WATER SAFETY KNOWLEDGE

A. PRINCIPLES OF PERSONAL SAFETY AND SURVIVAL

i. The Water Smart Code

The **Water Smart Code** is a list of simple guidelines you should follow when engaging in aquatic activities. They are:

1) **Go Together**: Play or swim in the water with someone who knows what to do in an emergency and can get help or rescue you. Never swim alone. If you are a child, it is important that you always go swimming with an adult.

2) **Know the Dangers**: Water can be fun but you should be aware of potential hazards. Never dive into shallow or unknown waters as there is a high chance that you could be injured when you hit the bottom or an object hidden under the water's surface. Use feet-first entry when entering the water. Enter headfirst only when the area is clearly marked for diving and has no obstructions above or below the water.

3) **Take Safety Advice**: Apply simple common-sense safety rules in all aquatic activities. Many accidents can be prevented if safety rules are heeded. One piece of advice which is commonly ignored is the importance of using Personal Floatation Devices (PFDs) when canoeing or boating.

4) **Float and Wave**: If you are in trouble in the water (for example, if you experience a leg cramp), relax, roll onto your back and wave for help with one arm.

5) **Learn How to Help**: If someone needs help, don't just plunge in. Lie down and reach out with a stick or throw the person a floatation aid. Call 995 for help.

ii. Personal Floatation Device (PFD)

A **Personal Floatation Device (PFD)** is a piece of equipment designed to help the wearer keep afloat in water. In emergency situations where there is no PFD, swimmers can remove their clothing and fill it with air to make a float for survival.

A PFD is commonly **used for water activities such as boating, kayaking and canoeing.**

PFDs vs Lifejackets

A PFD is **NOT** the same as a lifejacket although they may look similar. The table below summarises their key differences.

Personal Floatation Device (PFD)	Lifejacket
- designed to keep a conscious person afloat in calm conditions - has less buoyancy - floatation material is on the back of the device	- designed to turn an unconscious person from face down to face up in the water, allowing them to breathe - has more buoyancy - floatation material is in the front of the device

B. ENVIRONMENTAL AWARENESS

Swimmers must have knowledge of potential dangers in different aquatic environments. An understanding of what constitutes safe, responsible behaviour around water will help to ensure enjoyment and safety for all.

i. Swimming Pools

Conduct pool orientation (swimming instructors):

- Before the start of the swimming lesson, and beginning from the entrance of the pool, introduce students to the different personnel who work there.
- Emphasise the importance of not running around the pool.
- Familiarise students with the locations of the toilets and changing rooms.
- Demonstrate the correct use of open shower areas before entering the pool.
- Teach students how to check the water depth before entering the pool.
- Explain to students why no footwear is allowed in the water.
- Teach safe and proper entry into the pool.
- Emphasise that when children go swimming, they must be accompanied by a responsible adult.

Staying safe:

- Obey all safety rules. The rules will be clearly stated on signs by the poolside. You can also approach the lifeguards or staff if you need help understanding the rules.
- Follow the instructions given by the lifeguards and swimming instructors.
- Check the depth markings on the poolside and stay clear of deep water, unless you are able to swim well or are supervised.
- Rinse yourself before entering the water.
- Enter the pool using the pool ladder/steps.
- Diving must be supervised by an instructor and be performed at the dive pools.
- If you are at the dive pool, make sure the water is clear of other swimmers before jumping in.
- Do not run, jump, chase or push anyone along the poolside.

- Alert the lifeguard/security guard (or any adults who can help) if you witness someone in distress.
- If there is a lightning risk alert (even if it is a clear day), do not swim. Stay indoors and wait for further instructions.

ii. Rivers and Creeks

Rivers and creeks are often close to populated areas in some countries but can be very dangerous. Some dangers to look out for are:

- crumbling banks;
- uneven and unsafe river beds;
- submerged obstacles; and
- strong currents.

Staying safe:

- Never go alone.
- Only participate in activities such as swimming or canoeing in designated recreational areas.
- Read and obey all warning signs in the area.
- Always check the water carefully before entering safely.
- Watch out for, and stay away from, boat areas.
- If you are unsure of the strength of the current, throw in a stick and see how quickly it flows down the river. If the stick disappears underwater or is tossed around, the current is strong and is likely to be dangerous. Do not enter the water.

iii. Lakes, Dams, Canals and Reservoirs

The flat, still appearance of lakes, dams, canals and reservoirs often gives a false impression of safety. However, strong winds can produce short, choppy, dangerous waves and reduced temperatures. Some of the potential dangers are:

- river entry points — these areas can have strong currents;
- cold water — caused by high altitudes, deep water, etc. Sudden immersion can cause distress and shock; and
- waves — can vary in size and frequency.

