Water safety

Going to the beach can be a great experience, but for hundreds of Australians each year, it can be deadly. It is important to act responsibly at the beach and be aware of potential hazards such as rips, plunging waves and bluebottles.

Some beach safety facts include:

- Coast drownings account for approximately one-third of all drownings.
- Males account for about 90 per cent of drowning fatalities.
- Australian lifesavers rescue about 10,000 people each summer.
- Australian lifesavers provide first aid to about 25,000 people each summer.

Water environments

In Australia, a large proportion of the population lives close to aquatic-based activities. Swimming and other water sports and leisure activities are a major part of the Australian identity. Water safety involves the precautions that are taken around various water environments to ensure safety. To promote water safety, it is important to understand potentially unsafe water environments.

Water environments around Australia include:

- beaches
- lakes
- swimming pools
- rivers
- creeks
- waterfalls
- dams.

In these types of water environments, individuals should be careful of:

- submerged objects, such as broken glass, broken branches
- unclear waters
- water depth
- slippery surfaces or collapsing surfaces
- low temperatures, wind chill and hypothermia
- animals, such as sharks, eels, crocodiles and bluebottles
- rips, currents and undertows
- unstable sand banks
- unsafe or changing weather conditions, when boating
- unreliable boating equipment, missing safety equipment, overloaded boats.

Figure 6.5:
It is important to act responsibly at the beach and be aware of potential hazards.

Beach safety

Australian beaches are a beautiful and vibrant place where many people enjoy spending their time. They can also be very dangerous when unattended due to unpredictable wave and currents, so it is essential to know how to take care of an individual's safety while at the beach.

Beaches are safest when there are lifeguards on duty watching out for the safety of the swimmers. When swimming at a patrolled beach, it is important to swim between the red and yellow flags. These flags determine the area that lifeguards have selected as the safest area of the beach for that specific day. When in the water, a swimmer should choose a reference point that appears on the land, such as a towel or one of the flags, to check if they are drifting away from the original area. It can be helpful to have a 'buddy' or another person to go swimming with, in case of an emergency and to look after each other in the water.

Pool safety

Swimming pools are the most common area for accidents to occur for a child. In this area, there are safety rules that help minimise the risk of harm. These include having a pool gate that fits pool safety standards and making sure that this gate is always shut and locked. Children should always be supervised when near a pool. It is important that they do not run around the pool and push others in the pool area.

Public pools are patrolled by a lifeguard but have certain rules that swimmers must follow to ensure their safety. These include reading all safety signs and obeying the lifeguard's instructions, swimming in areas according to the level of confidence and ability; for example watching for deep areas, avoiding diving into shallow water, pushing anyone into the pool and not running near the pool.

Inland waterway safety

Rivers, lakes and dams are not patrolled by a lifeguard. Lakes can look calm and safe, although they can be very dangerous and have strong currents. It is important to look out for warning signs and look out for boats. Do not swim near any boat ramps or in boating areas. Never swim in fast-flowing water, and check the temperature before jumping in as it is often much colder underneath the surface of the water. Be aware of sharp rock edges, and trees, branches and rubbish.

Figure 6.6:
Beaches are safest when there are lifeguards on duty.

Figure 6.7:
When swimming in rivers, be aware of sharp rock edges, branches and rubbish.

Did you know?

The world's longest beach is in Brazil, stretching 252 kilometres.

Internet activity

Log on to TitanOnline to complete Activity 6.1 and evaluate the implementation of various swimming pool regulations.

Figure 6.8:
An individual who is in a dangerous situation should shout out for help and raise their arm straight above their head.

Survival techniques

There are many survival techniques that will help individuals when in a threatening situation in the water. Each technique will allow an individual to stay alive until they receive assistance from lifesavers. These include:

- **Floating:** This technique is used in a survival situation to conserve the individual's energy. It involves the person lying in a horizontal, diagonal or vertical position and moving as little as possible. Individuals should also try and keep their head out of the water.
- **Personal flotation device:** This is a device that is worn on the body in order to assist with flotation. This includes life jackets, buoyancy vests or buoyancy garments. Individuals should not remove this device when they are awaiting assistance.
- **H.E.L.P or huddle:** This is a strategy that individuals use that involves a person keeping their arms and legs as close to their body as possible in order to reduce body heat loss.
- **Remove clothing:** Individuals can remove extra clothing or any heavy outer garments in order to reduce weight and conserve energy. However, at least one layer should be left on in order to conserve body heat.
- **Signalling for help:** This strategy involves an individual who is in a dangerous situation shouting out for help and raising their arm. Their arm should be straight above their head and in a clenched fist. While signalling for help, they should tread water or scull to keep afloat.

