

Chapter 6: Safety, first aid and sports injury management

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Chapter 6: Safety, first aid and sports injury management

Introduction

Have you ever had to administer first aid to a friend or family member? Would you know what to do in an emergency? Do you know how to call for an ambulance? In this chapter you will learn how to keep calm and offer assistance in an emergency situation. You will also investigate some preventative measures to employ to reduce the risk of injury or illness for yourself, friends, family and team mates.



Elite sportspeople run a high risk of injury.

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Watch this video

Safety, first aid and sports injury management

Searchlight ID: eles-2337

ESSENTIAL QUESTION

How would you respond in an emergency situation?

STARTER QUESTIONS

1. What would you do if your friend needed first aid?

2. What injuries or accidents have you experienced in your life?
3. What could you have done to avoid the injury?
4. Why do you think more men than women die by drowning?
5. Would you know what to do in an emergency situation?

INQUIRY SEQUENCE

- 6.1 Prevention, safety and first aid
 - 6.2 DRSABCD action plan
 - 6.3 Common injuries and illnesses experienced in the great outdoors
 - 6.4 Water safety
 - 6.5 Sports injury management
- Review

6.1 Prevention, safety and first aid

It is everybody's responsibility to have a sound knowledge of both safety procedures and first aid. This helps to prevent accidents and allows you to treat those injured if one occurs.

ENGAGE

Four out of every 10 accidents occur in the home. These accidents are mainly due to burns, scalds, poisoning, falls, cuts and electrocutions. Would you know what to do if you were confronted by such an emergency? Some accidents are life-threatening.

Using the **Predicting danger** worksheet in your Resources section and the figure below, see how many potential hazards you can identify. In small groups, discuss what first aid techniques might be necessary in the event of one of these accidents.

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Worksheet

Predicting danger

Searchlight ID: doc-14727



The home, where most accidents occur, can be made a safer environment.

EXPLORE

What is first aid?

First aid is the initial or first help that is given to an injured or ill person. First aid is often confused with medical aid, which is treatment by a doctor or other qualified person, such as a nurse or ambulance officer.

First aid begins when a person arrives at the scene of an accident, and continues until the casualty recovers or medical aid arrives. The most obvious objective of first aid is to save the person's life. This objective can be simplified into the five Ps.

First aid can:

- preserve life
- protect the unconscious
- prevent injury or illness from becoming worse
- promote recovery
- procure medical aid.

Preserve life

If a life-threatening situation does exist, the first aider should have knowledge of procedures to keep the casualty alive.

Protect the unconscious

A casualty should be isolated from all further dangers and placed in a position where their injury or illness will not become worse.

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Interactivity

Five Ps of safety

Searchlight ID: int-5499

Prevent injury or illness becoming worse

The casualty's injuries or illness should be attended to in order to prevent complications arising from his or her injury or illness (for example, broken bones should be immobilised and bleeding should be controlled).

Promote recovery

A first aider can speed recovery of the casualty by reassuring them, keeping them comfortable and arranging for emergency care (that is, ringing an ambulance). This point is very important. Even though first aid delivered by a skilled person can save lives, it cannot indefinitely keep the casualty alive if the injury or illness is serious.

Procure medical aid

In most cases, there will be a need for qualified medical assistance; therefore, this must be a major priority. If there are bystanders, they should be sent to seek urgent medical advice, and told to return with an estimated time of arrival. If you are alone, you must attend to the casualty first and then seek medical help as soon as possible. Whoever is sent to seek medical advice must be aware of the correct procedure for calling any emergency service or assistance. The message should be brief yet contain all essential information about the accident or incident. This information may seem obvious now, but under pressure or panic, many calls are useless because callers fail to give relevant information.

How to call for help in an emergency

When possible, the person with the best first aid knowledge should stay with the victim while someone else calls for emergency assistance.



How to call for help in an emergency — instructions from Lifesaving Victoria

1. Dial 000

Triple zero (000) is Australia's primary telephone number to call for assistance (ambulance, police or the fire service) in life-threatening or time-critical emergency situations.

2. When the emergency operator answers, state clearly which service you need.

3. Stay calm and speak clearly. Be ready to give the following information and answer any questions.

- Location of the emergency (including nearby landmarks, closest intersections etc.)
- The telephone number from where the call is being made
- What has happened
- How many persons require assistance
- Condition of the casualty
- What assistance is being given
- Any other information requested

Never hang up before the emergency services operator hangs up.

4. Ask someone to stay in a prominent position to direct the emergency service vehicle to the correct location.

Using other emergency numbers

There are also two secondary emergency call service numbers — 112 and 106.

112 is available from all mobile phones.

If you have a hearing or speech impairment and your life or property is in danger, you can contact police, fire or ambulance on 106.



When seeking an emergency service, make sure you get the details right.



DID YOU KNOW?

There is no advantage to dialling 112 over 000. Calls to 112 do not go to the head of the queue for emergency services and it is not true that it is the only number that will work on a mobile phone.

Prevention and safety

Before learning how to administer first aid, we must remember one very important point. *Most accidents are preventable.* The golden rule of first aid is to be safety conscious. Common sense safety rules can prevent many accidents. Your home is where most accidents occur; therefore, you can be responsible for keeping your living environment safe by identifying any changes that can be made to improve safety.

Safety in the home

- Store poisonous substances and medicines out of reach of children.
- Leave all chemicals, medicines and cleaners in original, labelled containers.
- Provide guards for fires and radiators.
- If safety glass has not been installed in lower windows, fit a shatter-resistant film.
- Do not leave toys around the house, as people can trip on them.
- Store firearms and explosives in safe areas, locked away from children.
- Turn handles on saucepans and other cooking containers away from the edges of the stove.
- Unplug electric cords when not in use.
- Do not leave cooking unattended.
- Turn down the thermostat on gas hot water systems.
- Install smoke alarms.
- Always run cold water into the bath before the hot.
- Turn the hot-water tap off tightly when children are in the bath.
- Do not leave cigarette lighters or matches within reach of children.

DID YOU KNOW?

In 2010–11, the main causes of injury were falls (39 per cent) and transport accidents (12 per cent).

Safety in the backyard

- Have a childproof fence around swimming pools and spas — keep the gate locked.
- Store pool chemicals safely away.
- Lock away all sharp or dangerous tools when not in use.
- Have dangerous or flammable liquids clearly marked.
- Do not leave ladders standing against walls.
- Always supervise children around animals.
- Regularly undertake safety checks and maintain all play equipment.
- Avoid direct sun exposure when the UV index is above 3.
- Separate the driveway from the play area.



Backyard pools can be dangerous environments for children.

Safety in the car and boat

- Ensure the car is roadworthy.
- Don't drive too far without taking a break.
- Make sure all passengers have seatbelts correctly fitted, and that babies and small children are correctly secured in appropriate child restraints for their age/weight.
- Do not leave children (or pets) unattended in a car, even for a short time. Cars can reach dangerously high temperatures very quickly. For more information, follow the **Kids in cars** weblink in your Resources section.
- Get children out of the car on the kerbside.
- Do not leave loose items on the parcel shelf or the cargo area of a station wagon or hatchback.
- When on boats, carry approved life jackets for all on board.
- Inform someone responsible of where you are going and when you intend to return.
- Check the weather forecast.
- Have the charts for the area you intend to cruise in, regardless of your level of local knowledge.
- Carry sufficient fuel and water.

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Weblink

Kids in cars

- Have aboard a torch and spare batteries.
- Carry a functional fire extinguisher and a distress flare.

This is certainly not an exhaustive list of safety rules. Can you think of any others? Remember, every person has a responsibility to be alert to possible dangers and to do all in their power to prevent accidents to their own family and to other people. For more information, follow the safety weblinks in your Resources section.

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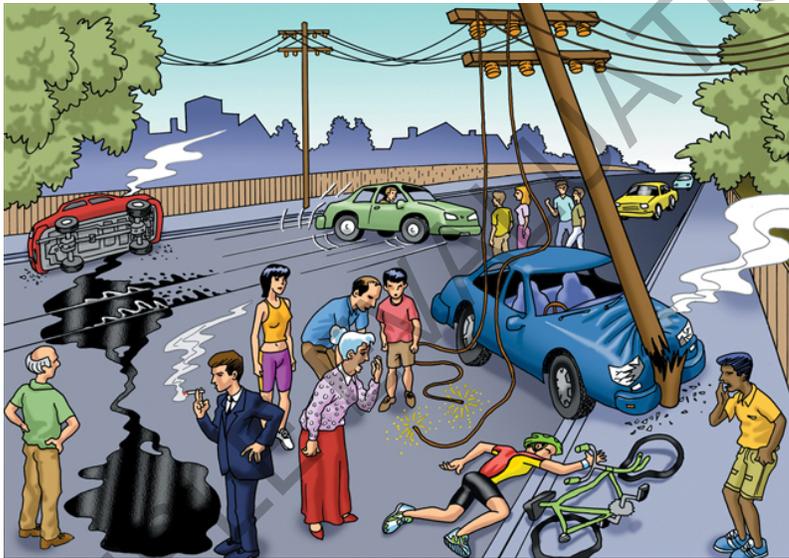
Weblinks

- Safety centre
- Safety posters

ACTIVITIES

1 You react

Examine the scene below and identify all the dangers shown and the causes of these dangers. Explain how you think a first aider should manage the scene.



2 No place like home

1. Draw a plan of your home, including your front and back yards. On your plan, identify all potentially hazardous or dangerous areas. Mark these areas with a red spot and then list what dangers may exist at each spot.
2. You have been appointed safety officer for your family. Explain how you would increase the safety standards around your home. List house rules that would make your home a safer environment.

3 Advertise

Design a pamphlet or poster aimed at adolescents that promotes an aspect of personal safety or the safety of those around them.

4 Emergency call

1. What information needs to be given to the 000 operator in an emergency?
2. Think of three locations outside of the home where you spend a lot of time. Use the following table to record how you would describe the location to the 000 operator in an emergency so that help could arrive quickly.

Location	Street address	Nearest major intersection	Local landmarks

5 Don't try this at home

Use the **Don't try this at home** worksheet in your Resources section to read the article and answer the corresponding questions.

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Worksheet

Don't try this at home

Searchlight ID: doc-14728

CHECK & CHALLENGE

Explain

1. Explain the objective of first aid.
2. What are the five Ps?

Elaborate

3. Choose three general rules from each of the safety in the home, backyard, car and boat sections, and describe what injuries could occur if these rules are not adhered to.

Evaluate

4. Do you know the fire evacuation procedures at your school? Evaluate the safety procedures and awareness of your school. Survey your classmates to assess their awareness of what to do in case of a school emergency.

6.2 DRSABCD action plan

In an emergency situation, knowing how to follow the DRSABCD action plan and perform cardiopulmonary resuscitation (CPR) effectively will greatly improve the chances of saving a person's life until medical support arrives.

ENGAGE

To administer first aid successfully, we must have a plan of action that will work for all types of situations, from a serious car accident to a sprained ankle.

In an emergency situation, we have to have a set of priorities in our plan of action. This allows us to address the most life-threatening injuries first. For example, we must attend to a person's compromised breathing before we attend to broken bones, as a person does not usually die from a broken bone. The most widely used plan of action is the **DRSABCD action plan**. Each letter stands for an aspect of first aid and is listed in order of priority.

In small groups, use the weblinks in your Resources section and discuss movies you have seen in which characters have dealt with an emergency situation. What were some of the techniques used to revive the casualty? Did any actions appear unrealistic or negatively affect the health of the casualty?

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Weblinks

- DRSABCD
- Man saved

EXPLORE

DRSABCD action plan

Danger

Check for and remove any danger to:

1. yourself first
2. then any bystanders
3. and finally, the casualty.

At this stage, put on gloves if possible.

Response

Check the casualty's level of consciousness. This can be done by loudly asking questions such as 'Can you hear me?' and 'What's your name?'. If the casualty:

- responds, check for other injuries and control serious bleeding
- does not respond, proceed with SABCD.

Send for help

Dial 000 or 112.

Remember, dial 000 from a fixed line or 112 on a *digital mobile phone*.

If you have a hearing or speech impairment, you can contact police, fire or ambulance on 106 directly through a teletypewriter or text phone (TTY).

When the emergency operator answers, state clearly which service is required and give the information as specified in section 6.1.

