

## how are SPORTS INJURIES classified and managed?

This chapter examines the process of classification of sporting injuries. It then focuses on the assessment and management strategies that are appropriate for different types of sporting injuries based on their initial **classification**.

### Ways to classify sports injuries

Sports or performance injuries can be classified according to either the cause of the injury or the type of body tissue damaged.

If injuries are classified according to *cause*, the three categories are **direct injury**, **indirect injury** and **overuse injury**.

If injuries are classified according to the *type of body tissue* damaged, the two categories are **soft-tissue** injury and **hard-tissue** injury.





**Table 16.1** Overuse injuries

Injury	Symptoms and signs	Possible causes	Management
Shin soreness	Tenderness Pain in shins Pain increases by running and jumping Swelling	Increased activity Poor footwear Postural imbalance Muscle imbalance	Decrease painful activity RICER Physiotherapy Correct footwear Orthotic control
Knee pain	Pain around knee Pain increased by sport, stairs, sitting, hills Swelling Discolouration	Increased activity Postural imbalance Poor footwear Muscle imbalance Growth spurt	Decrease activity RICER Physiotherapy Tape Correct footwear Orthotic control
Heel pain	Tenderness over heel Pain increased by running, jumping	Tight calf muscles Growth spurt Poor footwear	Decrease activity RICER Physiotherapy Stretching program Correct footwear Orthotic control
Shoulder pain	Pain on certain movements Reduced movement Local tenderness	Increased activity, e.g. swimming Poor technique, e.g. swimming, pitching, serving	Decrease activity RICER Physiotherapy Stretching program Exercises Modify activity
Elbow pain	Pain in and around elbow Pain increased by certain activities, e.g. shaking, lifting, gripping	Jarring Increased activity e.g. golf, tennis Muscle imbalance Poor technique Change of grip Lack of control	Decrease activity RICER Physiotherapy Stretching program Elbow brace Modify technique



RICER stands for rest, ice, compression, elevation and referral.



An orthotic control is a device placed in footwear to correct foot alignment.

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## Classification according to cause

### Direct injury

A direct injury is caused by an external blow or force. Direct injuries can be caused by:

- a collision with another person (for example, during a tackle in rugby union)
- being struck with an object (for example, a cricket ball or hockey stick).

Examples of injuries that result from external forces include haematomas ('corks') and bruises, joint and ligament damage, dislocations and bone fractures.



**Figure 16.1** Direct injury: hockey stick impacting athlete's body



**Figure 16.2** Indirect injury: ligament sprain/strain

## Indirect injury

An indirect injury can occur in two ways:

- The actual injury can occur some distance from the impact site. For example, falling on an outstretched hand can result in a dislocated shoulder.
- The injury does not result from physical contact with an object or person, but from internal forces built up by the actions of the performer, such as may be caused by over-stretching, poor technique, fatigue and lack of fitness. Ligament sprains and muscle strains and tears are examples of these injuries.

## Overuse injury

Overuse injuries occur when excessive and repetitive force is placed on the bones and other connective tissues of the body. Little or no pain might be experienced in the early stages of these injuries and the athlete might continue to place pressure on the injured site. This prevents the site being given the necessary time to heal. Eventually the damage accumulates, and the injured site becomes inflamed, and therefore painful.

The symptoms of overuse injury often occur when there is a change in training practices (such as increasing training frequency or intensity), and the body is unable to deal with the new stresses that are placed upon it. A large number of overuse injuries results from poorly planned training programs in which the athlete is not given appropriate time to recover between intense sessions.

Other causes of overuse injury are use of poor technique and poor equipment. Athletes who practise and compete using poor technique or equipment place extra stress on their body. Examples of this include elbow injury from poor backhand technique or the use of a heavy racquet in tennis, and ankle or knee pain from an inappropriate running style or from wearing inappropriate footwear.

Examples of injuries that result from repetitive forces are stress fractures (small cracks in the bone) and tendonitis (inflammation of a tendon).