When caught in an accident or emergency situation, it is important that a person knows what to do. This involves learning and practising the survival skills that can help save an individual and those around them. These skills include treading water, survival backstroke and survival sidestroke.

Treading water

Treading water is a popular survival technique and is a skill that everyone should learn, as it can help to avoid drowning. The technique for treading water is outlined below.

Body

- The body stays upright with the head above the surface.

Legs

- Legs can be moved in a variety of ways. The most popular technique is the rotary kick.
  - Rotate both legs in a different direction; similar to an egg beater.
  - The timing should be exact; as one leg kicks out, the other is moving back to the body.

Arms

- Use a sculling motion:
  - Extend arms out to the side of the body.
  - Move arms horizontally, back and forth in a circular motion.

Tips

- The body should hardly be moving up and down.
- The torso should not move while the legs and arms are working.

Figure 6.9:
Everyone should learn how to tread water, as it can help to avoid drowning.

Survival backstroke

Survival backstroke is a lifesaving skill that requires minimal energy. The technique for survival backstroke is outlined below.

Body

- Lie flat on the back, face up. Keep horizontal in the water.

Legs

- Use a breaststroke-style kick:
  - Keep knees under the water to help float.
  - Kick the legs apart, bring the legs together and whip them back in, in a circular motion.

Arms

- Extend the arms sideways under the surface and bend the elbows.
- Flatten and relax hands, circling them outwards and then inwards.
- Continue sculling the arms.

Tips

- Practise the breaststroke kick by submerging the bottom half of the body in water and holding onto the side of the pool.
- Practise the technique by lying with the back in the water, face up and holding a flotation device.

Figure 6.10:
Survival backstroke is a lifesaving skill that requires minimal energy.

Survival sidestroke

Survival sidestroke is used for long-distance swimming; for example, swimming back to shore when someone is tired or has drifted out too far, as it allows greater endurance for the swimmer. The technique for survival sidestroke is outlined below.

Body

- Lie on the side of the body and extend the lower arm above the head with the palm face down.
- The side of the head is in the water.
- The top arm is resting down the body near the thigh.

Legs

- Scissor kick the legs:
  - Bend both legs at the knees and hips with one leg in front of the other.
  - Point the toes, straighten the left leg out forwards and sweep it backwards in a circular, kicking motion.
  - Bring the legs together, glide and repeat with the right leg.

Arms

- Pull the left arm downwards so it extends out from the shoulder.
- The right arm raises to the chin and then pulls back out to the side of the body, using the palm to move the water.

Tips

- Swap the sidestroke to the other side of the body when one side becomes tired.
- Sidestroke is effective when it has been mastered on both sides of the body.

Hypothermia

Hypothermia occurs when the body's temperature falls below 35°C. The human body has a number of systems that maintain a constant core temperature of around 37°C. A person does not have to be in very cold water temperatures to be at risk of hypothermia. Some situations can cause the body to lose more heat than it can generate. These situations can include prolonged exposure to cold conditions, being in cold water for a long time or spending excessive time in wet clothes.

Hypothermia can be divided into three stages: mild, moderate and severe. The signs and symptoms of hypothermia depend on the body temperate of the different stages.

Figure 6.11:
Wearing a layer of clothing helps prevent heat loss while in the water.

For mild hypothermia (35 to 32°C), signs and symptoms include:

- paleness
- cool skin
- shivering
- numbness in the extremities
- sluggish responses, drowsiness or tiredness
- increased breathing and heart rate.

For moderate hypothermia (32 to 28°C), signs and symptoms include:

- decreasing conscious state
- urinary incontinence
- shivering may stop
- slowing heart rate, breathing rate and dropping blood pressure.

For severe hypothermia (below 28°C), signs and symptoms may include:

- unconsciousness and no response
- slowed and irregular heart rate before stopping if the person gets too cold
- rigid muscles
- no response to light in the pupil of the eye
- pulse and breathing may be present but hard to detect.