Airway

Open the mouth and check for any foreign matter, removing it if needed. Then clear the **airway**. This can be done by gently supporting the jaw with one hand and tilting the chin forward.

When checking the airway, the **unconscious** casualty should be rolled onto their side (**recovery position**) only if foreign material is present in the mouth.

Breathing

- Look for **signs of life** — is the lower chest or abdomen rising and falling?
- Listen for the sound of air leaving the nose and mouth, such as wheezing or coughing.
- Feel on the side of the rib cage for the rise and the fall of the chest. You can also feel for air leaving the mouth and nose by placing your cheek close to the casualty's mouth and nose.

If the casualty is breathing but not responding, an ambulance must be called immediately (dial 000). Continue to monitor the breathing.

If the person is not breathing, an ambulance must be called (dial 000) and then CPR should be commenced immediately.

Compressions (CPR)

If the casualty is unconscious, shows no signs of life and is not breathing normally, **cardiopulmonary resuscitation (CPR)** must be commenced immediately. CPR is a combination of rescue breaths and chest compressions, and effectively keeps the patient alive by oxygenating the blood with the rescue breaths and providing artificial blood circulation with the chest compressions

(the heart is squeezed between the sternum and the vertebrae) until more advanced life support arrives.

Defibrillation

Defibrillation can be performed by qualified rescue personnel such as paramedics if the casualty is still not breathing and is unconscious. Some first aid courses also now teach you how to use a defibrillator as part of CPR training, as many public places such as airports, railway stations, leisure facilities and shopping centres have **automated external defibrillators (AEDs)** available for use in case of emergency.

Unlike regular defibrillators, an AED is a portable electronic device about the size of a laptop computer that requires no training to use. An AED is attached to a victim who is thought to be in **cardiac arrest**, and it provides voice and visual prompts to lead rescuers through the steps of operation. The AED automatically diagnoses some potentially life-threatening heart problems and is able to treat some of them with defibrillation.

To be effective, an AED needs to be ready to use, well-signed and easy to find by the public when needed.



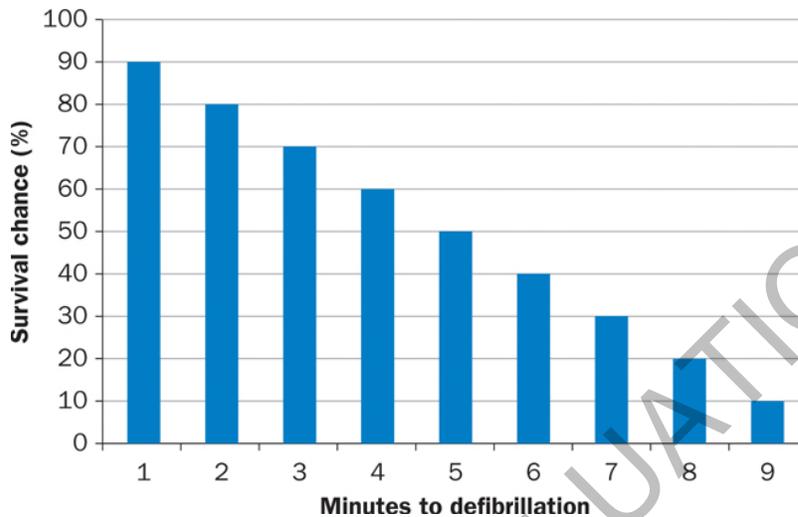
An AED for public use will often have clear signage and instructions.



An AED set up and ready for use

DID YOU KNOW?

Early access to an automated external defibrillator saves lives. Statistics show up to 20 000 lives per year in Australia could be saved by the immediate availability of an AED for the person in cardiac arrest. For every minute that a person in cardiac arrest goes without being successfully treated by defibrillation, their chance of survival decreases by 10 per cent.



Chance of survival from cardiac arrest

Hypothetical accident

You are walking home from school when you hear a screech of tyres and a loud bang coming from around the corner. Your heart skips a beat and then starts thumping in your chest like a drum. You quickly rush around the corner and then are confronted by a horrific sight. A motorcyclist is lying still on the road, his motorbike mangled beside him. A car has veered across the road and mounted the kerb. The driver is getting out and appears dazed but uninjured.

What do you do?



What do you do?

Using this hypothetical accident as an example, we will go through the steps of the DRSABCD action plan.

D – Danger

- › Check for danger to yourself, bystanders and the casualty.

R – Response

- › Check for a response.
- › If no response, proceed with SABCD.

S – Send for help

- › Call 000 immediately once you determine the casualty is unconscious.

A – Airway

- › Open the mouth and clear the airway.

B – Breathing

- › Look, listen and feel for signs of life:
 - Chest rising?
 - Wheezing or coughing?
 - Can you feel their breath on your cheek?
- › If the person is not breathing or responding, give two rescue breaths and then commence CPR.

C – Compressions

- › 30 chest compressions followed by two breaths
- › Five sets in two minutes
- › Use two hands for an adult, one hand for a child and two fingers for an infant.

D – Defibrillation

- › Attach an AED as soon as available and follow the prompts.

Danger

First check for dangers to yourself, bystanders and the casualty. Dangers such as oncoming traffic, fuel spills, blood, broken glass, twisted metal and debris all pose a danger to everyone involved. Strategies for removing these dangers include having bystanders flag and divert traffic from a safe distance, and using a stick or other implement to shift sharp or hot objects. When the dangers can be eliminated and it is safe to proceed, do so. Move the casualty only if a danger *cannot* be removed, such as if the vehicle is on fire.

Response

Which casualty is likely to be more seriously injured? From initial observation, it is likely the motorcyclist. You should first establish whether the casualty is conscious or not. You should approach the motorcyclist and loudly say things like 'Can you hear me?', 'Open your eyes', 'What's your name?' and 'Squeeze my hands'. If the casualty responds, check for bleeding and other injuries such as broken bones while a bystander calls for an ambulance. Unfortunately, in this case, the casualty has not responded. What do you do now?

Send for help

While you check for bleeding or other injuries, instruct a bystander to call 000 (you can do this step yourself if alone).

The bystander will need to stay calm, not shout, and speak slowly and clearly to give the following information.

- State *ambulance* when the person answering the 000 call asks 'Do you want police, fire or ambulance?'
- Location of the emergency (including nearby landmarks, closest intersections etc.)
- The telephone number from where the call is being made
- What has happened — there has been a motor vehicle accident between a car and a motorbike, other bystanders are diverting traffic.
- How many persons require assistance — two casualties (give sex and estimated age also)
- Condition of the casualty — the car driver is conscious but dazed and appears uninjured. The motorcyclist is unresponsive.
- What assistance is being given — first aider going through DRSABCD and commencing CPR
- Any other information requested

Never hang up before the emergency services operator hangs up.

If a bystander has made the call while you are providing assistance to the casualty (or casualties), ask them to return and give you an estimated time of arrival of the emergency service. This is important so that you confirm the 000 call has been made and that you have some indication of the time remaining that you will need to provide first aid until more qualified medical assistance arrives to take over. Also ask someone to stay in a prominent position to direct the emergency service vehicle to the correct location.

Airway

As the casualty is unconscious, you must check that the airway (the passage that leads from the mouth, nose and throat to the windpipe) is clear. If the airway is blocked, oxygen cannot reach the lungs. If there is no oxygen for 3–4 minutes, the person will start to die. Some common causes of a blocked airway are:

- the tongue
- vomit
- broken teeth
- chewing gum.

If any of these objects is blocking the airway, you must place the casualty in a position that will enable you to remove the blockage. This is called the recovery position and is shown in the figure below.

1. Kneel beside the casualty.
2. Place the arm of the casualty that is furthest away from you straight out.
3. Place the casualty's nearest arm across their chest.
4. Bend the nearer knee up.
5. Roll the casualty away from you so they are lying on their side.
6. Place the casualty's knee at a right angle to the body for stability.



Rolling a casualty into the recovery position to remove foreign substances

In the recovery position, any object that is blocking the airway can be removed more easily. It is very difficult to remove objects from a person lying on their back. For example, the hypothetical motorcyclist may have vomited from the shock of his fall. If he is lying on his back, the contents would block his airway. You therefore place him in a recovery position to clear his airway.

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Interactivity

DRSABCD

Searchlight ID: int-5500

Clearing the airway

1. With the casualty in the recovery position, tilt the head down slightly to allow for drainage of any fluids.
2. Open the mouth. With two fingers, remove any objects that may be loose in the mouth using a two finger scooping action.
3. If that doesn't remove all foreign matter, perform five sharp blows to the person's back (between the shoulder blades) in an upwards motion, if conscious; if unconscious, five sharp blows to the sternum.



Clearing the airway

Once the airway is clear, the casualty can be positioned on their back.

Opening the airway

1. Whether the person is on their back or in the recovery position, tilt the head right back with one hand on the forehead and, using a pistol grip, hold the chin and jaw line.
2. Lift the jaw forward and open the casualty's mouth slightly.

Breathing (look, listen and feel)

You have done a good job clearing the motorcyclist's airway; however, he still appears to not be breathing. You are not a doctor, so how do you check whether he is breathing? You look, listen and feel for any signs of breathing by:

- looking at the chest to see whether it is rising and falling
- listening for any sounds of breathing by placing your cheek alongside the casualty's mouth

- feeling with your hand on the ribs/diaphragm for the rise and fall of the chest, and feeling for breath on your cheek.

If the motorcyclist casualty was breathing, you would keep him in the recovery position and keep his head tilted slightly backward and face slightly downward. You would wait for an ambulance while monitoring vital signs and checking for other injuries.

However, the motorcyclist is not breathing, so you must not waste time.

Rescue breathing

There are two main methods of performing rescue breathing:

- mouth-to-mouth
- mouth-to-nose.

Both methods are equally effective, but the mouth-to-mouth method is more commonly used.

The mouth-to-nose method is usually used when there has been a trauma to the mouth or jaw or you are giving rescue breaths in deep water. The mouth-to-nose technique can be performed by using the same principles as followed for mouth-to-mouth, except you close the patient's mouth and breathe into their nose.

The motorcyclist is not breathing, so you must perform the following.

1. Position the casualty on his back on a firm, flat surface.
2. Kneel beside the casualty's chest.
3. Tilt the casualty's head back by placing the palm of one hand on the casualty's forehead.
4. Pinch the casualty's nostrils with your fingers or close off the nostrils with your cheek.
5. Place your mouth firmly over the casualty's mouth, making an airtight seal (see the figure at right).
6. Breathe into the casualty's mouth to give two rescue breaths, ensuring the chest gently rises with each breath.
7. Remove your mouth and look for the patient's chest to rise after each inflation, and listen for air escaping from the patient's mouth and nose by turning your head so that your ear is close to the patient's mouth. At the same time, observe the patient's stomach to make sure that it has not been distended with air (which would indicate you are breathing too hard, there could be an airway blockage or you do not have satisfactory head tilt).
8. If there are still no signs of life, begin chest compressions.



The mouth-to-mouth method. Sealing the nose with the fingers, give two rescue breaths.

Cardiopulmonary resuscitation (CPR) for adults (one operator)

1. Visualise the centre of the chest. Place the heel of one hand on the centre of the chest (between the nipples).
2. Place the heel of the other hand on top of the first and keep the fingers off the ribs. Interlace the fingers of both hands to assist holding the lower fingers off the chest wall.
3. Ensure that your arms are straight and your shoulders are above the patient's chest.
4. Bend forward at the hips so that you depress the breastbone rhythmically and vertically about one-third of the depth of the chest (roughly 4–5 cm), as shown below.
5. Release the pressure, then repeat.
6. Perform 30 compressions.
7. Pause after each set of 30 compressions to give two more rescue breaths, then repeat; you should be performing CPR at a rate of 30 compressions for every two breaths.
8. Aim to do this five times in two minutes (which is at a rate of 100 compressions per minute).
9. *Do not stop* — continue doing 30 compressions and then two breaths until one of the following happens:
 - The casualty recommences breathing under their own power.
 - Someone more qualified, such as a paramedic, arrives to take over.
 - You are physically unable to continue.
 - An AED is applied to the victim. Follow the prompts and recommence CPR if advised.