**Figure 16.3** Stress fractures can result from a repetitive force

## Classification according to tissue type

### Soft-tissue injury

Soft-tissue injuries are the most common injuries resulting from participation in sport. They include the following:

- skin injuries—abrasions, lacerations and blisters
- muscle injuries—tears or strains of muscle fibres and contusions
- tendon injuries—tears or strains of tendon fibres and inflammation (tendonitis)
- ligament injuries—sprains and tears of ligament fibres.

Soft-tissue injuries can result in internal bleeding and swelling. Prompt and effective management of this bleeding aids recovery. Soft-tissue injuries are covered in further detail on page 290.



Tendons join muscle to bone while ligaments join bone to bone.

**Table 16.2** Injury prevalence in AFL (missed games per club)

Body area	Injury type	
Head/neck	Concussion	0.3
	Facial fractures	0.7
	Neck sprains	1.1
	Other head/neck injuries	1.6
Shoulder/arm/elbow	Shoulder sprains and dislocations	6.4
	Acromio-clavicular joint injuries	1.4
	Fractured clavicles	1.8
	Other shoulder/arm/elbow injuries	1.5
Forearm/wrist/hand	Forearm/wrist/hand fractures	2.3
	Other forearm/wrist/hand injuries	3.1
Trunk/back	Rib and chest wall injuries	1.9
	Lumbar and thoracic spine injuries	2.8
	Other buttock/back/trunk injuries	1.7
Hip/groin/thigh	Groin strains/osteitis pubis	18.0
	Hamstring strains	24.3
	Quadriceps strains	5.6
	Other hip/groin/thigh injuries	5.5
Knee	Knee anterior cruciate ligament (CL)	15.9
	Knee medial CL or posterior CL	6.3
	Knee cartilage	9.1
	Other knee injuries	6.0
Shin/ankle/foot	Ankle sprains or joint injuries	7.1
	Calf strains	3.1
	Achilles tendon injuries	2.2
	Fractures/stress fractures of leg or foot	9.5
	Other leg/foot/ankle injuries	4.2
Other	Medical illnesses/non-football injuries	4.1
<b>Missed games/club/season</b>		<b>147.5</b>



Osteitis pubis is an overuse injury to the groin region (inflammation of the pubis symphysis).

Adapted from *16th Annual AFL Injury Report: Season 2007*

### Hard-tissue injury

Hard-tissue injuries are those involving damage to the bones of the skeleton. They range from severe fractures and joint dislocations to bruising of the bone. A direct force can bruise a bone and cause bleeding between the outer layer of the bone and the underlying compact bone. This is common in a bone such as the tibia (shin) where there is little muscle tissue over the bone to absorb the force.

Bones have a blood supply and internal bleeding can result from a fracture. In major injuries, this internal bleeding in the bone, together with bleeding from surrounding damaged tissue, can lead to shock and serious circulatory complications. Hard-tissue injuries are covered in further detail on page 294.



## Secondary injury

Athletes returning to activity are also at risk of a secondary injury, which is an injury that occurs as a result of a previous injury being poorly treated or not being fully healed. Athletes risk recurrence of injuries if they commence playing before regaining full strength and range of movement.

### practical application

#### Classify sports injuries

- 1 Examine Table 16.2 (page 289), then complete the following tasks.
  - a **Classify** the injuries in the table into direct and indirect injuries on the basis of their most likely cause.
  - b **Discuss** how some of these injuries could be both direct and indirect.
  - c **Classify** the injuries listed in the table into soft-tissue injuries and hard-tissue injuries.
  - d **Identify** the injury that resulted in the most missed matches in 2007.
  - e **Discuss** the possible reasons for the identified injury resulting in the most missed matches.
- 2
  - a **Identify** examples of direct and indirect injuries that might occur in the following sports:
    - field hockey
    - snow skiing
    - cricket.
  - b **Classify** the injuries identified in task 2a into soft-tissue and hard-tissue injuries.

### Critical inquiry

- 1 **Explain** why it is necessary to classify injuries.
- 2 **Investigate** whether injuries can be classified in other ways than those described above.

### Research and Review

- 1 **Describe** the differences between direct and indirect injuries.
- 2 **Explain** how poor technique can cause an overuse injury.
- 3 **Define** soft-tissue injury and hard-tissue injury.
- 4
  - a **Clarify** what a secondary injury is.
  - b **Outline** how they can be prevented.