Staying safe:

- Never go alone.
- Only participate in activities such as swimming or canoeing in designated recreational areas.
- Read and obey all warning signs in the area.
- If you are unsure about the weather conditions, check with a local.
- Scan carefully for any potential dangers such as obstacles before you consider entering the water.

iv. The Beach and Ocean

Going to the beach is a popular pastime but it can also be a dangerous place as the ocean can pose some threats. The potential dangers to be aware of include:

- moving watercrafts such as canoes, boats or jet skis;
- waves, including plunging, surging and spilling waves; and
- currents, including tidal currents, runback currents and rip currents (a fast and strong current of water that moves out towards the sea. It can take a person into deep water a great distance from the shore). You can identify a rip current if you see:
    - debris floating with the current;
    - discoloured water due to the sand being stirred; and
    - waves breaking on either side of the rip.

Staying safe:

- Swim at a beach patrolled by lifeguards.
- Read and obey the warning signs and the lifeguards' instructions.
- Put on proper swimwear if you are going swimming.
- Swim in the designated areas, for example, between the red and yellow flags.
- Do not run and dive into the water.
- Do not jump off rocks or water breakers.
- Stay away from rocks when swimming.
- Do not swim at night.
- Always swim with another person — never swim alone.
- If you are caught in a rip current, do not panic. Swim parallel to the shore until free of the current or let the current take you out then swim back to shore after the current breaks apart.
- If you have any doubts about your ability to cope with the conditions, you should not enter the water.

v. The Home

Although your home may seem to be a relatively safe place, it does have potential dangers too, particularly for very young children. Some water dangers in and around the home include:

- unfenced pools, such as in condominiums or houses;
- gates and barriers to pools that are left open, allowing easy access;
- fish ponds in gardens;
- large fish tanks filled with water;
- uncovered spa tubs;
- filled paddling pools that are left untended;
- buckets filled with liquid;
- bathtubs filled with water or with the plug left in;
- top/front-loading washing machines with the lid/door left open; and
- toilet bowls with open lids.

Staying safe:

- Always remember to keep the gates and access points to a swimming pool area closed and locked when you enter or exit.
- Remove objects that children could climb high up onto from the area around a pool.
- Keep the bathplug of a bathtub out of reach of children.
- Immediately drain bathtubs and paddling pools after use.
- Keep liquid-filled buckets out of reach of children.
- Always close top/front-loading washing machines after use.
- Keep fish tanks covered.
- Install rigid covers over spa tubs.
- Always keep toilet bowl lids closed.

vi. Principles of Watercraft Safety

You may be involved in various kinds of watercraft activities, such as being on a cruise canoeing or dragon boating. It is important to know some basic rules and guidelines for such activities to ensure your safety when you are involved in them.

Safety guidelines for watercraft activities:

- The skipper should inspect the boat and its safety gear regularly to ensure they are in good working order.
- Everyone on board should wear a PFD.
- Follow the boating traffic rules.
- Know the limitations of the boat.
- Check the weather conditions before departure and continue to monitor weather reports after the boat have left the shore.
- Keep a lookout for rising winds, waves, rocks, reefs and weirs (low dams built across rivers).
- Leave word of destination and estimated time of return.
- Learn and practice “person overboard” drills.
- If on-board a cruise ship or boat, take note of the following:
    - The nearest exit from your location
    - The location of the lifejackets or PFDs
    - The safety booklet of the cruise or boat

C. EMERGENCY SITUATIONS AND SURVIVAL TECHNIQUES

i. Emergency Situations

An emergency can happen to anyone at any time in or around the water. When participating in aquatic activities, it is important to recognise and know how to respond correctly to an emergency situation.