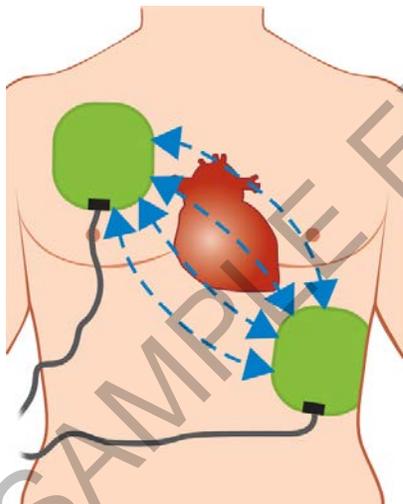


Push the breastbone down to about one-third of the depth of the chest.

Defibrillation

After two minutes of CPR, a bystander approaches you with an AED. The motorcyclist is still not breathing, and so it's important for you to attach the AED as soon as possible; however, you must continue CPR until the AED is ready.

Attach the AED as shown in the figure below and then follow the prompts given by the device. Shortly afterwards, the heart re-establishes a regular rhythm and the motorcyclist resumes breathing. You continue to monitor vital signs of the casualty until the ambulance arrives.



Position and placement of an automated external defibrillator (AED) using adhesive pads

Variations of CPR

There are several variations of CPR. It is essential you apply the correct method depending on the situation.

Two operators

- Each person should kneel on opposite sides of casualty's body.
- The more experienced person should control the head and perform the rescue breaths.
- Give 30 compressions and two rescue breaths, five times in two minutes (a rate of 100 compressions per minute).
- The first aider performing the compressions should call the numbers 1 to 30 as he or she compresses the chest. This allows the other first aider to time the breaths with reduced interruption to the compressions.
- Change operators of chest compressions every two minutes to avoid fatigue, which leads to ineffective compressions.

CPR for small children

For children under 8 years but over 12 months old, use the following procedure.

- Apply a slight head tilt as required to open the airway, but not a full head tilt.
- Cover the child's nose and mouth if required with your mouth and breathe with less force — enough pressure to cause the chest to rise gently. This is because children's lungs are smaller.
- Locate the lower half of the breastbone.
- Apply compressions with the heel of one hand placed over the middle of the chest.
- Depress the breastbone about one-third of the depth of the chest (about 2.5 cm).
- Retain the same breath to compression ratio as for adults, that is, two breaths for every 30 compressions at a rate of 100 compressions per minute.

CPR for infants

For infants below the age of 12 months, use the following procedure.

- Do not apply head tilt for infants. The head remains in the neutral or horizontal position.
- Apply compressions with the tips of your index and middle fingers over the middle of the chest.
- Compress to one-third of the depth of chest (about 1.5 cm) using two fingers.
- Cover the child's nose and mouth with your mouth and breathe with a gentle puff — enough pressure to cause the chest to rise gently.
- Rates of ventilation and compression are the same as for small children.

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Weblink

CPR

DID YOU KNOW?

Even if perfect resuscitation techniques are performed immediately, the casualty will not always be able to be revived. Revival can sometimes depend on factors outside the first aider's control.

ACTIVITIES

1 Debate the compulsory

Conduct a class debate on whether all people should have compulsory CPR training.

2 Pretend first aid

Form pairs. Take turns being the first aider and the casualty. The first aider is to administer the appropriate first aid for each of the following situations. Refer to the DRSABCD action plan, but do not actually perform the rescue breaths or compressions on your partner, as this can be harmful when the person is healthy; just pretend to do so. Alternatively, use a resuscitation mannikin.

1. An unconscious, breathing casualty
2. A conscious casualty who has a blocked airway
3. An unconscious casualty with no breathing

Rehearse one of the above scenarios and make a video of yourself working through the steps of the DRSABCD action plan.

3 How would you react?

I was heading to the skate park after school along Bayview Street. Everything indicated that it was going to be a normal afternoon in my seaside suburb. I guess it would have been about 3.45 pm because I had been out of school only a little while but the skate park would be busy with the after-school crowd. I was listening to my iPod as I turned left down Beach Road and then walked across Queens Park to meet up with my mate Sam. I was startled out of my daydream by Sam calling out from the skate park 'Hey, watch this! I just nailed that move I've been practising for ages!' He landed the rail slide and looked at me with a huge grin. Unfortunately he was not watching where he was going and there was a loud thud as he collided with another skater. Sam was knocked off his skateboard, appeared to hit his head hard and lay motionless on the cement surface. The other skater appeared disorientated; he was clutching his left forearm and was bleeding from a gash above his eye as he tried to get up to find his skateboard. Another boy stood over Sam's body, furiously yelling and cursing about not watching where he was going. Other kids were on their

skateboards, flying past dangerously close. Sam's younger brother, Liam, appeared at his side and was trying to rouse Sam. Liam was yelling at me, 'Call an ambulance, I don't think he's breathing, do something!'

Imagine you are in this situation.

1. What dangers exist for the victim, for yourself and Liam, and for other bystanders? Make a list and suggest what you could do to manage these dangers so it is safe for you to approach and provide assistance to your friend.
2. What would you do next? Sam is not responding to your voice and touch.
3. Explain what information you or Liam would have to give to the ambulance officer over the phone.
4. Explain what you could do to get an ambulance to the scene as quickly as possible.
5. If Liam made the 000 call, how would you provide further assistance to your injured, non-breathing best friend?

4 Accident scenario

Complete the **Accident scenario** worksheet in your Resources section for more practice in what to do in an emergency.

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Worksheet

Accident scenario

Searchlight ID: doc-14729

CHECK & CHALLENGE

Explain

When administering cardiopulmonary resuscitation (CPR), strict guidelines must be followed.

1. How many rescue breaths should be given when you first determine that the casualty is not breathing?
2. How many chest compressions must be given immediately following the rescue breaths?
3. What is the ratio of compressions to rescue breaths during administration of CPR?
4. When two people are available to administer CPR, how often should they swap roles? Why?
5. How long should you continue to perform CPR?
6. When performing CPR on infants, how should chest compressions be applied?

Evaluate

7. What is an AED and under what circumstances should a first aider use one on a casualty?
8. If the chest does not rise and fall when giving rescue breaths, what should you check?

Elaborate

9. Why is your own safety and that of the bystanders a higher priority than the safety of the casualty in an emergency situation?

6.3 Common injuries and illnesses experienced in the great outdoors

When getting out and about in the great outdoors, it is important we can recognise problems that can arise, have the skills to manage illnesses related to overexposure and be able to treat common injuries that can occur.

ENGAGE

Most of us have experienced Australia's great outdoors on camping trips, hikes or boat trips. When preparing for some of these trips, many of us have probably underestimated the effect the elements would have on us. For example, the phrase 'We'll be moving around, so we won't get cold!' is a justification for not taking extra clothes. How sorry we were when we shivered through the day.

Exposure to the wind, rain and cold without adequate body protection can cause physical and mental fatigue, and have significant impact on our health, even in healthy young people. When heat loss is greater than heat gain, severe problems arise. However, most exposure to the elements (sun, wind, rain, snow, water) can, with adequate preparation and forethought, be minimised.

Use the **Missing minister** weblink in your Resources section to read an article about a person who became lost while hiking on Mt Feathertop. In small groups, discuss the precautions or strategies that this person might have taken to avoid severe hypothermia while lost overnight outdoors in freezing conditions.

eBook *plus*

Weblink

Missing minister



A first aid kit is essential when bushwalking.

EXPLORE

Overexposure

Precautions

- Pack appropriate clothes for the conditions that you will be experiencing. If you do not know what weather conditions you will experience, find out all you can from various sources, such as teachers, camp leaders or the internet, before you go.
- Make sure you keep yourself dry by having good quality waterproof clothing.
- Wear inner clothing made from natural fibres (some artificial fibres may be appropriate).
- Wear a hat:
 - in the sun, to protect from sunburn
 - in the cold, to protect from heat loss from the head.
- Travel in groups.
- Take equipment to start a fire.
- Ensure you eat a balanced diet.
- Take sufficient food and water with you.
- Check the weather forecast before you leave.
- Take a change of clothes in case you get wet.
- Take shelter in extreme weather.
- Take a ground sheet.

Can you think of other precautions?

Symptoms

The symptoms of overexposure are:

- feeling cold and shivering
- uncoordinated movements
- blurred vision, dizziness, nausea
- a person lagging behind
- excessive tiredness
- slow mental and physical response
- cramps.

Remember, death by overexposure is not an accident.



After being rescued from a sailing accident, this sailor, Tony Bullimore, was wrapped in a space blanket.

Management

- Take the casualty and yourself out of the wind, rain and cold, and away from wet ground.
- Remove any wet clothing and put the casualty in dry clothes. Wrap the person in a blanket (shown in the figure above) or sleeping bag.
- If conscious, give warm drinks.
- Place a companion in the sleeping bag with the casualty. This will warm the casualty slowly through the warmth given off by the other person's body.
- *Do not* warm the casualty in front of a fire, as this will re-warm them too quickly and force blood to the extremities.

Hypothermia

Hypothermia is a more dangerous consequence of overexposure to the cold. After several hours of exposure, hypothermia develops as the body's internal organs and tissues start to cool down. This condition can lead to death. It is important to remember that heat loss from the head can account for up to one-third of the body's total heat loss if not covered — it is critical to wear a beanie or other form of head protection in the cold.

Symptoms

The symptoms of hypothermia are listed below.

- Casualty is cold to touch
- Slow and shallow breathing
- Unconsciousness
- Slow pulse
- Babies become quiet and refuse food.

Management

Hypothermia can be treated with the following steps.

- Remove casualty to a warm, dry place.
- Place the casualty between blankets so that the temperature can rise gradually.
- If conscious, give them a warm drink.
- A companion stripped to underclothes and sharing the sleeping bag will help to warm the casualty.
- Seek medical aid.

Do not attempt to speed up the warming process by:

- placing casualty in a hot bath
- massaging
- giving alcohol
- applying hot water bottles
- applying direct heat.

Frostbite

Frostbite is the local freezing of a particular body tissue. The body parts that are prone to frostbite are usually those that are exposed to the cold for a long time (for example, nose, ears, face, fingers and toes). As the body cools, the blood vessels in the particular body tissue constrict. This usually cuts off circulation to the area. In extreme cases, a person can lose the body part that has frostbite.



Frostbite can cause severe damage to the extremities.

Symptoms

The symptoms of frostbite are:

- numbness and tingling in exposed areas
- white, waxy skin
- skin is firm and cold to touch
- possible blistering and discolouration of skin.

There may be little or no pain associated with frostbite.

Management

- Place the casualty in a warm, dry place.
- Re-warm the area by body heat.
- *Never* rub or massage the frostbitten area.
- *Never* re-warm with direct heat.
- Cover any blisters with dry, sterile dressing.
- Seek medical aid.

Heat injuries

Sunburn and skin cancer

The Cancer Council of Victoria recommends that Australians use sun protection when the ultraviolet (UV) index is forecast to reach 3 and above. At this level UV radiation is strong enough to damage skin and eyes and increase your risk of skin cancer. UV can't be seen or felt and can be damaging even on cool or cloudy days.

Australia has one of the highest rates of skin cancer in the world. The reasons for this are our climate, how close we are to the equator and the time we spend outdoors. To reduce your risk of developing skin cancer, it's important to be sun smart.

DID YOU KNOW?

It is estimated that more than 75 per cent of all skin cancers could be prevented by practising sun protection in childhood and adolescence.

In Australia, sunburn can occur in as little as 11 minutes on a fine January day.



Communities can provide shaded outdoor areas to protect against sun damage.

During the daily sun protection times, the Cancer Council recommends using a combination of the five sun protection measures to protect against sun damage.



PROTECT YOURSELF IN FIVE WAYS FROM SKIN CANCER

eBook plus

Weblinks

- Sun protection mistakes
- How to properly apply sunscreen

DID YOU KNOW?

In 2011, 1544 Australians died from melanoma.

Skin cancer risk is related to the number of severe sunburns a person receives, particularly during childhood. A person's lifetime or 'cumulative' exposure can also put them at higher risk of skin cancer.

1. Slip on sun-protective clothing that covers as much skin as possible.
2. Slop on SPF 30+ sunscreen. Ensure it is broad spectrum and water resistant. Put it on 20 minutes before you go outdoors and reapply every two hours. Sunscreen should never be used to extend the time you spend in the sun.
3. Slap on a hat that protects your face, head, neck and ears.
4. Seek shade.
5. Slide on some sunglasses. Ensure they meet Australian standards for EPF (eye protection factor).