## Soft-tissue injuries

Three common soft-tissue injuries are tears, sprains and contusions.

### Tears, sprains and contusions

A *tear* is a disruption of the fibres of a muscle or tendon. This can be tiny and microscopic (often called a strain). A tear can also be more severe, and involve larger fibres of muscles and tendons. Tears (and strains) occur when a muscle or tendon is over-stretched or when a muscle contracts too quickly. The severity of the tear can range from the microscopic level (a strain), to a small number of fibres through to a complete rupture of all muscle fibres.

A *sprain* is a tear of ligament fibres, muscles or tendons supporting a joint. This can occur when a joint is extended beyond its normal range of movement. A sprain can involve a small number of fibres through to a complete rupture. In extreme circumstances, the fibres of the ligament, muscle or tendon can remain intact and rip from the bone.

A *contusion* or bruise is bleeding into the soft tissue. It is caused by a direct blow from another person, an implement or an object. A bruise can occur to any soft tissue of the body.

### Skin abrasions, lacerations and blisters

Injuries to the skin are very common in sport. They include minor wounds, such as abrasions (grazes), blisters and small lacerations. They also include bone fractures and more serious lacerations that require suturing (stitches). Small skin abrasions, lacerations not requiring sutures and blisters are manageable conditions, and in most cases do not require referral to a doctor.

*Skin abrasions* occur when the outer layer of skin is removed, usually as a result of a scraping action. The open wound can contain dirt or gravel, which should be removed. More extensive, deeper abrasions require medical attention.

When the skin is lacerated (cut), the depth and location of the *laceration* will determine whether suturing is required. Medical attention is required if the laceration is deep enough to expose tissues, such as fat, tendons or bone. Sometimes a superficial laceration will require suturing. This can be required if the laceration is located:

- over a joint (such as the knee) because **flexion** will continually open the wound
- in a cosmetically sensitive position (for example, on the face).

Deep lacerations are usually accompanied by significant bleeding.

*Blisters* result from friction (rubbing). One layer of skin separates from another and a small pocket of fluid forms. Blisters can be caused by equipment, shoes, pressure from callus build-up, increased training loads or simply by the recommencement of training after an extended rest period.



A **callus** is a build-up of dead skin formed at a site where there has been frequent rubbing and pressure; for example, on the heel.



**Figure 16.4** Skin abrasions occur when the outer layer of skin is removed

## Inflammatory response

The initial stage of repair of body tissue is the **acute inflammatory phase**. It exists during the first 24 to 72 hours after injury. The immediate response of the body to injury is to increase the flow of blood and other fluids to the injured site. If blood vessels at the site are damaged there will also be direct bleeding into the surrounding tissue. The accumulation of fluid in the area causes an increase in tissue pressure, which produces pain.

All these changes produce what we call inflammation. Inflammation consists of redness, heat, swelling, pain and loss of function. If inflammation is left unchecked and persists for a long time, formation of **scar tissue** will be more severe.

The extent to which the formation of inflexible scar tissue can be prevented will, in part, determine the time required for rehabilitation of the injury and the degree to which normal functioning can be returned to pre-injury levels. Figure 16.5 (page 292) shows how stretching and the application of ice will limit the formation of scar tissue.