If a person is suffering from any stage of hypothermia, there are some tips to prevent further heat loss and lessen the symptoms:

1. Do not massage or rub the person.
2. Keep the person still to avoid cardiac arrest.
3. Move the person out of the cold – if this is not possible, protect them from wind, cover their head and remove any wet clothing.
4. Try to warm the person – make sure they are dry and use any available heat source, such as heaters, hot water bottles or heat packs, to begin warming the person. Do not immerse them in cold water.
5. Have them drink warm, non-alcoholic beverages, except if they are vomiting.
6. Do not leave the person alone.
7. Continually monitor breathing – if breathing stops follow the DRSABCD action plan immediately.

Source: Adapted from the Better Health Channel.

Figure 6.12:
Dry towels can be used to warm a person with symptoms of hypothermia.

Figure 6.13:
Hypothermia can occur in non-water environments.

Learning activity

1. Create a sign to display on the beach that highlights safety precautions to take. The sign should be easy to read and suitable for people of all ages and nationalities.
2. Explain how to have a safe and fun time around water.
3. Discuss what is meant by the term 'inland water safety'.
4. Provide a definition for the term 'hypothermia'.
5. Discuss survival techniques for a swimmer in distress.

Sun safety

Australians suffer from one of the highest rates of skin cancer in the world. Each year, around 1,200 Australians die from what is almost a preventable disease. During summer, Australia is closer to the sun than most other countries, resulting in higher ultraviolet (UV) intensity. The incident rates for skin cancers are rising in both males and females. The continued increase in skin cancer is due to many years of doing little to protect our skin. In the past, individuals did not know the value of covering up their skin or using sunscreen. As a result, older Australians are now developing skin cancers.

Both long-term sun exposure and sunburn cause skin cell damage, which can lead to the development of skin cancer. Severe sunburn increases the chances of developing melanoma. In fact, five doses of sunburn while a person is young can double an individual's risk of developing this deadly disease later in life. Mild sunburn or tanning is also not ideal. There is no safe way for a person to expose themselves to the sun without increasing the risk of skin cancer.

Did you know?

Fruits such as tomatoes, watermelon, guava and grapefruit can promote natural sun protection.

Some important preventative methods that can reduce a person's risk of developing skin cancer are:

- avoiding sun exposure
- avoiding sun-sensitising creams and medication
- using sunscreen
- wearing a hat and sunglasses
- performing regular self-examinations.

Figure 6.14:
Severe sunburn increases the chances of developing melanoma.

Skin cancer

Hereditary factors play an important part in susceptibility to skin cancer. Skin type is genetic. If an individual's parents have fair skin, they are likely to have fair skin also, and will have a greater risk of skin damage due to exposure to the sun. Most people have moles and freckles. However, if a person has a great number of freckles or moles (more than 50 moles), they are at risk of skin damage.

Moles or freckles that grow, change shape or colour, bleed or ulcerate, or new spots that appear, should be treated with suspicion. Individuals should have their doctor check out any unusual spots as soon as possible as early detection is crucial. The sooner a skin cancer is identified and treated, the better the chance of avoiding surgery, potential disfigurement or even death.

The three main types of skin cancer are melanoma, basal cell carcinoma and squamous cell carcinoma.

Did you know?
By the time they are 70, two in three Australians will be diagnosed with skin cancer.

Internet activity
Log on to TitanOnline to complete Activity 6.2 by investigating statistics surrounding skin cancer in Australia.

Melanoma

Melanoma is the least common but most dangerous type of skin cancer. Most skin cancer deaths are from melanoma. The moles or spots typically change size, shape and colour. They may also have an uneven outline.

There are over 15,000 new cases diagnosed each year. In 2018, there were close to 1500 deaths from melanoma of the skin. It is possible to prevent at least 80 per cent of melanomas in Australia. Melanomas may be treated through a number of drugs and medication or surgery.

Basal cell carcinoma

Basal cell carcinoma (BCC) is the most common type of skin cancer. If left untreated, the cancer can damage nearby tissues and organs. The spots grow slowly over months and years. They can be shiny, pearly nodules or red patches like eczema.