An aquatic emergency situation can occur due to the following:

- Muscle cramps: Muscle cramps can happen when the muscles become tired or cold from swimming. It can affect the ability to swim or float in the water.
- Exhaustion: This means a person no longer has the energy to keep swimming or floating.
- Falling into water: An unintended entry into the water, for example, accidentally falling off a boat or the edge of the river.
- Capsized craft: When participating in any watercraft activities, there is a possibility of capsizing (when a boat overturns in water).
- Medical emergency: People with medical conditions such as heart conditions, asthma, or epilepsy may collapse during aquatic activities.

ii. Survival Techniques

Survival in an aquatic emergency will depend on your ability to use survival knowledge, judgement, skill and fitness to cope with the situation. If you are in an emergency situation, remain calm and consider the following:

- Winds, currents or tide strength and direction
- Distance from safety
- Ability to swim safely
- The possibility of someone on the shore coming to help
- The weather, air and water temperature and water conditions
- Whether a capsized watercraft will remain floating and can be held on to, or if it will eventually submerge
- What buoyant objects would help floatation
- Whether any heavy clothing needs to be removed

Survival Swimming

In an emergency, the ability to carry out survival swimming will greatly increase your chances of survival. The key to survival swimming is to conserve energy and, when necessary, to retain body heat.

Some strategies of survival swimming are:

- Make a plan and do not panic — even when exhausted or suffering from a difficulty such as a cramp, it is still possible to remain afloat for long periods of time.
- Stay afloat (try to float feet first in a half-sitting position) and hold any buoyant object to help floatation or put on a PFD and remain as still as possible.
- Maintain the body in a relaxed position. If propulsion is desired, keep as horizontal as possible.
- Keep the body and limbs submerged.
- Swim with slow, relaxed strokes to conserve energy (for example, survival sidestroke, backstroke and breaststroke)
- Change position and stroke to lessen muscular fatigue.
- Splash around in the water, wave or shout to attract attention. If help turns away or does not see you, remain calm and conserve energy to wait for help to come again.

A survivor swimmer must have a wide range of skills and a high level of water confidence. The following techniques would help you carry out survival swimming in an aquatic emergency:

1) Treading water: This is a survival technique that helps to conserve energy. It may be performed in a horizontal or vertical position.

2) Swimming underwater: It is desirable to develop the ability to swim under water with confidence. You will be able to find objects or remove clothing to get yourself out of danger in an emergency.

3) Survival floating (back float): This is an important survival skill. Some people may find floating motionless impossible (due to body composition). However, for these people, some arm sculling or leg action can be used to give support to the float. Floating in salt water is easier as it provides greater buoyancy than fresh water. The use of floatation aids may assist in floatation.

4) Removal of clothing and making a float: It is important to assess which items should be removed. Clothing should only be removed if it is too heavy or constricting. It is best to retain at least one layer of clothing to minimise heat loss. You can then inflate the removed article of clothing, such as a pair of pants, a shirt or a jacket, and use it as a floatation aid.

5) Putting on and swimming with PFDs: Be familiar with the various types of PFDs. It is important to be able to use them confidently and to understand how they work, as they will greatly increase your chances of survival when used correctly. Also, your PFD should fit you properly.

6) Signalling for help: The widely recognised personal distress signal is one arm raised or waved above the head and a cry for help. The best position for supporting the body while one arm is raised is the back float, sculling with one hand and legs kicking gently.

7) Heat Escape Lessening Posture (H.E.L.P.): This can increase the chances of survival by reducing the amount of body surface area that is exposed to cold water. In this position, the chest and knees are in contact with each other. Huddling with other people in the water will also help to lessen the loss of body heat.

In the event of a cold-water immersion, you should do the following:

- Wear a PFD and protective clothing
- Grasp a large floatation aid or piece of boat wreckage if available and climb as high out of the water as possible
- Avoid immersing the head
- Adopt the Heat Escape Lessening Posture (H.E.L.P.) or huddle position
- Remain as still as possible

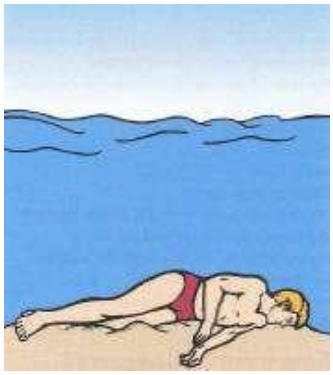
D. RESCUE

Sometimes parents or caregivers watching children around water fail to recognise when a swimmer is in trouble. Most people who are in trouble in the water cannot or do not call for help. They spend their energy trying to keep their heads above water to get a breath. A swimmer in distress may be too tired to get to the side of the pool or may be trying to swim with little or no forward progress. If not assisted in time, a swimmer in distress may soon become a victim of drowning.