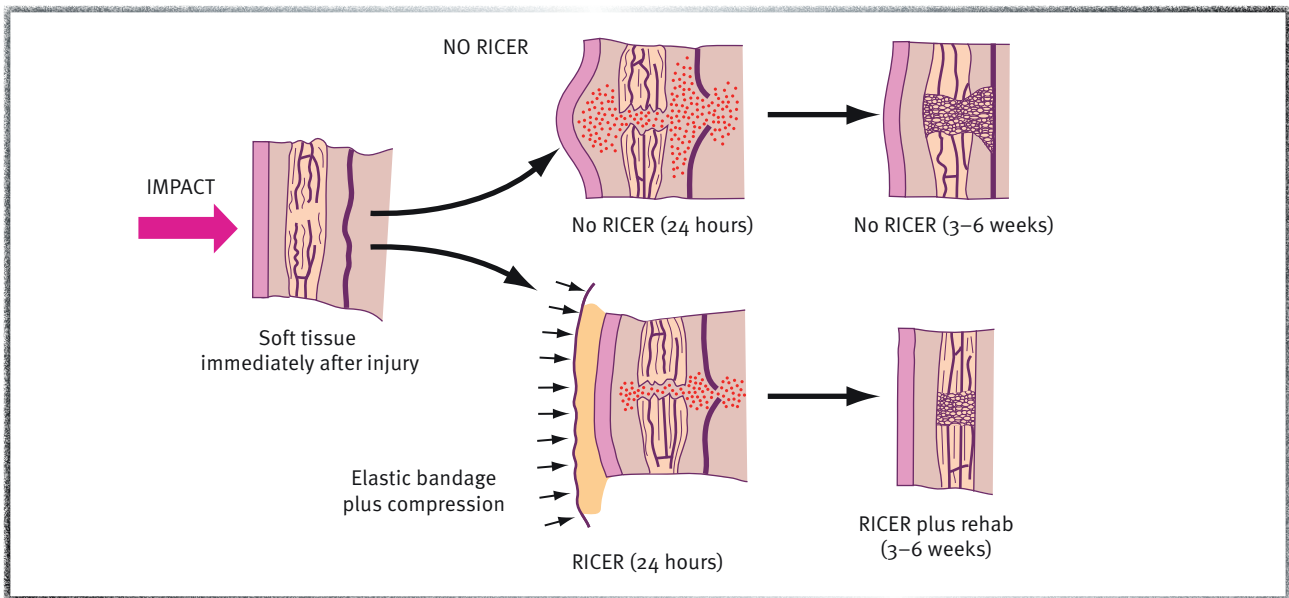
## Managing soft-tissue injuries

In order to effectively manage soft-tissue injuries the RICER procedure needs to be followed.

### RICER

The immediate management of soft-tissue injuries during the acute inflammatory phase is very important for successful rehabilitation after the injury. The aims of immediate treatment are to:

- prevent further tissue damage
- minimise swelling
- ease pain
- reduce the formation of scar tissue
- reduce the time needed for rehabilitation.



**Figure 16.5** How RICER helps in the management of a soft-tissue injury

These aims are achieved through the application of the RICER procedure.

- **R** for Rest
- **I** for Ice
- **C** for Compression
- **E** for Elevation
- **R** for Referral.

### Rest

The injured area must remain relatively inactive for the first 48–72 hours. The duration of the rest will depend on the severity of the injury.

### Ice

The application of ice causes the blood vessels to constrict, thus decreasing circulation and resulting in less inflammation at the site. Where possible, ice should be applied to the surrounding area, in addition to the direct site. Ice should be applied in a wet towel for periods of 20–30 minutes every two hours for the first 48–72 hours. Do not apply ice, or a plastic bag containing ice, directly onto the skin. Care should also be taken when applying ice in the region of the eye.



Do not apply ice, or a plastic bag containing ice, directly onto the skin.

### Compression

In addition to the application of ice, compression should be applied using a wide elastic bandage over the injured site and surrounding area. This will help to reduce the swelling by limiting fluid build-up (see Figure 16.5). It also provides support for the injured site. Care should be taken to ensure that circulation is not constricted by bandaging too tightly.

### Elevation

Elevation of the injured part above the level of the heart reduces the volume and pressure of blood flow to the injured area, thus limiting inflammation. Elevation can be achieved for most injuries by supporting the injured area while the casualty is seated or lying down.



**Figure 16.6** Rest, ice, compression and elevation of an injured ankle

## Referral

Medical assessment should be sought as soon as possible to ascertain the full extent of the injury, and to commence appropriate rehabilitation.

## Actions to be avoided

During the first 48–72 hours after an injury there are certain actions that must be avoided. These include the application of heat (for example, use of hot liniments, spas, saunas and hot baths), drinking alcohol, physical activity and massage. These actions all increase blood flow, and therefore swelling.