When is sun protection needed?

Whenever the UV index is 3 and above, most people need sun protection. This period is called sun protection time, but the actual time of the day can vary depending on where you live, the season and weather. However, particular care should be taken during the middle of the day when UV index levels are highest. A UV alert is issued when the UV index is forecast to be 3 or above, giving specific sun protection times for your region.

You can check the daily sun protection time using:

- the SunSmart app
- online resources (follow the weblinks in your Resources section)
- the weather section of newspapers.

Use the **ARPANSA** weblink in your Resources section to get live, real-time UV levels for Australian capital cities.

eBook plus

Weblinks

- SunSmart app
- Bureau of Meteorology
- ARPANSA

DID YOU KNOW?

Australia has one of the highest rates of skin cancer in the world. Two out of three Australians will be diagnosed with skin cancer by the age of 70.

Dehydration and heat exhaustion

Heat injuries occur in hot and humid climates, where people lose excessive amounts of fluid through sweating. Heat injuries are often associated with hard physical exercise. The fluid in your body regulates your body temperature. When your body becomes hot, it produces sweat to cool

itself down. If this fluid is not replaced, the body will continue to heat up. Therefore, the importance of taking in plenty of fluids before, during and after exercise cannot be stressed enough.

Children are likely to suffer from **heat exhaustion** more quickly than adults due to their smaller body size.

Dehydration and heat exhaustion can be prevented by:

- drinking before exercise (even if you are not thirsty)
- drinking small amounts constantly during exercise — thirst is a late indicator of dehydration
- avoiding exercise during the hottest part of the day
- wearing loose-fitting clothes.

The signs of dehydration and heat exhaustion are:

- feeling hot, exhausted and weak
- headache, which may persist for hours
- thirst
- fatigue
- nausea
- giddiness and fainting
- lack of coordination
- rapid breathing and pulse
- muscle cramps
- sweating.

Dehydration can be managed by following the steps outlined below.

- Remove the casualty to a cool place with fresh air.
- Lay the casualty down.
- Loosen any tight clothing.
- Sponge the casualty with a damp cloth or towel.
- Give plenty of fluids (cool water, add sugar or glucose at half a teaspoon per litre).
- If the casualty does not recover and starts to vomit, seek medical aid.

Heatstroke

Heatstroke is a more serious form of heat exhaustion and can be very dangerous. It is a complete breakdown of the body's heat regulating mechanism and is an acute form of hyperthermia. At this



Novak Djokovic, the Australian Open defending champion in 2008, retired against Andy Roddick in the quarter-finals in 2009 because of heat exhaustion.

stage, the body stops sweating and, as a result, the body's temperature continues to rise. There are cases where a person may become unconscious. This condition is especially dangerous to infants and the elderly. Likely victims of heatstroke are infants left in closed cars, athletes running long distances in hot weather, elderly people and unfit outdoor workers not used to the heat.

A person suffering from heatstroke has:

- a strong, pounding pulse
- a headache
- nausea, dizziness, irritability
- visual disturbance and an altered mental state.

Management of heatstroke involves the following steps.

- Undress the casualty. Douse with cold water or rub ice over the body.
- Apply a cold pack or ice to the neck, groin and armpits. Cover the casualty with a wet sheet and fan the body to increase air circulation.
- Seek medical aid. The body's fluid and salt levels will be low, so the casualty will need medical attention to increase the fluid levels.
- Check the body temperature every five minutes.
- When the casualty is cool to touch and temperature is lowered to 38 degrees, stop cooling procedures.
- When the casualty is fully conscious, give fluids such as water or lemonade, to which glucose and half a teaspoon of salt per litre have been added.

Use the **Drink up** weblink in your Resources section to read an article about heatstroke and then complete the **Drink up** worksheet in your Resources section.

Bleeding

Adults have approximately six litres of blood in their body, children have about 2.5 litres and babies about 750 mL. Severe bleeding must be controlled, as losing a large quantity of blood, such as more than one litre in an adult, can result in serious damage or even death.

Management of external bleeding

To reduce the risk of [disease transmission](#) when controlling bleeding, you must form an effective barrier (for example, by using latex gloves) between your skin and the victim's blood. Immediately after providing care, wash your hands thoroughly with soap and water. Do not eat, drink or touch your mouth, nose or eyes until you have washed your hands. This subject is discussed further later in this chapter.



Weblink
Drink up

Worksheet
Drink up

Searchlight ID: doc-14730

Bleeding may be controlled by using pressure and elevation as follows.

1. Lay the casualty down.
2. Apply direct pressure to the site of the bleeding. Pressure can be applied by:
 - using your hand
 - tying a piece of clothing around the wound
 - making a pad and using a bandage to hold it in place.

By pressing firmly on the wound, the blood vessels beneath the skin are flattened and the blood flow is reduced. This gives time for blood clots to start forming, sealing off damaged blood vessels.

3. Apply pressure for five to ten minutes.
4. Raise the injured area to reduce blood flow.

Once bleeding has been controlled, commence an orderly assessment of the casualty, checking for injuries, burns or fractures as you investigate the casualty's body. Look for anything out of the ordinary, such as tenderness, swelling, blood and deformity. Examine each area in the following order.

1. Head and neck
2. Shoulders and chest
3. Abdomen and hips
4. Arms, elbows, shoulders, wrists and hands
5. Legs, hips, knees, ankles and feet
6. Back

Once you have completed your plan of action, wait for medical help to arrive and take responsibility. You should remain at the scene so that you can provide any information relevant to the accident.

Asthma

Asthma causes breathing difficulty because of sudden or progressive narrowing of the airways caused by spasms in the muscles of the bronchial walls (tubes in the lungs responsible for transporting oxygen), swelling and inflammation of the lining of the airways, and excessive production of mucus.

Major factors that can bring on asthma attacks are exposure to house dust, pollens, animal fur and moulds, respiratory infections and exercise. Additional causes of asthma are cold air, anxiety or emotional stress, and cigarette smoke.

Many children experience attacks during exercise; however, increased physical fitness can reduce the chance of having an attack, as a high level of physical fitness can strengthen the breathing

muscles and this, in turn, can improve breathing. Such a balance can be difficult to manage — the sufferer needs to improve their level of fitness through exercise, but exercise may bring on an attack. Fortunately, with an asthma management plan, people with asthma can readily participate in sporting activities; in fact, many elite athletes have asthma.

DID YOU KNOW?

The prevalence of asthma in Australia is high by international standards. About 10 per cent of the population currently has asthma. In 2008, there were 449 deaths due to asthma, an average of more than one person dying due to asthma every day.

Premedication with an inhaled 'reliever' medication a few minutes before exercise can prevent exercise-induced symptoms. 'Reliever' medications such as Bricanyl, Respolin, Ventolin and Asmol are called bronchodilators. They relieve symptoms, but usually for only a short time. The main medication for keeping asthma as steady as possible is the inhaled 'preventer'. Preventer medications, such as Becotide, Pulmicort or Intal, will work only if you use them regularly and should not be used to treat an asthma attack.

Warm-up exercises are helpful to reduce bronchial constriction that occurs during exercise. The best types of fitness activities are swimming, walking and cycling.

If you suffer from exercise-induced asthma, you can work out a suitable asthma management plan with your doctor and enjoy the benefits of regular exercise. With your doctor, you need to work out a plan that enables you to recognise when your asthma is getting worse, know how to treat it quickly, and know how and where to get the right medical assistance. Follow the **Asthma management** and **Asthma care for schools** weblinks in your Resources section for more information.

eBook plus

Weblinks

- Asthma management
- Asthma care for schools

Management of an asthma attack

1. Sit the patient down and remain calm to reassure him or her. Do not leave the patient alone.
2. Without delay, shake the blue reliever puffer (names include Ventolin, Airomir, Asmol or Epaq) and give four separate puffs through a spacer (spacer technique — one puff, then take four breaths from spacer, repeat until four puffs have been given).
3. Wait four minutes. If there is no improvement, give another four separate puffs, as per step 2.
4. Wait four minutes. If there is no improvement, call an ambulance (dial 000) immediately and state that 'a patient is having an asthma attack'.
5. Continuously repeat steps 2 and 3 while waiting for the ambulance to arrive. If at any time the patient's condition suddenly worsens, call the ambulance again.

6. If breathing stops, commence CPR immediately, as described in section 6.2.

Anaphylaxis

Anaphylaxis is the most severe form of allergic reaction and often involves more than one body system (for example, respiratory, gastrointestinal, cardiovascular). A severe allergic reaction can occur within 20 minutes of exposure to the trigger and can rapidly become life-threatening. It must be treated as a medical emergency, requiring immediate treatment and urgent medical attention.

Up to 2 per cent of the general population and up to 5 per cent of children are at risk. The most common causes of anaphylaxis in young children are eggs, peanuts, tree nuts, cows' milk, bee or other insect stings, and some medications.

Signs and symptoms

The signs and symptoms of anaphylaxis may occur almost immediately after exposure or within the first

20 minutes after exposure. Rapid onset and development of potentially life-threatening symptoms are characteristic markers of anaphylaxis.

Allergic symptoms may initially appear mild or moderate but can progress rapidly. The most dangerous allergic reactions involve the respiratory system (breathing) and cardiovascular system (heart and blood pressure).

Symptoms of mild to moderate allergic reactions include:

- tingling of the mouth
- swelling of the face, lips, eyes
- hives, welts or body redness
- vomiting or abdominal pain.

Symptoms of severe allergic reaction, or anaphylaxis, include:

- difficulty and/or noisy breathing
- swelling or tightness in the throat
- wheeze or persistent cough
- paleness and floppiness in young children
- swelling of the tongue
- difficulty talking or hoarse voice
- loss of consciousness and/or collapse.



Epinephrine injectors can be life-saving in the event of anaphylaxis.

Management

Anaphylaxis is a preventable and treatable event. Knowing the triggers is the first step in prevention. You need to be educated on how to avoid food allergens and/or other triggers.

However, because accidental exposure can happen, you need to be able to recognise symptoms and be prepared to administer adrenaline according to the individual's anaphylaxis action plan.

In Australia, anaphylaxis is treated by delivering adrenaline via an EpiPen. An EpiPen is an intramuscular injection of adrenaline for the emergency treatment of anaphylactic reactions.

Research shows that fatalities more often occur away from home and are associated with either not using or a delay in the use of adrenaline. Use the **EpiPen action plan** and **Food allergies** weblinks in your Resources section to find out more.

eBook plus

Weblinks

- EpiPen action plan
- Food allergies

ACTIVITIES

1 Witness

In small groups, discuss dangers or accidents you have witnessed as a bystander. Outline:

1. the nature of the danger
2. how the situation was addressed
3. how bystanders helped or hindered the elimination of the danger.

2 True or false

Answer 'true' or 'false' to the following statements. Research any statements about which you are unsure. Rewrite those statements that you found to be false so that they are true.

1. The human body, without oxygen, will start to die after two minutes.
2. Adults have about 6 litres of blood in their body, children about 5 litres and infants about 750 mL.
3. We lose one-third of our body heat through our heads.
4. A person suffering from hypothermia should be placed near a fire.
5. A person who is immersed in cold water should start swimming because this will decrease heat loss.

3 Adventure story

You are part of an expedition that has set out to conquer a steep mountain. Your party has run into problems due to adverse weather conditions. Write a short story explaining how you saved a member of your party who developed hypothermia. Include how you assessed

the situation, what action you took to treat the condition and how you could avoid this situation happening again.

4 How would you deal?

Look at each of the illustrations below. Write a short report on each injury and how you would deal with the casualty.



How would you treat the casualty?

CHECK & CHALLENGE

Explain

1. List the five steps recommended to protect against sun damage when the UV index is 3 or above.
2. Describe four preventative measures an athlete should take to avoid dehydration.
3. Summarise the six key steps for managing an asthma attack.

Elaborate

4. Which parts of the body are most susceptible to frostbite? Why?

Evaluate

5. If anaphylaxis is a preventable and treatable condition, why does it still cause fatalities? What could be done to reduce the number of these?