Being able to recognise a person who is having trouble in the water may help save that person's life. The following are the characteristics of a person in an aquatic emergency, according to how proficient they are at swimming.

i. Characteristics of a Person in Difficulty

Non-swimmer: Non-swimmers will panic when experiencing difficulty in the water. They will often do what is referred to as "climbing the ladder" — they will be vertical in the water and appear to be climbing a vertical ladder. The swimmer will have minimal or non-supportive leg action. They may submerge and may or may not be facing the shore. A non-swimmer may attempt to grab the rescuer.	
Weak swimmer: Weak swimmers may be able to use their arms and legs for support. The swimmer will often be angled in the water (at approximately 45 degrees) and may attempt to grasp the rescuer or a floatation aid. Their head position will be tilted up and back and the head will usually be turned to safety or help.	
Injured swimmer: An injured swimmer will typically grasp the injured body part and call for help. They may be in an awkward position, but will be able to use a floatation device if provided.	

Unconscious swimmer: The unconscious person may be at any depth of water, depending of the length of time they have been unconscious. The individual may be face-up or face-down in the water, but will not be moving. Rescue conscious swimmers first before they go unconscious.	

ii. The Four "A"s

If you notice a swimmer in trouble, you need to act quickly. The steps in any rescue may be summarised as 'the four As':

1) Awareness
2) Assessment
3) Action
4) Aftercare

1) AWARENESS

The ability to recognise an emergency situation (refer to the section: Characteristics of a Person in Difficulty on how to identify a victim of an aquatic emergency).

2) ASSESSMENT

Assess the situation to make sure that the scene is safe to conduct the rescue — do not put yourself at risk while attempting to rescue the person. Then, act based on your training (knowledge, fitness, skill and ability). If you do not have the ability to conduct the rescue, alert others who do (for example, the lifeguards) and call for help.

3) ACTION

If you are able to do so safely, help get the swimmer out of the water. To ensure maximum safety, any rescuer should consider using, in order of priority (from top to bottom), the following methods of rescue. *[Land-based or dry rescue (without the need of going into the water) is the safest action for consideration before attempting any water-based rescue, especially for younger rescuers.]*

Rescue Technique	What is it?	When to use it?	Type of Rescue
Talk	Talk to the victim. Let him or her know help is coming or tell the victim what he or she can do to help with the rescue.	The person in trouble is conscious, capable of responding to instructions and is close enough to the rescuer for his or her gestures and voice to be seen and heard.	Land-based rescue /Dry rescue
Reach	Use any available object to extend your reach to the victim and pull him or her to safety.	The person in difficulty is near the edge, for example, having fallen in the water. This rescue can be used when a weak or non-swimmer has to carry out a rescue alone.	Land-based rescue /Dry rescue
Throw	Throw anything that will provide the victim with support, such as a line or float.	The person in difficulty is too far away for the rescuer to reach safely. The purpose of throwing a buoyant aid is to provide the swimmer in difficulty with support until he or she can be removed from the dangerous situation.	Land-based rescue /Dry rescue
Wade	If the water is shallow enough, walk through the water to get closer to the victim and throw a line or float to him or her.	Attempts to Reach and Throw have been unsuccessful and the depth, current and temperature of the water permits a safe entry. This technique brings the rescuer nearer to the person in difficulty and may enable a Reach or Throw rescue to be attempted.	Water-based rescue
Row	Use a watercraft, for example a kayak, to move closer to the	Reach or Throw rescues were unsuccessful and a Wade rescue is not possible because of the	Water-based rescue

Rescue Technique	What is it?	When to use it?	Type of Rescue
	victim to conduct a rescue.	depth of water. This is an effective and safe technique because the rescuer remains clear of the water and the person in difficulty can be secured quickly and safely.	
Accompanied Swimming	With a floatation aid, swim to the victim and pass the aid to him or her. Accompany the person to safety.	Rescuers should use a swimming rescue only if he/she is a strong/confident swimmer and when all land-based rescues have either failed or are not appropriate.	Water-based rescue
Non-contact Tow	Swim closer to the victim and use an assist equipment to tow the victim to safety.	If a swimming rescue is to be used, always attempt an Accompanied Swimming rescue first. However, a Non-contact Tow can be used when an accompanied rescue is not possible or has proven ineffective.	Water-based rescue
Contact Tow	Swim to the victim to tow him or her to safety.	A Contact Tow is performed when all other rescue approaches are not suitable. For example, when the victim is not able to swim, has not responded to rescue aids, or is unconscious.	Water-based rescue

4) AFTERCARE

After rescuing the victim, reassure him/her and provide any aid until medical help arrives. When the paramedics arrive, inform them of what has happened.