## Immediate treatment of skin injuries

The aims of the immediate management of skin injuries include prevention of infection for both the victim and the first aider, minimisation of blood loss and tissue damage, and promotion of healing in order to reduce recovery time.

For most skin injuries the common management steps that should be followed are:

- 1 Reduce the dangers of infection (for example, by wearing gloves).
- 2 Control bleeding with rest, pressure and elevation.
- 3 Assess the severity of the wound.
- 4 Clean the wound using clean water, saline solution or a diluted antiseptic.
- 5 Apply an antiseptic to the wound (for example, Savlon or Betadine) after ensuring that the person is not allergic to the antiseptic to be used.
- 6 Dress the wound with a sterile pad and bandage.
- 7 If necessary, refer the person to medical attention.

Skin injuries that should be referred to medical attention include wounds that require suturing, wounds that show signs of infection or cannot be properly cleaned of foreign material and wounds to the head. The reason why all head wounds should be referred to medical attention is because even minor injuries to the head might be accompanied by concussion.



Concussion is a brain injury that is not usually considered life threatening.

## Critical inquiry

- 1 **a** Discuss whether elevation is possible for all soft-tissue injuries.  
**b** If elevation is not possible, **outline** other ways that blood flow to the area can be reduced.
- 2 If ice is not available, **identify** items that can be substituted.

## practical application

### Managing soft-tissue injuries

- 1 **Apply** the RICER procedure to the following soft-tissue injuries:  
**a** sprained ankle ligaments  
**b** corked thigh  
**c** sprained thumb ligaments.

## Research and Review

- 1 **Describe** the differences between a sprain and a strain.
- 2 **Explain** the acute inflammatory response.
- 3 **Outline** the aims of the immediate management of soft-tissue injuries.
- 4 **Identify** the problems that can sometimes occur at the 'ice' and 'compression' stages of the RICER procedure.
- 5 **Explain** what actions should be avoided after sustaining a soft-tissue injury.
- 6 **Identify** the common management steps that should be followed with skin injuries.
- 7 **Clarify** when a skin injury requires professional medical attention.



# Hard-tissue injuries

## Types of hard-tissue injuries

Hard-tissue injuries include fractures and dislocations.

### Fractures

A **fracture** is a break in a bone. This can result from a direct force, an indirect force or repetitive smaller impacts (as occurs in a stress fracture).

If the skin over a fractured bone is intact, the fracture is described as ‘simple’ or ‘closed’. If the skin over a fracture is broken, the fracture is described as ‘open’ or ‘compound’. The skin might be broken either by the force of the injury that caused the fracture or by a piece of broken bone protruding through the skin. A fracture is described as ‘complicated’ if nearby tissues and/or organs are damaged.

In some cases, a simple fracture can be difficult to detect. The signs and symptoms of a fracture include:

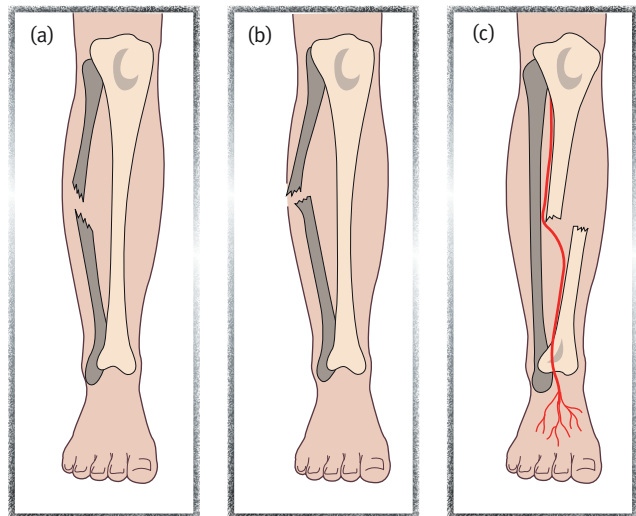
- pain at the site of the injury
- inability to move the injured part
- unnatural movement of the injured part
- deformity of the injured part
- swelling and discolouration
- grating of bones.