6.4 Water safety

Aquatic recreation is one of the fastest growing forms of recreation. Unfortunately, water activities carry a serious risk of drowning. Being aware of all possible dangers and obeying safety rules when playing in or by the water could help to prevent the high number of deaths by drowning that occur in Australia every year.

ENGAGE

Many Australians love and participate in aquatic activities, whether they are recreational, training or therapeutic. Although there are immense benefits from participating in aquatic activity, the number of drowning incidents must constantly be addressed.

From July 2013 to June 2014, 266 people drowned in Australian waterways. The 2014 National Drowning Report revealed males are typically at greater risk, being more than four times more likely to drown than females. Males aged 25–34 represented the greatest proportion of drowning incidents. Of the 266 people to drown in Australia, 81 per cent were males and 19 per cent were females.

Alcohol is a major contributing factor, contributing to one-third of male drowning deaths each year. What other factors do you think could contribute to the high incidence of drownings in males aged 25–34, and the Australian population as a whole?



In Australian waterways, 266 people drowned between July 2013 and June 2014.



Water sports are very popular in Australia.

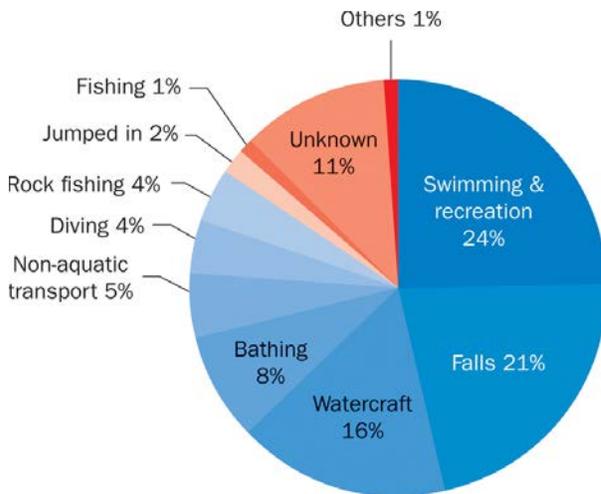
EXPLORE

Cost of drowning

Accidental **drowning** and non-fatal drowning incidents place a tremendous burden on Australian society. In human terms, this translates to a loss of life, lost quality of life, pain and suffering. There are also the direct financial costs to society associated with treatment and ongoing care, along with lost productivity due to death or incapacity. For every drowning death, another three people are hospitalised due to drowning.

Life Saving Victoria has warned that near-drownings, which often result in brain damage, remain high, with an average of 89 incidents in the state each year. Recent findings highlight the continued need to ensure the promotion of water safety is a year-round concern and parents are aware of all potential dangers surrounding children and the water.

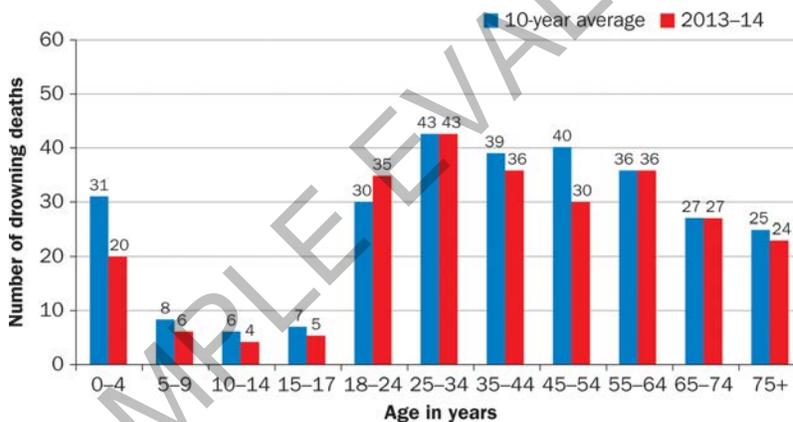
Swimming, and recreation pursuits, watercraft and falls are all activity types that have typically represented the greatest proportion of drowning deaths. As the following figure shows, many people who drown do not intend to enter the water.



Australian drowning deaths by activity immediately prior to drowning 2013–14

DID YOU KNOW?

There has been a 48 per cent decrease in the drowning rate in Victoria since the start of the Play it Safe by the Water campaign in 1998.



Drowning deaths by age in Australia, 2013–14

DID YOU KNOW?

Many drownings could have been prevented if people had known how to manage emergencies in the water. We must be aware of all possible dangers and safety rules to minimise and eliminate dangerous situations.

Dangers in the waterways

Rivers

- Currents can be faster than they seem.
- Submerged obstacles (for example, tree branches, rocks, discarded rubbish) are dangerous when diving and swimming.
- Crumbling banks can cause a person to accidentally fall into the water.
- Uneven and unsafe river beds can cause difficulty for those wading and swimming.
- A strong current can sweep unprepared people into dangerous situations.

DID YOU KNOW?

In 2013–14, the majority of drowning deaths in Australia occurred in inland waterways.

Lakes

- Where a river enters a lake, there can be unexpectedly strong currents.
- Cold water can cause distress and shock if a person accidentally enters a lake.
- As with rivers, submerged obstacles are dangerous when diving and swimming.

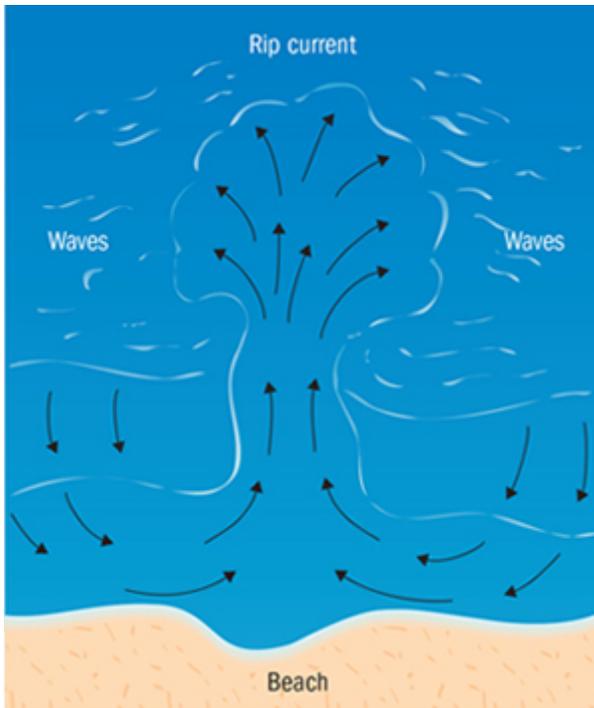
Sea

- Waves can cause difficulty for weak swimmers and non-swimmers.
- Inshore holes can cause unsuspecting bathers to fall or go out of their depth.
- Rips are fast-flowing currents that move out to sea (see the figure below). They can be identified by discoloured water, foam on the surface extending beyond the breaking waves, a ripple appearance when the water around is generally calm, and larger waves breaking on either side or further out. Rips can carry a swimmer far out to sea quickly.

eBook plus

Weblink

Rip avoidance



A rip current

If you are caught in a rip when at a beach patrolled by lifesavers, obey the three Rs:

- *Relax*. Stay calm and float with the current; swim across it, not against it.
- *Raise*. Raise one arm above your head to signal for help.
- *Rescue*. Float and wait for assistance.



Raising your hand while swimming indicates you require rescuing.

Water safety rules

The Royal Life Saving Society — Australia has developed some commonsense rules for water users. If these rules are followed, the chance of dangerous situations occurring is greatly reduced.

Rivers and lakes

- Be careful not to stand on an overhanging bank.
- Before entering the water, check for the strength of the current.
- Check the depth of the water. Are there any snags, rocks, sandbanks or weeds?
- Enter cold water slowly.
- Beware of boats using the waterway.
- Do not try to stand up in quicksand or deep mud.
- If caught in weeds, avoid sudden movement. Swim very gently with a long, slow breaststroke or sidestroke, with minimum leg movement.



At the beach

- Read and obey notices giving advice to beachgoers.
- Swim only between the red and yellow flags. This part of the beach is safer to swim at and is patrolled by lifeguards. Download the Beachsafe App, available from the Appstore. This app contains information on over 12 000 Australian beach conditions.
- Never swim alone.
- Swimmers using surf beaches should have a sound knowledge of waves, currents and rips.
- Keep watch on a reference point on the beach to avoid drifting too far away from the safe swimming area.
- Swim across the current to safety, as swimming directly against a current can be exhausting.
- If unable to escape from a rip, float and signal for help by raising one arm above your head.
- When swimming long distances, swim parallel to, not away from, the shore.
- Do not swim after dark. No-one can see you if you get into trouble.
- If cramping occurs, adopt a floating position and signal for help. Stretch the cramped muscle.
- When using a surfboard, always use a leg rope, obey signage and be careful of other people in the water.



Know your safety rules and swimming abilities.

Public pools

- Read and obey notices to swimmers.
- Obey pool attendants.
- Check depth markings on the side of the pool.
- Stay clear of deep water unless you are a strong swimmer.
- Do not push others into the water.
- Do not dunk others under the water.
- Do not jump into an area where people are swimming.
- Do not hyperventilate prior to submerging then try to swim as many laps under water as you can. Healthy adults or adolescents who hyperventilate before initiating prolonged underwater swimming activities can risk shallow water blackout. For further information, follow the **Shallow water blackout** weblink in your Resources section.

eBook plus

Weblinks

- Pool safety
- Shallow water blackout

Fishing

- Always wear suitable clothing and footwear.
- Always fish in the company of other people.
- Avoid standing on sloping, slippery rocks.
- Check for changes in the weather and tides.
- Never turn away from the sea. If a large wave is evident, move safely away.
- If boat fishing, do not overload the boat with people or fishing gear.
- Do not stand in the boat when landing a fish.

- Always wear a life jacket.

Boating

- Never go out in a boat alone.
- Do not overload the boat.
- Check weather conditions before you leave.
- Always leave word of where you are going and when you expect to be back.
- Everyone should wear a life jacket. Wearing a life jacket may have potentially prevented 50 per cent of drowning deaths among recreational boaters.
- When entering or leaving a small boat, keep your weight low and centred.
- Look out for warning signs of bad weather, such as clouds building up, wind rising quickly or waves becoming bigger.
- If bad weather threatens, immediately make for shore.

DID YOU KNOW?

In 2012–13, 3 in 4 people who drowned in boating incidents were not wearing a personal flotation device at the time the incident occurred.

Rescue techniques

Many drownings occur at inland places such as rivers, dams and home swimming pools — places that usually do not have lifeguards patrolling them. Therefore, it is up to bystanders to render assistance to people who are in trouble. We must be aware of basic rescue principles to effectively deal with water emergencies. Use the following steps in an emergency situation.

1. Recognise an emergency situation.
2. Accept responsibility.
3. Assess the situation.
4. Implement a plan of action.
5. Provide emergency care.

DID YOU KNOW?

In 2012–13, 20 per cent of drowning deaths occurred as a result of watercraft accidents. Eighty-eight per cent of the drowning victims were male.

Recognise an emergency situation

This means that a person must recognise that there is something suspicious or dangerous occurring, for example, an overturned boat, a surfboard drifting away, a swimmer not making any headway swimming back to shore or a person splashing violently in the water. Without recognition, a water rescue cannot be enabled.

Accept responsibility

A bystander must take the responsibility of helping the person in danger. At a crowded emergency scene, individuals may assume that someone else will save the person in trouble. This is usually because people are unsure of what to do. Efficient communication is required between bystanders to find out whether the person in danger is being helped.

Assess the situation

The rescuer must correctly assess the situation and decide on appropriate action. Factors to consider are:

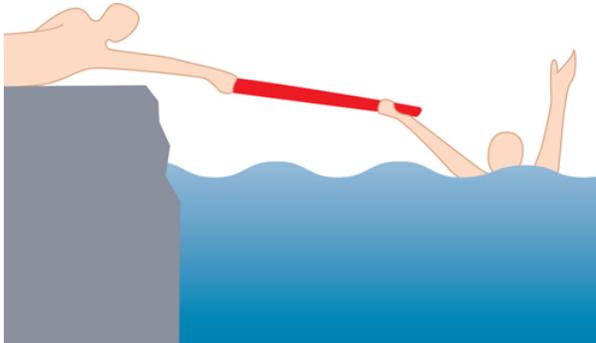
- the number of people involved
- the condition of the drowning person (for example, weak swimmer, non-swimmer or injured swimmer)
- available help (for example, rescue aids or other people)
- distance from safety
- strength of wind and currents
- depth of water
- possible entry points.