Three in 10 Caucasians will develop a BCC within their lifetime. In 80 per cent of cases, BCC is found on the head and neck. The majority of cases can be successfully treated through surgery, chemotherapy, immunotherapy or radiation. BCC can also be removed by cryotherapy (using liquid nitrogen to rapidly freeze the cancer off), curettage (scraping) or cautery (burning).

Squamous cell carcinoma

Squamous cell carcinoma (SCC) is less common than BCC but grows faster and can spread to other parts of the body. The cancer may look like an ulcer or reddish skin patch that is growing, bleeding on the lip or a lesion with hard, raised edges. Males are affected by SCC at twice the rate for females. The vast majority of cases can be successfully treated before serious complications occur through surgery or topical medication.

Figure 6.15:
It is important that individuals choose a sunscreen that best suits their skin type and activity they will be performing.

Choosing sunscreen

Sunscreen is one of the most common forms of protection against the sun. There are many different sunscreens on the market including creams, lotions, milks, gels and sprays. Sunscreens differ in price, quality and their sun protection factor (SPF). It is important that individuals choose a sunscreen that best suits their skin type and activity they will be performing.

When choosing or buying sunscreen, an individual should:

- Choose a sunscreen that is a broad spectrum (SPF 30+ or SPF 50+). Broad spectrum means the sunscreen filters both UVA and UVB rays, which both penetrate deep into the skin.
- Choose a sunscreen that is water resistant.
- Only use sunscreen which is in date.
- Store sunscreen according to the instructions, usually below 30°C.

When applying sunscreen, an individual should:

1. Apply it to clean, dry skin.
2. Apply it 20 minutes prior to being in the sun.
3. Reapply it every two hours, or more often if sweating.
4. Apply more than half a teaspoon of sunscreen to each arm and the face and apply more than one teaspoon to each leg, the front of the body and back of the body.
5. Accompany sunscreen with sun-protective clothing, such as a hat and sunglasses.

If the sunscreen irritates the skin, choose a different type or brand.

Heat illness

Our bodies typically regulate temperature – keeping it at an average between 36 and 37°C. The body regulates temperature by sweating and radiating heat through the skin. In some circumstances, such as hot weather, high humidity and vigorous exercise, our bodies are unable to regulate temperature. This can lead to a range of heat-related illnesses including heat cramps, heat exhaustion and heats stroke.

Heat cramps

Heat cramps are strong, involuntary muscular contractions. Individuals suffering from heat cramps experience muscle pains and spasms, typically in the abdomen, arms and/or legs. Pains and spasms are commonly sporadic and disappear on their own. The cause of the heat cramps is related to electrolyte problems. When experiencing heat cramps, individuals should restore their electrolytes by drinking appropriate fluids. Commercially available fluids include products such as Gatorade and Powerade. These drinks provide adequate dietary salt intake and replace fluid volume that has been lost.

Heat exhaustion

Heat exhaustion is less severe than heat stroke. Individuals suffering from heat exhaustion have lost too much fluid, causing the body to overheat. Heat exhaustion typically occurs when people who are not well-adjusted to hot, humid environments are exposed to them for an extended amount of time. Symptoms of heat exhaustion include excessive sweating, heat cramps, headaches, weakness, nausea and elevated core temperature. Treatment includes applying cool water to the skin; resting in a cool, shaded area; and avoiding alcohol and caffeine.

Heat stroke

Heat stroke occurs when the core body temperature rises to about 40.5°C and the body's internal systems start to shut down. Heat stroke is a life-threatening medical condition. The body's cooling system stops working and the core temperature of the body rises to the point where brain damage or damage to other internal organs may occur.

Heat exhaustion can lead to heat stroke, and infants and the elderly are more likely to have this problem. Symptoms associated with heat stroke are unconsciousness, flushed skin, elevated blood pressure, hyperventilation and dangerously elevated core temperature. Heat stroke is a medical emergency and requires immediate medical assistance.

Learning activity

1. Research current statistics on skin cancer. Create a report on the incidence, mortality and trends for skin cancer.
2. Explain why protection from the sun remains important even on cloudy days.
3. List the five ways to protect yourself from the damaging effects of the sun.
4. Provide a definition of the three following cancers:
   a. melanoma
   b. basal cell carcinoma
   c. squamous cell carcinoma.