### Dislocations

**Dislocations** are injuries to joints where one bone is displaced from another. A dislocation is often accompanied by considerable damage to the surrounding connective tissue. Dislocations occur as a result of the joint being pushed past its normal range of movement. Common sites of the body where dislocations occur are the finger, shoulder and patella.

Signs and symptoms of dislocation include:

- loss of movement at the joint
- obvious deformity
- swelling and tenderness
- pain at the injured site.



**Figure 16.7** Types of fractures: closed (a), open (b) and complicated (c)



**Figure 16.8** Splinting a leg fracture

**Table 16.3** Types of fractures

Type of fracture	Definition	Associated factors
Closed	The bone is fractured but there is no cut or wound at the fracture site.	Bleeding remains concealed beneath the skin.
Open	A jagged end of the fractured bone protrudes through the skin or there is a cut near the fracture site.	Visible external bleeding occurs. Infection may enter the body and the bone through the cut. Infection will significantly delay healing and should be prevented.
Complicated	The fractured bone damages the local tissues; i.e. the organ(s) that it protects (e.g. a lung punctured by a fractured rib).	Seek medical assistance quickly as the damage to other structures may cause internal bleeding.

## Managing hard-tissue injuries

### Medical treatment

Because hard-tissue injuries can be accompanied by significant damage to muscle, blood vessels, surrounding organs and nerves, immediate medical treatment is required. For serious hard-tissue injuries, the person should not be moved, and an ambulance should be called. Immediate management in this situation is as follows:

- Immobilise and support the injured site with a splint or sling.
- Check for impaired circulation and other possible complications.
- Arrange for transport to hospital and professional medical assessment.
- Implement the RICER procedure—if it does not cause pain.

### Immobilisation

Management of hard-tissue injuries aims to minimise movement of the injured area. This is achieved by immobilising the joints above and below the injury site. If the injury site is the shaft of a long bone (for example, the femur or humerus), the injury can be supported with a sling or splint.

A supporting splint should be long enough to extend beyond the nearest joints of the injured site. A splint can be another limb or another part of the body or a firm, straight object.

The correct application of the splint is essential. When correctly applied, a splint is secured at all these six points:

- above the joint above the fracture
- below the joint below the fracture
- at the joint above the fracture
- at the joint below the fracture
- just above the fracture
- just below the fracture.

In some cases of fracture, a rigid splint is unnecessary. In these cases, a sling or bandaging of the injured limb to the other limb is adequate.

With dislocation, immobilisation is also the immediate aim. Under no circumstances should the first aider attempt to relocate the dislocation. As a result of the dislocation there can be associated damage to the bones and to the ligaments of the joint. In most cases, an X-ray is needed before relocation. Any rushed attempt by the first-aider to relocate the dislocation might result in further damage to the joint.



**Figure 16.9** A sling used where the fracture does not require splinting



**Figure 16.10** An X-ray of a dislocated shoulder

## practical application

### Managing hard-tissue injuries

- 1 Using a variety of appropriate materials, **apply** a splint to fractures of the:  

<b>a</b> tibia	<b>c</b> radius
<b>b</b> femur	<b>d</b> finger.
- 2 It is important to be able to discriminate between injuries that require immediate medical attention and those that do not. Using the knowledge gained so far through the study of sports medicine, **construct** a policy entitled 'Guidelines for Medical Referral'. This policy should list those situations where immediate medical attention for injuries should be sought.

## Research and Review

- 1 **Describe** the various types of fractures.
- 2 **Identify** the signs and symptoms of a fracture and of a dislocation.
- 3 **Outline** what the immediate aim of management of a fracture and a dislocation is and how this can best be achieved.
- 4 **Explain** why a dislocation should not be relocated.

## Assessment of injuries

It is important to follow correct assessment procedures when assisting an injured athlete.

### TOTAPS

When attending to an injured athlete who is unconscious, the DRABCD action plan must be followed. If the athlete is conscious, the TOTAPS method of injury assessment can be used. This ordered procedure will provide information about the extent of the injury, and will indicate whether the person should be permitted to continue the game/performance or should be given professional medical help. TOTAPS stands for:

- **T** for Talk
- **O** for Observe
- **T** for Touch
- **A** for Active movement
- **P** for Passive movement
- **S** for Skills Test.