Implement a plan of action

The golden rule of lifesaving is self-preservation. The plan of action should first ensure that the rescuer is safe at all times. If the rescuer experiences difficulty, there are now two potential deaths, not one. A rescue that is performed without getting wet is the safest. The following sequence outlines the order in which rescue methods should be considered.

Reach

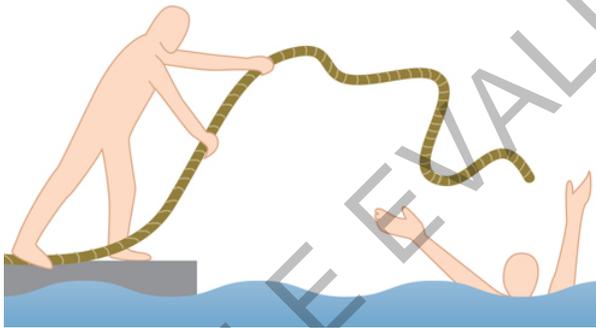
This method involves the rescuer lying down and reaching for the victim, using a stick, towel, piece of clothing or similar object to increase their reach.



The reach method is the safest.

Throw

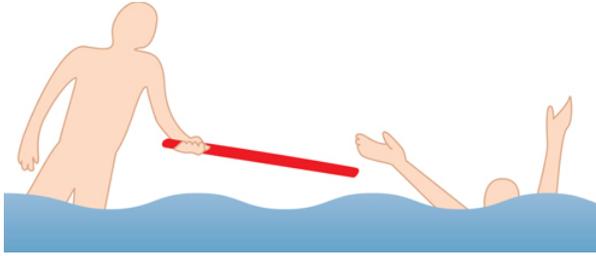
The rescuer stays on land and throws an object if the victim is too far away to reach. The object should ideally be used to pull the victim to safety (for example, a rope) or be able to be used as a flotation device (for example, a kickboard or plastic container).



A throw rescue

Wade

If a person cannot be reached by reaching or throwing, the rescuer may enter the water. This technique brings the rescuer closer to the victim. When wading, the rescuer must be careful to test the depth of the water.



A wade rescue

Row

If the water is too deep to wade, a suitable rescue craft can be used to get closer to the victim (for example, a surfboard, canoe or boat).



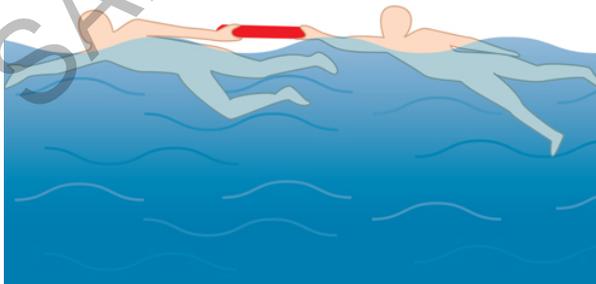
A row rescue

Swim

Swimming to the casualty is the second-least safe method of rescue.

Tow

If all the techniques previously described fail or are unsuitable, physically towing a victim is the last option. A rescuer is most vulnerable to danger using this technique. There are a number of safety tows that can be adopted to rescue victims. If you want to find out more about these tows and other rescue techniques, you may like to enrol in a Royal Life Saving Society certificate course. There is a wide range of certificates, ranging from beginners to advanced.



The tow rescue is the least safe.

Provide emergency care

Drowning is death caused by asphyxia (insufficient oxygen reaching the tissues of the body). Although the final cause of death is failure to get air into the lungs, there are other factors that can contribute to death (such as heart attack, stroke or hypothermia).

When a person drowns, a relatively small amount of water gets into the lungs. Generally, this amount of water is not enough to interfere with the normal transfer of oxygen. However, water in the lungs can cause irritation and result in fluid collecting in the alveoli. This further reduces the transfer of oxygen to the blood and may result in a condition called **secondary drowning**. This may occur up to 72 hours after the emergency. As a result, the victim must be kept under observation.

When there is a drowning emergency, the rescuer should:

- check for dangers, such as currents and rips
- effect the rescue as quickly as possible
- return the victim back to shore quickly
- follow the DRSABCD plan (refer to section 6.2).

Spinal injuries

Most spinal injuries or neck injuries are sustained due to diving accidents. Swimmers dive into shallow water and hit their head on the bottom.

The symptoms of spinal injury are:

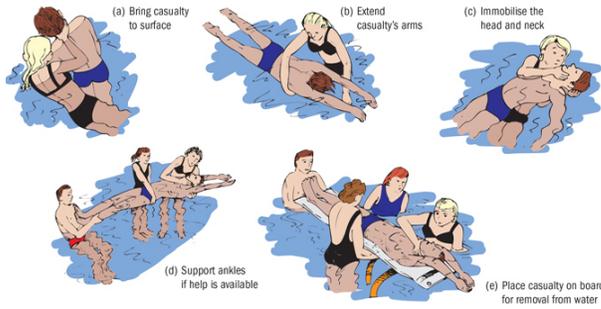
- pain
- swelling
- lack of feeling in limbs below the injured area
- inability to move.

Before taking action and effecting the rescue, the following considerations must be taken into account:

- the person's size in relation to the rescuer
- whether the casualty is conscious or unconscious
- the availability of additional help.

Management

- Immobilise the casualty. This means placing them in a position that will prevent the spine from moving in any direction, and keeping them as still as possible. If face down, the casualty should be rolled over as soon as possible.



Rescue procedure for a spine-injury victim

- Clear and check airway. Follow the same process as for DRSABCD. Maintain breathing, and if breathing is absent, commence CPR.
- Recruit other people to assist.
- Stabilise the casualty. The assistants can help to keep the casualty steady and still until medical help arrives, or they can assist to remove the person from the water.

Rescuer 1: keeps head and neck steady

Rescuer 2: keeps hips steady and at water level

Rescuer 3: keeps legs and ankles steady

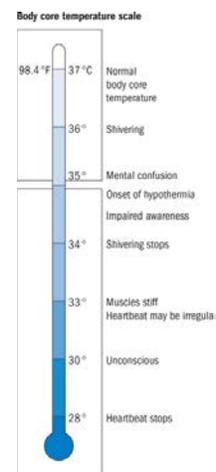
If a stretcher or board is available, the casualty may be placed on it.

- Removal from the water should be attempted only if the casualty cannot be kept comfortable in the water until medical help arrives. When removal is necessary, it should be attempted only if the casualty is on a board. If care is not exercised, the injury could be made much worse than it already is.

Other conditions

Sudden entry into cold water

The human body has a normal temperature of 37 degrees Celsius. If we enter cold water (around 15 degrees or cooler), our breathing rate increases. This increased rate is greater than the body needs. As a result, the levels of carbon dioxide in the blood drop, leading to dizziness or even unconsciousness. In older people, this can result in heart attack or stroke.



Effects of cold water immersion on the human body

Table 6.1: The survival times for immersion in cold water

Degrees	Time
0 °C	15–30 minutes
5 °C	30 minutes
10 °C	1.5 hours
15 °C	2 hours
20 °C	5.5 hours

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Weblink

Chilling truth

Children and thin adults lose body heat more rapidly. If a person is immersed in cold water for a prolonged period of time, hypothermia will develop (see section 6.3). For more information, use the **Chilling truth** weblink in your Resources section.

Survival techniques in cold water

The key to surviving in cold water is to conserve heat and energy. To do this, the person must:

- retain clothing
- keep the head and as much of the body as possible out of the water
- adopt **HELP (heat escape lessening posture)** to minimise heat loss, shown in the figure below. This position delays heat loss by protecting areas which lose heat most quickly — the head, sides of the chest and groin.



The HELP posture

- adopt a **huddle position** if in a group (shown in the figure below). This minimises heat loss by the group pressing the sides of their chests, groins and lower body areas together.



The huddle position

- float on their back if there is no **flotation device**. Movement increases body heat loss, so therefore minimise movement as far as possible.
- swim only if close to shore or upturned boat, as swimming ability will be affected adversely due to cold. The casualty should swim at only one-tenth of their normal swimming ability. The figure below shows survival times in cold water, adopting various strategies. Swimming does not come high on the list.

With flotation aid



Wearing a thermal protection jacket



Huddle



HELP



Holding still



Swimming

With no flotation aid



Treading water



Slow survival swimming

Relative survival times in cold water (10 °C) adopting various strategies

DID YOU KNOW?

Cold water carries heat away from the body 25 times faster than air of the same temperature.



Don't be afraid to be involved in water activities; just be aware of the safety issues.

ACTIVITIES

1 Water safety

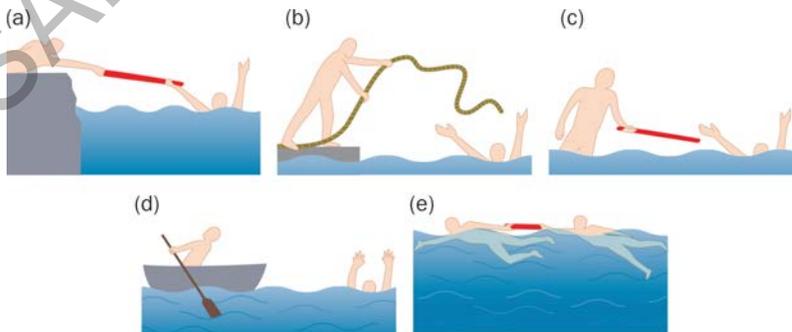
Complete the following table of potential water hazards using the information found in this lesson.

Potential hazards	How they can be dangerous to swimmers	Safety points to avoid danger
River		
Lake		
Beach		

2 Rescue techniques

Describe the water rescue technique illustrated in each of the diagrams below, including:

1. the degree of safety for the rescuer
2. the equipment needed for each rescue
3. the type of waterways where the technique would be most likely to be used.



3 How would you react?

Four teenagers are swimming in a river near the bank, throwing a soccer ball to each other. The river is about 20 metres wide and there is a slow current running down it. One of the teenage boys makes a bet that he can swim across the river and back. He sets off and reaches the other side, but fails to see weeds near the bank. He is suddenly caught in the weeds and starts shouting for help.

Imagine you are one of the teenagers on the other side of the river. Using the following rescue principles, explain how you would save the victim.

1. Acceptance of responsibility
2. Assessment of the situation
3. Number of people in difficulty
4. Plan of action
5. Available assistance
6. Selection of rescue aids
7. Action (the rescue)
8. Emergency care

4 Investigate

Use the weblinks in your Resources section and other sources to investigate one of the following programs or groups. Evaluate the range of programs and strategies it provides to encourage people to participate safely in physical activities.

5 Match up

Match the terms below with the relevant definitions.

1. Ventilation
2. Immobilise
3. Dehydration
4. Coma

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Weblinks

- AUSTSWIM
- Life Saving Victoria
- St John Ambulance Australia

5. Hypothermia
6. Huddle position
7. CPR

- a. Excessive loss of salt and water from the body
- b. To prevent from moving
- c. A severe accidental cooling of the body
- d. The mechanics of breathing
- e. A method of providing artificial blood circulation to a person who is unconscious, shows no signs of life and is not breathing normally
- f. A condition in which the brain fails to respond to the message sent to it
- g. A position in the water where a group of people press close together to minimise heat loss

6 Spinal safety

Use the **Spinal safety** weblink in your Resources section to read an article by a person with a spinal injury, and then answer the following questions.

1. How would you raise awareness about this problem?
2. Were you surprised to read that the victim had only jumped in?
3. What strategies could be used to reduce the likelihood of this type of accident occurring?
4. What types of things should you be looking for before diving or jumping into a river or dam, or off a pier?

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Weblink

Spinal safety

CHECK & CHALLENGE

Explain

1. What are the three steps you should follow if you find yourself caught in a rip at a patrolled beach?
2. Give details of three dangers present in each of the following areas: rivers and lakes; beaches; and swimming pools.
3. Explain what the huddle position is, when you would use it and how it helps reduce heat loss.

Evaluate

4. Males aged 25–34 and adults aged 55+ represented a large proportion of drownings in 2013–14.
 - a. What factors do you think contribute to the high incidence of drownings in these two age categories?
 - b. What do you think families, local communities and governments can do to reduce this statistic?
 - c. Investigate the **Grey Medallion** weblink. What does this government strategy hope to achieve?

