>Poor flexibility level</b> – This can lead to a decreased joint stability.	

#### Extrinsic Risk Factors

Incorrect Equipment and Clothing	
<b>Age and ability related</b> – Adapted equipment for younger participants will ensure strain is not place onthe body	
<b>Protective equipment</b> – certain sports require important protective needs. i.e. boxers wear gum shields and cricket batsmen will use various padding	
<b>Footwear</b> – this is designed with the sports needs in mind.	

Poor Technique and Training	
<b>Coaches</b> – these individuals should teach the correct technique, impart the right warm up routines and consider appropriate practices	
<b>Guidelines</b> – there have been many rules changes in sport over the years as a result of injuries and recommendations i.e. rugby scrum engagement sequence	

Inappropriate Intensity, Duration or Frequency of Activity
<b>Principles of training</b> – using these principles will ensure the risk of injury is minimised. This must be age and ability appropriate
<b>Intensity</b> – if training is too great acute injuries may occur
<b>Duration/Frequency</b> – training too long or often can lead to inflammatory or overuse injuries

#### Warm Up and Cool Down Effectiveness

Importance of a Warm Up	
<b>Increases the elasticity and mobility of joints</b> – Stretching the joints and muscles decreases the risk of sprains and strains	
<b>Increases Core Temperature</b> – a small rise in temperature will improve enzyme activity and diffusion gradients	
<b>Prepares the Mind</b> – Undertaking a warm-up enables the sports person to focus and prepare mentally for the training session or competition	

Prior to a training or exercise session a thorough warm up should be undertaken	<b>Stage 1:</b> Pulse raiser Involves gentle jogging, running and sprinting <b>Stage 2:</b> Dynamic Stretches/mobility exercises A number of exercises, which are carried out in order to stretch the major joints and muscles of the body <b>Stage 3:</b> Exercise Specific Drills This stage involves the performer warm up specific skills to the event being completed
This should... - Last at least 30 minutes - Gradually increase the intensity - Contain three stages	

Dynamic stretches are now more favourable to static stretches after research suggested

- Static stretches do not prevent injury
- They reduce the peak force capability due to lengthen to muscle too much
- Reduce the muscles ability to consume oxygen by as much as 50%

#### Importance of a Cool Down

**Reduces Soreness and Stiffness** – Stretching helps prevent the joints and muscles becoming sore and stiff

**Stops blood pooling** – keeps blood circulating and slowly returns

**Removes Lactic Acid** – Continuing gentle movement reduces the build up of lactic acid

Cool downs should...	2 Stages – Gentle Aerobic Gentle Stretching
<ul style="list-style-type: none"> <li>- Last at least 20-30 minutes</li> <li>- Gradually decrease intensity</li> <li>- Follow two stages</li> </ul>	The first part is gentle aerobic work to maintain heart rate and venous return i.e. Gentle walking and jogging
Active recovery aims to flush the muscle tissue with oxygenated blood and therefore remove waste products	The second part is gentle stretching exercises of all the major joints and muscles to reduce tension and gradually reduce muscle temperature


Training will often work the individual at high intensities to overload the muscle, this will stimulate muscle hypertrophy	A cool down will return the body to a complete resting state and will remove lactic acid and prevent muscles cramps and DOMS, the muscle soreness is a result of structural damage to the fibres
<b>Delay Onset Muscle Soreness (DOMS)</b> – Pain that begins after you have worked out, usually starts a day or two after a workout	


#### Responding to Injuries

SALTAPS – See, Ask, Look, Touch, Active, Passive, Strength  
 PRICE – Protect, Rest, Ice, Compress, Elevate  
 6 Rs – Recognise, Remove, Refer, Rest, Recover, Return