It is important to note that the control of bleeding takes priority over TOTAPS.

### Talk

Ask the athlete questions to gather information about the cause, nature and site of the injury. For example:

- How did the injury happen?
- Where does it hurt?
- Did you hear any snaps or cracks?
- Do you have any 'pins and needles'?
- Is the pain sharp or dull?
- Did you continue to play for any time?

For suspected concussion, the questions should be directed at discovering the athlete's alertness and level of consciousness.

If the athlete shows signs of serious injury (that is, spinal injury, a fracture or a dislocation) the person should be immobilised and professional help should be sought immediately. The first aider might also seek information on the injury history of the athlete (for example, previous injuries to the body part) and might talk to witnesses who saw the injury occur.

### Observe

After questioning the athlete, visually examine the site of the injury. Look for deformity, swelling and redness. If the injury is to a limb, compare it with the corresponding area on the opposite limb. If there is obvious deformity, there is likely to be a fracture or serious ligament/tendon damage, and medical assistance is needed. If there is no deformity move on to the next stage of the assessment ('touch').



DRABCD stands for danger, response, airway, breathing, compressions and defibrillation.



## Touch

If there is no obvious deformity and the athlete is not especially distressed, feel the site of the injury. Using your hands and fingers, gently touch the site without moving it. If possible, feel the corresponding site on the other side of the body and compare the two sides. Note any differences in bone shape and skin temperature.

Observe the athlete's level of distress as you touch the injury. If touching the injury causes the athlete intense pain, the injury might be serious and medical diagnosis is necessary. If touching the injury causes only slight pain, move on to the next stage of the assessment ('active movement').

If there is evidence of a fracture or dislocation, the procedure is stopped at this point. Specific management for a fracture should begin.

## Active movement

Ask the athlete to attempt to move the injured part. Observe the degree of pain. Also observe the extent or range of movement that is achieved by the athlete. If possible, compare it with the other limb. As the athlete moves, feel the injured site for any clicking or grating. If the athlete cannot move the injured site, or has only minimal range of movement, the RICER procedure is used, and medical

assistance is sought. If the athlete can move without intense discomfort, proceed to the next stage ('passive movement').

## Passive movement

If you have reached the passive movement stage, it is likely that the injury is not serious. A decision needs to be made as to whether or not the athlete should continue to play. The 'passive movement' stage requires the first aider to move the athlete's injured body part and determine how much pain-free movement is possible. If the athlete cannot have the injured part manipulated through the normal range of movement without pain, the first aider should not continue. RICER treatment should be administered. If the range of movement is normal, the athlete should be asked to stand.

## Skills test

If the athlete can stand, have the person place pressure on the injured site by performing movements similar to those required in the activity to be resumed. For example, the athlete could run, hop, jump and push. If these actions can be completed, the athlete may resume the activity. For example, in the case of a touch football player being assessed for an ankle injury, you would ask the player to run forward and backward and change direction quickly as these movements are fundamental to the game.

**Figure 16.11** Touch the injured site to help determine the seriousness of the injury





**Table 16.4** A summary of the approach to an injured athlete

Step	Action
1 Danger	<ul style="list-style-type: none"> <li>Control dangers then assess injured athlete</li> </ul>
2 Life threat	<ul style="list-style-type: none"> <li>Use DRABCD</li> </ul>
3 Initial injury assessment	<ul style="list-style-type: none"> <li>Use STOP</li> </ul>
4 Detailed injury assessment	<ul style="list-style-type: none"> <li>Use TOTAPS</li> </ul>
5 Initial management	<ul style="list-style-type: none"> <li>Manage appropriately</li> <li>Refer to health professional</li> </ul>



STOP stands for stop, talk, observe and prevent and is a fast on-field assessment.

Safer Sport

## practical application

### Using TOTAPS

For each scenario outlined below, apply the TOTAPS procedure to determine the nature and extent of injury. Remember that medical help is to be sought when a serious injury is suspected. Prepare a table such as the one below, and complete it.