E. HEALTH AWARENESS

i. Personal Hygiene

People can get sick after swimming in a public pool due to the presence of bacteria and germs in the water. It is the responsibility of everyone to keep the pool clean. To keep yourself and other swimmers in the pool healthy, you should take the following steps.

Before entering the pool:

- Do not enter the pool if you are suffering from allergies or other illnesses such as diarrhoea and eye or skin infections, as they may spread to others as well.
- If you have an open wound, do not enter the pool — bacteria from your wound could get into the water and spread to others, or bacteria in the pool could get into your wound.
- Shower before entering the pool — this will ensure that you are clean before entering the pool.
- Wear appropriate swimming attire such as a swimsuit.
- On the pool deck area, do not wear shoes/flip-flops that have been worn outside the pool complex.

While in the pool:

- Do not drink the pool water as it contains high levels of chlorine. It will likely also contain urine, dirt and germs from other swimmers.
- Do not urinate or pass motion in the pool.
- If you notice stool or vomitus in the pool, get out immediately and inform the lifeguard.

After exiting the pool:

- Rinse yourself off or take a shower to wash the chlorinated water off your skin.

ii. Personal Health

Observe the following points to keep yourself healthy and safe when engaging in aquatic activities:

- If you are not feeling well or are under medication, do not take part in the activity.
- Ensure that there is enough time to digest your food before the start of the activity.
- If you have a medical condition, be sure to inform an adult supervising the activity (for example, teachers, parents, swimming instructors and lifeguards) before it begins.
- If you feel sick at any time during the activity, stop immediately and inform the adult supervising the activity (for example, teachers, parents, swimming instructors and lifeguards).

- Do not hold your breath underwater for a prolonged period of time as it deprives your body of oxygen and may cause you to black out and drown.

iii. Protection from Ultraviolet (UV) Rays

When we are exposed to the sun, our bodies make vitamin D which helps our bodies absorb calcium for stronger, healthier bones. However, too much unprotected exposure to the sun's ultraviolet (UV) rays can cause tanning or burning and increase the risk of skin cancer. It is important to protect your skin from too much sun exposure.

Protection from UV rays during outdoor aquatic activities:

- Avoid or minimise exposure to the strongest rays of the day
  - Between 10.30am and 3.30pm, UV rays are the strongest and the UV index levels are at their highest
  - Swim or participate in outdoor aquatic activities in the early morning, late afternoon or evening

- Use sunscreen
  - Use Sun Protection Factor (SPF) 30 or higher sunscreen
  - Use water-resistant sunscreen
  - Apply sunscreen 20–30 minutes before going outside/getting in the water
  - Re-apply sunscreen every two hours, especially during prolonged aquatic activities

- Wear sun-protection accessories
  - Long-sleeved top
  - Sun glasses
  - Cap or broad-brimmed hat

iv. Hydration During Swimming

People often neglect to hydrate themselves during swimming as they do not realise that the body is losing fluids through sweat. This is because they do not see or feel themselves sweating, as they are constantly immersed in water. However, the body is still giving off sweat due to the physical exertion of swimming. Warm air, low water temperature and high humidity can also cause the body to lose moisture quickly.

It is important that you hydrate yourself to lower the risk of dehydration. You should hydrate before, during and after the activity. Try to take breaks and drink before you begin to feel thirty.

Dehydration can result in a drop in your performance levels for the activity and most importantly, pose a safety risk to your health.

Signs of dehydration during swimming:

- Increased thirst
- Increased body temperature
- Increased effort of exercise
- Decreased stamina
- Flushed skin
- Unexplained sudden fatigue
- Palpitations and increased breathing rate

v. Alcohol and Aquatic Activities

Alcohol affects your judgement and can slow down your reflexes, balance and coordination. Due to its harmful effects on the body, alcohol can be a contributing factor in fatal accidents in aquatic environments.

Do not consume alcohol if you are engaging in water activities such as boating, swimming or diving.

vi. Fitness Benefits of Swimming

Not only is swimming a highly valuable skill to have in terms of personal safety when engaging in water activities, it also plays an important role in conditioning the body and promoting a healthy and active lifestyle.

The benefits of swimming include the following:

- Builds endurance, muscle strength and cardiovascular fitness
- Provides a full body workout as nearly all muscles are used during swimming
- Is a low impact exercise suitable for people with certain types of injuries and conditions
- Helps to de-stress and provide relaxation through physical activity
- Provides a pleasant way to cool down after a hot day