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Weblink

Grey Medallion

6.5 Sports injury management

Australia has earned the reputation of being a sports-mad country. Many people are obsessed with playing and watching sport. With our vigorous, enthusiastic participation in sport comes the drawback of sustaining injuries. In this lesson we will explore ways of preventing or reducing the effects of injuries by developing a sound knowledge of safety rules and treatment techniques.

ENGAGE

A sporting injury can be defined as any condition which causes a player or athlete to miss a game or training, leave the field of play, or seek medical treatment or first aid. Independent research commissioned by Medibank Private has found sports injuries cost Australians \$2 billion in 2005.

The most recent Medibank Private Sports Injuries Report (2006) found that, on average, 5.2 million sports injuries occur every year. Minimising injuries by concentrating on safety is therefore vital. Prevention is the key to reducing the incidence of sports injury.

Smartplay is an Australian sport safety and injury prevention program that operates in several Australian states. Use the **Smartplay** weblink in your Resources section to find out about this program. As a group, choose an acute injury and read through the fact sheet. Discuss and summarise the important information, record any interesting aspects of the injury, and present your group's findings to the class.

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Weblink

Smartplay



The injuries sustained by Alisa Camplin, former world aerials champion.

EXPLORE

Types of sports injuries and treatment

Acute sporting injuries

An athlete can expect to suffer from a number of different sports injuries during his or her career. The severity of each injury will vary greatly in terms of injury damage, recovery and rehabilitation. Some sports lend themselves to specific types of injuries. The following figure shows the most common sports injuries sustained in Australian Rules football.

SAMPLE EVALUATION ONLY



The top 10 most frequent injuries in AFL football, how they are treated and the length of time the player may be away from the game:

1. *Hamstring tear.* Ice treatment and rest are followed by stretching one exercises. Week to 6 months off.
2. *Facial lacerations.* A bad cut may need to be stitched. Players aren't allowed on the field if they are bleeding. Most players will be back by the next game.
3. *Groin injury.* Muscles in the groin are usually strained by stretching the legs too far. Depending on the severity of the injury, the player may have from one week to six months away from play.
4. *Thigh haematoma.* Mild to severe internal bruising. Ice treatment and stretching exercises are used to treat this injury. The player will probably be back by the next game.
5. *Sprained ankle.* Depending on the severity of the sprain, treatment ranges from strapping the ankle to reconstructive surgery. This may mean 2–12 weeks away from the game.
6. *Concussion.* Players with **concussion** are taken from the field and tested for confusion and amnesia. Players are not allowed to return to play in the same game or practice session that day. Players may miss one or two games; however, serious head injuries are rare.
7. *Rib fracturing/bruising.* The chest may be strapped and the player must rest. Fractures take 2–4 weeks to heal.
8. *Shoulder injuries.* Treatment ranges from strapping and rest to reconstructive surgery, depending on the type and severity of the injury (such as a strain or a dislocated shoulder). The player may be away for 2–16 weeks.
9. *Torn knee ligaments.* This is a severe injury which requires surgery and physiotherapy. The player may be absent for 6 weeks to more than one season.
10. *Lower back strain.* This includes injuries to discs which may require surgery. The player will be away for 1–6 weeks.

DID YOU KNOW?

The frequency of hospital treated sports injuries is growing at a rate of 6 per cent per year.

Acute sports injuries mostly occur spontaneously and are usually very painful. The injury may occur due to an action within an event, a type of contact as part of a game, or an exercise within an intense training session. All areas of the body are at risk of suffering an acute sporting injury. If not treated correctly, such injuries may deteriorate to a form of overuse or chronic injury. For more information, see the **Acute sports injuries** and **AFL injuries** weblinks in your Resources section.

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Weblinks

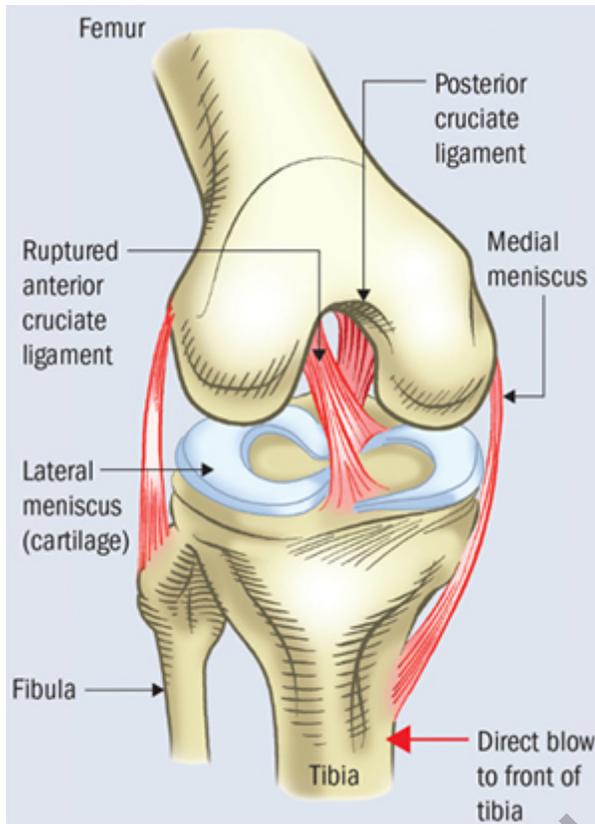
- Acute sports injuries
- AFL injuries

DID YOU KNOW?

Over the past 21 years the number one injury in AFL remains the hamstring strain. The most severe AFL injury is the anterior cruciate ligament tear in the knee.

Knee injuries

Of the major sports injuries in Australia, knee injuries rank the highest in terms of cost to the community – in both direct medical costs and indirect costs due to time off work.



ACL injury

Heat illness injuries

Training and competing in hot conditions can lead to illnesses such as heat exhaustion, heatstroke and dehydration, discussed in section 6.3.

By developing an extreme heat policy, heat illness can be prevented and assistance can be given to officials, coaches and participants to recognise and manage potentially dangerous heat situations.

Overuse or chronic injuries

When managing sports injuries, sometimes a difficult task for the coach is to convince the athlete to rest, to modify workloads and/or take time away from a sport. These steps may be the only way to prevent overuse or **chronic sports injuries** from occurring. The majority of sports and overuse injuries begin as minor trauma involving soft-tissue injuries — injuries that affect muscles, ligaments or tendons.

If high workloads and low levels of rest are programmed, the athlete can develop an overuse injury. This is particularly relevant to younger athletes who are going through puberty and growth spurts.

DID YOU KNOW?

If we are hit in the diaphragm, the diaphragm muscle goes into spasm and we cannot breathe. This is a frightening experience and is called 'being winded'. Treatment is for the victim to calm down and wait for the muscle spasm to subside.

The body's response to injury

In a contact injury (direct injury), such as a carked thigh, the tissue that has been damaged will usually bleed. With a carked thigh, there will be pain and bleeding under the skin in the soft tissue of the thigh muscle. A lump may appear where contact has been made. Often, the bruise does not appear until the next day or even later. The bruise is the bleeding trapped inside the skin. The aim of first aid is to:

- stop the bleeding
- reduce the bruising and restore normal movement to the thigh.

If a ligament suffers more than normal stress (for example, if a running person steps into a pothole), it will usually **sprain** or tear. This will cause bleeding, swelling and pain under the surface of the skin.

Injuries resulting from overuse can also occur. Although there is no loss of blood under the surface of the skin, there is still swelling and irritation. There may be inflammation, heat, redness, stiffness and pain, as with tennis elbow or swimmer's shoulder.

Managing sports injuries

When managing sports injuries, it is important to have a basic checklist to follow. There are four questions that should be considered.

1. What is this injury? (Diagnosis)
2. What should I do for it? (Treatment)
3. How did it happen? (Cause)
4. How do I stop a recurrence? (Prevention)

When people approach an injured person, there is the possibility that they may make the injury worse. There must be an assessment made of the extent of the injury, whether the player can continue and whether he or she needs treatment.

A checklist known as **SALTAPS** can be used to assess most injuries. These letters represent the procedure to be followed when diagnosing a sports injury.

1. **S**top play immediately when an injury occurs. The player should be examined on the field or, if practical, removed from the field or court.
2. **A**sk the player what happened, as well as how, when and why.

Questions may include:

- How did it happen?
 - Were you hit or not?
 - From which direction were you hit?
 - Could you move afterwards?
 - Where does it hurt?
 - Did you play on?
3. *Look* at the injury carefully before you touch it. Compare it to the other limb, looking for any change in:
- colour
 - shape
 - size.

A pale look may indicate damage to the artery; a blue colour may indicate obstruction to the veins; redness can indicate inflammation. If there is an obvious change in shape compared with the other limb, this usually indicates a fracture, **dislocation** or both. An increase in size will indicate bleeding under the surface of the skin.

4. *Touch* the injured player to further assess the injury *only* when you have thoroughly looked at the injured area and its opposite limb. Begin by feeling the opposite side of the body, paying particular attention to bone shapes, contours and bumps. Next, feel the injured area for any differences in tissue thickness, lumps, bumps or fluid under the surface. If there is a difference in temperature, this may indicate infection.
5. *Active movement*. Ask the person if he or she can move the injured area. If not, do not try to move it yourself. Note the range and directions of movement, and any clicking, grating or creaking around the limb.
6. *Passive movement*. When you have established the degree and extent to which active movement is possible, gently move the part through its range of movements without using force.
7. *Stand up, play on*. Check to see whether the person can put weight on the injury. Can he or she walk or run? Is the person fit to play on?

It is important to note that the decision to play on should not be made by the player or the coach. The decision should be made by a qualified trainer. This is important, because a player can play on with a serious injury in the heat of the moment, when he or she is warmed up and is caught up in the excitement of the game. For example, former world boxing champion Jeff Fenech has boxed through title fights with broken hands; and former AFL Essendon champion, Paul Van Der Har, kicked a 60-metre goal with a broken bone in his leg.

However, to continue playing with an injury can be very serious. The result may be that a minor injury could become a major injury; for example, a slight calf **strain** could, if the player continues to play, develop into torn calf muscles.

Signs and symptoms of soft-tissue injuries

The signs and symptoms of a soft-tissue injury are:

- pain
- swelling
- loss of movement.

The aim of first aid is to limit the amount of blood loss and to decrease swelling and pain. The management plan to achieve this aim is **RICER** – rest, ice, compression, elevation, referral.

1. **Rest.** Sit the person down, away from the action.
2. **Ice** should be applied continuously for 20 minutes. This can be crushed ice placed in the middle of a damp towel, or an ice pack that is kept in a first aid kit or in the fridge. Ice constricts the blood vessels around the injury and therefore lets less blood escape. This reduces blood loss and swelling. Ice should be applied at least once every hour for mild injuries for 24 hours (slight ankle sprain) and up to 72 hours for severe injuries (hamstring tear). Ice should not be applied directly to the skin. Rather, wrap it in a wet cloth, as shown below.



Applying ice treatment

3. **Compression** is achieved by the use of an elastic bandage. The elastic bandage applied around the injured area restricts internal bleeding and reduces swelling, as shown below.



A compression bandage

4. **Elevation** is achieved by raising the injured part so it is above the level of the heart. This reduces blood flow to the injured area, and hence reduces blood loss and swelling.
5. **Referral**. Refer the athlete to a qualified sports medicine practitioner for a complete appraisal of the injury. This will ensure correct treatment and speedy rehabilitation. If the management plan is well executed and the goals are achieved, then recovery will be enhanced and the sportsperson will return to training more quickly. The repair of the injured area will also be more successful; that is, the person is more likely to regain the same movement and strength in the injured area.

In general, the RICER method is continued for the first 48 hours after the injury has occurred. The reason why it is approximately 48 hours is because this is how long a soft-tissue injury will bleed. If you are certain that internal bleeding has stopped after 48 hours, you can commence with the recovery phase of the treatment.

After 48 hours, the objective is to heal, stretch and strengthen.