- Scenario 1: A hockey player goes in for a tackle and is involved in a heavy collision with another player. The player remains on the ground in intense pain, grasping the lower leg.
- Scenario 2: At a cross-country event, a participant cannot continue and is in obvious discomfort with a leg injury.
- Scenario 3: At a game of rugby union, a player remains lying on the ground after a ruck. The player is conscious and complains of pain in the spinal region.
- Scenario 4: You arrive at the scene of a cycling accident. The cyclist is attempting to remount the bike and continue the race, but has severely limited movement in one arm.
- Scenario 5: A 100-metre hurdler pulls up in the middle of the race and grasps his or her knee.

Step	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Talk: What questions would you ask the injured person?					
Observe: What are some of the injuries you would be looking for?					
Touch: Would you touch the injury? If so, how?					
Active movement: What things would you look for as the casualty moves the injury?					
Passive movement: Would you move the injured part? If so, how?					
Skills test: What skills would you require the athlete to perform?					

## Research and Review

- 1 Discuss the value of following the TOTAPS procedure.
- 2 In the touch stage, **identify** what the first-aider should be feeling for.
- 3 **a** Compare the differences between active movement and passive movement in the TOTAPS procedure.  
**b** Discuss why passive movement follows active movement.
- 4 At each stage of the TOTAPS procedure, **describe** some signs that require you to seek immediate medical treatment.

## how are sports injuries classified and managed?

### chapter summary

- Sports injuries can be classified by cause: indirect, direct or overuse. They can also be classified by tissue type: soft or hard tissue.
- Soft-tissue injury is the most prevalent type of injury in sport and it occurs to muscles, ligaments, tendons and the skin. Examples include tears, sprains, strains, contusions, abrasions, lacerations and blisters.
- The inflammatory response is the body's initial mechanism of tissue repair and occurs in the first 72 hours post injury. Blood and fluids flood the site, causing pain and inflammation.
- Soft-tissue injuries are managed using the RICER (rest, ice, compression, elevation and referral) procedure.
- The immediate treatment of skin injuries includes the control of bleeding, cleaning of the wound, application of antiseptic and dressing of the wound.
- Hard-tissue injury involves injury to bone. Examples include fractures and dislocations.
- The key to the management of hard-tissue injury is the immobilisation of the limb.
- Sports injuries are assessed using the TOTAPS (talk, observe, touch, active movement, passive movement and skills test) procedure.

### revision activities

- 1 Identify** a variety of sporting injuries that can be classified as:
  - a soft tissue
  - b hard tissue
  - c overuse.
- 2 Describe** practices that should be avoided after receiving a soft-tissue injury.
- 3 Outline** the procedure for the immediate management of skin injuries.
- 4 Clarify** the difference between the assessment and management of sporting injury.

### extension activities

- 1** Select a sport of your choice and research the most common injuries that occur within that sport. Use Publisher or a similar program to create a brochure or pamphlet in which you **summarise** the following:
  - a latest injury statistics
  - b classification of injuries sustained
  - c primary causes of injury
  - d preventative methods.
 Incorporate a variety of diagrams and graphs to visually represent the statistics you have found.
- 2** Compile a media file that contains a variety of articles about the injuries sustained by elite athletes. For each injury identified:
  - a **Classify** it according to cause and tissue type.
  - b **Outline** relevant management procedures.
- 3** Create a visual representation (such as a Vodcast) of the management procedure for:
  - a soft-tissue injury
  - b hard-tissue injury.
- 4** Create a series of questions using content from this chapter that could be used as part of a game show such as *Jeopardy* or *Who Wants to be a Millionaire*. Use your questions to test your classmates' knowledge. Use a game show format.

### exam-style questions

- 1 Explain** how sporting injuries can be classified. (8 marks)
- 2 Contrast** the management of soft-tissue injury and hard-tissue injury. (8 marks)
- 3 Describe** the inflammatory response and the role it plays in injury rehabilitation. (8 marks)
- 4 Assess** each step of the TOTAPS procedure and the role it plays in the assessment of a sporting injury. (12 marks)