Responding to Injuries		
	SALTAPS	PRICE
S	<b>SEE</b> Acknowledge that an injury has occurred and ensure no further damage can take place by stopping the game	For improved recovery time of acute soft tissue injuries such as pulled or strained muscles immediate response is vital
A	<b>ASK</b> Question the injured person about the nature and location of the injury	<b>P</b> <b>PROTECT</b> The area from any further injury by removing the player from the site and isolating the injury
L	<b>LOOK</b> For signs of injury to assess level of the pain	<b>R</b> <b>REST</b> The area for at least 2 – 3 days to allow for the initial healing process to take place
T	<b>TOUCH</b> Palpate the injury to assess level of the pain	<b>I</b> <b>ICE</b> The injury for 15 minutes every 2 hours to reduce swelling
A	<b>ACTIVE</b> Can the injured player move the area unaided	<b>C</b> <b>COMPRESS</b> The area with a bandage to limit the spread of the swelling
P	<b>PASSIVE</b> If active phase is successful try to move the area through a full range of motion	<b>E</b> <b>ELEVATE</b> The injury above the heart to further limit the swelling of the area
S	<b>STRENGTH</b> Assess strength with resistance from assessor or Bering weight on leg	

6 Rs	
R	<b>RECOGNISE</b> The nature and the severity of the concussion by performing simple visual tests
R	<b>REMOVE</b> The player from the pitch / court To avoid any further injury
R	<b>REFER</b> The injured player must be seen by a trained medical professional
R	<b>REST</b> The appropriate time away from the sport as advised by medical professionals to allow full recovery should be adhered to
R	<b>RECOVER</b> The player should be regularly assessed to monitor the speed and effectiveness of recovery
R	<b>RETURN</b> The player should follow a graduated return to play protocol

Rehabilitation	
	<ul style="list-style-type: none"> <li><b>Rehabilitation</b> – The process of regaining full function of the injured area <ul style="list-style-type: none"> <li>3 Stages <ul style="list-style-type: none"> <li>➤ Early Stage</li> <li>➤ Mid Stage</li> <li>➤ Late Stage</li> </ul> </li> </ul> </li> <li><b>Early Stage</b> – gentle exercise, encourage healing</li> <li><b>Mid Stage</b> – progressive overloading of the affected area to develop strength</li> <li><b>Late Stage</b> – functional exercises and drills to enable player to return to full time training</li> </ul>

Massage	
Deep muscle therapy used to realign damaged muscle fibres and removing toxins from the affected areas	
<ul style="list-style-type: none"> <li>- Nutrients can be flushed through the damaged tissues to aid recovery</li> <li>- Muscle fibres stretched to release tension</li> <li>- Scar tissue broken down and removed from area</li> <li>- Pain reduction</li> </ul>	

Cold, Heat and Contrast Therapy	
<b>Cold Therapy</b>	
Use of ice or ice baths to reduce tissue temperature and metabolic activity and reduce blood flow from vasoconstriction of blood vessels, this can be used on acute injuries early in recovery process	
<b>Heat Therapy</b>	
Use of hot pads to reduce muscle tension and increase blood flow from vasodilation of the blood vessels, this can be used on chronic or latter stage acute injuries	

Cold, Heat and Contrast Therapy		
<b>Contrast Therapy</b>		
Alternate cold and heat therapy – use cold water followed immediately by hot water ratio of 1;3 or 1;4 minutes		
<b>Surgery</b>		
As a last resort when all other rehabilitation has been attempted or for fast recovery of elite performers surgery can be used The type of surgery depends on the severity of the injury		
		
Common surgical procedures include... <ul style="list-style-type: none"> <li>- relocation of dislocated joints-</li> <li>- repairing meniscal tears or ligament ruptures</li> </ul>		

Stretching			
3 Types – Acute Stage <ul style="list-style-type: none"> <li>- Mid Stage</li> <li>- Late Stage</li> </ul>			
Acute Stage	Mid Stage	Late Stage	
Up to 3 days after injury - No stretching	3 days to 2 weeks - Heat therapy and gentle static and passive stretching	2 weeks to 1 month - Range of motion stretches some PNF	

Anti –Inflammatory Drugs	
<b>NSAIDs-</b> Non – Steroidal Anti – Inflammatory Drugs	
Ibuprofen and Aspirin Help to reduce the inflammatory response to injury by inhibiting the natural chemical releases in the cells following injury interfering with the pain receptors	
Side affects can include heartburn and headaches and long term use is not recommended	

Physiotherapy	
<ul style="list-style-type: none"> <li><b>Physiotherapy</b> – Treatment of the injured area by physical manipulation by a professional physiotherapist</li> </ul>	
	
The joint or injured area is often mobilised, stretched or manipulated Exercises are encouraged to work the damaged muscle fibres	
Adjusted posture and alignment to increase biomechanical efficiency to help reduce chances of further injury	