- **Heal**. The body will begin the healing process naturally. It will try to remove the swelling and bruising. You can assist this process by applying heat to the area; for example, a ray lamp or very light massage of the area. Do not be too rough — you may start the bleeding again.
- **Stretch**. This involves moving the injured area by increasing activity within the limits of pain. In other words, move the injured area until pain tells you to stop. Early stretching will help the area regain full flexibility and minimise scarring under the surface.
- **Strengthen**. Once stretching has increased mobility, attempt to put weight on the injury progressively. Again, pain has to be your guide.



Stretching an injured muscle

Prevention of injury

The old saying that prevention is better than cure is still true today. As a coach or a player, you have a responsibility to reduce your chances of injury. The coach sets the standard for what he or she expects at training and at competition.

There are a number of ways in which injuries can be prevented. These include ensuring an adequate warm-up and cool-down is completed prior to and at the end of every training session and competition. This topic was discussed in detail in chapter 5, and it is extremely important that correct warm-up and cool-down activities are used.

Developing correct skills and techniques are also important, and you and your coach can monitor this. Studies have shown that the higher the level of skill, the lower the chance of injury. Appropriate skill progressions, rule modifications and equipment modifications are important when developing skill, and therefore necessary for the prevention of injury.

Injuries can occur at any time in a training session or during competition. However, studies have shown that they are more common when a player is fatigued. This would indicate that developing a good level of fitness for a particular sport or activity is very important. After injury, a gradual progression to full training is very important to reduce a reoccurrence of the injury.



A summary of injury prevention

Many rules in sport are designed to create a safe environment for performers or players, who should be encouraged to abide by these rules. Coaches may like to set clear written rules for training and playing. Most schools and sporting associations have adopted codes of conduct for players, coaches and spectators. These should be made available to all concerned and reinforced by the clubs involved.

Poor design or faulty equipment and poor playing surfaces also may lead to injuries that could have been prevented. It is important that equipment is checked and maintained regularly and that playing areas are level and firm, sprinklers are not left uncovered, and that permanent features such as goal posts are padded and highly visible. It is also important that spectators are kept well away from the players.

(a)



(b)



(a) Gloves, pads and a helmet are used to protect the batsman against impact from the ball.

(b) An ice hockey helmet and face mask protects against impact from the puck, other players and their sticks.

Many protective devices have been designed to reduce injury. Players in World Series Cricket were the first ones to wear helmets in cricket. Helmets have since been modified and players are encouraged to wear them in most standards of cricket.

There are many other protective devices that have been designed to reduce injuries in sport. Some of these are mouthguards, pads, eye goggles, gloves, shin guards, life jackets and wetsuits.

Another way to reduce injuries is fluid replacement. Remember to drink before, during and after training and competition, and not just on hot days or when thirsty.

Sunburn and sunstroke are major concerns in Australia's harsh summers. In conditions that expose players to outdoor conditions, remember to 'slip, slop, slap, seek and slide'.

Cold can also have life-threatening consequences. When not participating, players should wear adequate warm clothing. Ensure another warm-up is carried out after long breaks.

Illness and medical conditions can have an effect on injury and participation. When athletes are ill, the body is vulnerable and the risk of damage to organs and tissues is high. Athletes in this situation should not participate. Some athletes may have other, more permanent problems. Again, medical screening and clearance should be obtained before allowing further participation.

Balanced competitions can also reduce injuries. During adolescence, players in contact sports can be at risk because of the inequality in size and strength due to the wide range of physical maturity in underage teams. Consideration needs to be given to grading teams on more than just chronological age.

Remember that prevention is common sense. By following the guidelines set out in this chapter, players, coaches and parents can help reduce the risk of injuries occurring.

DID YOU KNOW?

In the United States, a system is in place in high school sport to classify adolescent athletes based on height, weight and age. Each athlete's height, weight and age are added and assigned a value. If the total reaches or exceeds 90 exponents, the athlete plays on the varsity or junior team. If the total is 84–90, they play on a separate B team. For values less than 84, the athlete floats to C level. This system attempts to fairly categorise adolescents who are growing at different rates.



During adolescence, players in contact sports can be at risk of injury because of the inequality in size and strength.

Safe blood practices

Sport is great for our health and fitness, but due to increasing awareness of HIV and other blood-borne viruses, attitudes to blood on the field or court have changed considerably in the past 20

years. People have become much more aware and concerned about the transmission of diseases through participation in sport. All players and club officials should be aware of how to safely handle blood spills because you never know what viruses people may have.



In contact sports such as NRL, bleeding players are required to immediately leave the area of play for medical or first-aid treatment.

A number of blood-borne viruses have the potential to be transmitted during sporting contact. The more serious viruses — HIV, hepatitis B and hepatitis C — can greatly affect your health. According to Sports Medicine Australia, even the more common infectious diseases such as colds and flu may be spread during the close contact of sport and, while not usually as serious, these illnesses will reduce your competitiveness and enjoyment of the game.

What is the blood rule?

The blood rule in most contact sports dictates that ‘any player who is bleeding must leave the playing area for immediate attention from a medical or first aid officer’ (Sports Medicine Australia). The player cannot return to the game until the bleeding has stopped and the wound is covered. If any blood has been spilled onto the uniform, the piece of clothing must be replaced. Any equipment that has been contaminated with blood must be cleaned or replaced before play continues.

If bleeding starts again, the player must again leave the playing area until bleeding is under control and the wound covered. If this is not possible, then he or she must take no further part in the game.

DID YOU KNOW?

‘The chances [of being infected by HIV through sport] have been estimated to be 1 in 125 million. Your chances of getting killed driving to the football stadium are infinitely greater . . .’

How to clean up a blood spill

Playing areas

Playing surfaces on which blood has been spilt should be washed until all visible blood has gone, then disinfected with bleach and water for at least 30 seconds.

Clothing

All teams should have spare uniforms and extra clothing available, such as spare football jumpers.

All clothing and towels etc. that have been contaminated with blood should be soaked in bleach or disinfectant for 30 minutes, then washed at a high temperature on a long cycle.

Sporting clubs should have a special bag in which all bloodied clothes can be placed so they can be safely transported to a laundry.

In summary, individuals and sporting clubs have responsibility for playing their part in preventing the spread of infection through participation in sport. By following some simple guidelines, the risk of spreading infection of blood-borne viruses can be greatly reduced.

Sporting clubs have responsibility for:

- adopting an infectious disease policy
- making sure there is a safe and clean environment for players, spectators and officials
- proactively adhering to the blood rule. Don't wait until the umpire notices and sends the player from the ground; individuals should remove themselves from play if bleeding.
- continuing to educate all members on appropriate handling of blood spills.



The best management is prevention. We are all responsible for safety.

ACTIVITIES

1 Injuries

Investigate common overuse injuries relevant to a sport of your choice. Use the **Injury fact sheets** weblink in your Resources section to select one overuse injury and read through the fact sheet. Summarise the important information and record any interesting aspects of the injury. Develop a PowerPoint presentation and present your research to the class.

2 Hot weather policy

Using the **Extreme heat** weblink in your Resources section as a guide, develop a hot weather policy for your local sporting club.

3 Sports medicine

1. Research each of the following fields of medical practice.
 - a. Physiotherapy
 - b. Osteopathy
 - c. Chiropractic
2. In pairs, role-play a radio interview with a practitioner in each field, and provide information on:
 - a. the theory behind the practice
 - b. the role they play in injury prevention, injury management and injury rehabilitation
 - c. the qualifications required to practise in each field.

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Weblinks

- Injury fact sheets
- Beat the heat fact sheet
- Extreme heat
- Heat policy
- Sun protection
- SunSmart campaigns

4 Class debate

Conduct a class debate on the following topic: 'A player is not required by law to divulge their HIV/hepatitis status'.

Affirmative: This group will argue for the issues being presented — that a player **should not** be required by law to divulge their HIV/hepatitis status.

Negative: The other group will argue against the topic — That a player **should** be required by law to divulge their HIV/hepatitis status to club administration, fellow players and competitors.

CHECK & CHALLENGE

Explain

1. Use the **Heat policy** weblink in your Resources section to read about and summarise Tennis Australia's heat policy. Why do you think it was introduced?
2. Describe the difference between an acute and a chronic sporting injury.
3. Describe four methods clubs can implement to reduce the risk of transmitting blood-borne viruses to players, spectators and officials.

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Weblink

Heat policy

Elaborate

4. Imagine you are a sports trainer for a local basketball team. One of the players goes up for a rebound, lands on the foot of another player and rolls his ankle.
 - a. Use the SALTAPS checklist to assess the player's injury.
 - b. What type of injury is likely to have occurred?
 - c. Describe the RICER management plan you would recommend to enhance the recovery process.
5. Why should team managers ensure that spare uniforms are available at each game?

Evaluate

6. Evaluate the protective equipment in a sport of your choice. List all the protective equipment required for your chosen sport and rank each item in order of importance. What types of injuries could be prevented if the protective equipment is worn?
7. Imagine a basketball player has accidentally received an elbow to the nose during play and their nose starts to bleed. Some of the blood drops onto the ball.
 - a. What responsibility does the umpire have upon noticing the exposed blood?
 - b. Describe how blood droplets on a basketball or netball court should be cleaned up.
 - c. Blood has dripped down the front of the bleeding player's singlet. Once their nosebleed is under control and no longer bleeding, can they recommence play? What additional precautions should be taken before they return to the game?

Elaborate

8. Discuss whether you think interschool sport in Australia should adopt a classification system similar to the one used in the United States to help reduce the risk of injuries

occurring due to inequality in size and strength that is present when teams are categorised only by chronological age.

Review

What have I learned?

- First aid is the initial help that is given to an injured or ill person by people at the scene of an accident.
- Most accidents are preventable, and it is important to take precautions to ensure safety at home and when engaging in outdoor activities.
- In the event of an accident, a useful plan is the DRSABCD action plan sending for help, which involves checking for danger, seeking a response from the patient, sending for help, checking the patient's airway, checking their breathing, and using cardiopulmonary resuscitation (CPR) and/or defibrillation if necessary.
- CPR is a technique that combines rescue breaths with external cardiac compression. It is used when a casualty is unconscious and is not breathing.
- It is important to learn first aid techniques and sports injury management so that you may be prepared in the event of an accident.
- Following common sense water safety rules can save lives. Always check water for hazards before entering rivers, lakes or beaches; be aware of local conditions; swim between the flags at beaches; and never swim alone. Be aware of survival techniques and rescue procedures.
- Sports injuries are a major cause of injury, with millions of people suffering sports injuries in Australia each year.
- Acute injuries are caused spontaneously during training or the game. These include concussion, lacerations, bruising, bone fractures, sprains and dislocations.
- All sports injuries should be treated according to the guidelines summarised by RICER, which stands for rest, ice, compression, elevation and referral.
- Diagnosis of sports injuries is summarised by SALTAPS, which stands for stop, ask, look, touch, active movement, passive movement and stand.
- The coach must set up protocols within the club for the prevention and management of sports injuries.
- All blood spills should be treated as potentially infectious and handled according to the club's infectious disease policy.
- A player who is bleeding should leave the playing area for immediate attention from medical personnel.

CHECK

1. Identify potential dangers in a specific area of your school or sports club. What steps could you take to eliminate, substitute or reduce these dangers?
2. Imagine you are at a party and one of your friends suddenly collapses and is unconscious. Following the DRSABCD action plan, discuss the steps you would take to manage the situation.
3. Explain the difference between hypothermia and hyperthermia.
4. Describe what a swimmer should do if caught in a rip at a patrolled beach. How can a swimmer get out of a rip if they are swimming at an unpatrolled beach?
5. What are the procedures a sports trainer should follow if one of their athletes suffers a soft tissue injury, such as a sprained ankle?
6. If you play for a local club, investigate whether your club has adopted an infectious disease policy. If you do not play for a club, choose a sport you enjoy watching. Next, investigate if this club or sport has a blood rule in place in order to prevent the spread of blood-borne viruses and other infectious diseases in their sport.
7. Define the key words and terms of the topic using the **In my words** worksheet in your Resources section.

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Worksheet

In my words

Searchlight ID: doc-14733

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Interactivity

Multiple choice quiz

Searchlight ID: int-5398

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Interactivity

True/false quiz

Searchlight ID: int-5499

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Interactivity

Crossword

Searchlight ID: int-5500

ESSENTIAL QUESTION REVIEWED

How would you respond in an emergency situation?

Evaluate your initial response to the essential question now that you have studied the topic.