



Partners in Sports



Giving Hope. Improving Lives.



SINGAPORE
SPORTS COUNCIL

Sports
Safety



Recreational Diving Safety Guide

Know yourself. Know your gear. Know your dive.

Think Safe. Play Safe. Stay Safe

A Sports Safe Singapore

The Singapore Sports Council (SSC) recognises that safety must be a fundamental component of our sporting culture and a prerequisite for every healthy lifestyle. Therefore, the SSC has set a corporate goal of zero injuries, since all accidents can be prevented. Emphasising the need for personal accountability, the SSC also urges people to be responsible for the safety of others. Our Sports Safety Division was formed in 2006 under the direct purview of the CEO's office. It was tasked to promote safety throughout Singapore's sporting community and inculcate a safety-first mentality in the minds of every stakeholder. For more information, please visit www.sportssafety.ssc.gov.sg

Message from the National Water Safety Council (NWSC)

With the increasing interest and participation in water activities and sports in recent years, it is essential for all water enthusiasts to be reminded and aware of the potential dangers that arise from being in the water. One has to be sufficiently water competent, take personal responsibility for one's safety and have in-depth knowledge on water safety, as these can make the difference between life and death. The National Water Safety Council supports SSC's Recreational Diving Safety Guide, which provides diving enthusiasts, novices and experienced ones alike, invaluable pointers on how to stay safe while enjoying their dives.

Acknowledgement

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Think Safe. Play Safe. Stay Safe.

Another Initiative by the Sports Safety Division, Singapore Sports Council

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INTRODUCTION

Recreational diving is a wonderful hobby. As with any sporting activity, it involves a degree of risk and can be dangerous if safety is ignored. Formal recreational diving training and proper certification are a must for a safe diving experience. This is especially so as you will be relying on specialised breathing apparatus and operating in an unfamiliar and dynamic underwater environment.

This book aims to share with you the inherent risks of the sport and safe practices, in order for you to better exercise personal responsibility for safety when you embark on your next recreational diving experience.



WHAT IS RECREATIONAL DIVING

Recreational diving is defined as diving for pleasure to a depth not exceeding 40m/130ft

- It uses compressed air only
- It is never done solo
- It involves No-Decompression (No-D) diving

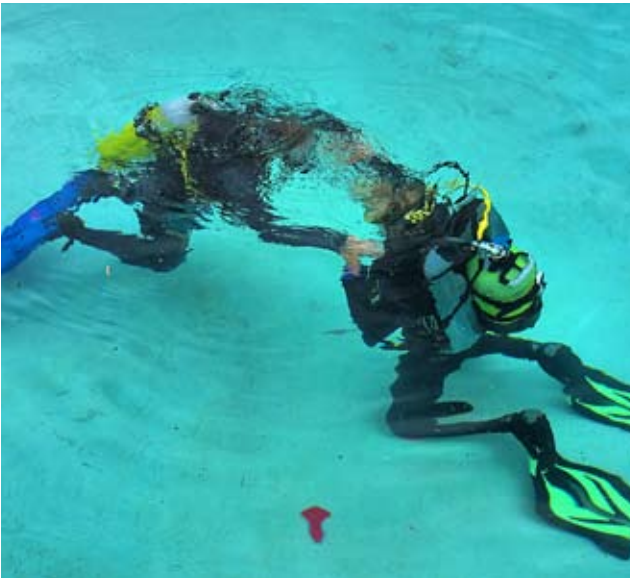


ENVIRONMENT

The aspiring diver is expected to start his formal practical training in a pool environment. This allows him to learn the use of his breathing apparatus, practise buoyancy control and other essential underwater skills in a controlled environment.

However, the relatively safer pool environment can give the diver a false sense of confidence. The conditions in open water can be very dynamic and can change very quickly in its visibility, underwater currents and surface conditions. The possible presence of hazardous marine life must also not be ignored.

Being aware of these conditions will better prepare the diver for his open water dive.



POOR VISIBILITY

While the media is often saturated with beautiful images of the underwater corals shimmering in their glory, there may be occasions when underwater visibility is far from ideal. Experienced divers will tell you that under the wrong conditions, or at certain dive sites, visibility can fall to no further than your outstretched hand. Under such conditions, disorientation, panic and getting separated from your dive group become very real dangers.

Light penetration and particulates are some of the things that affect visibility. Not surprisingly, these are often related to environmental factors. Rough seas often reflect more light and hence, reduce underwater illumination. Particulates, such as suspended sand and silt, affect visibility underwater in much the same way as dust on land. Tides, strong wave actions and storm surges can stir up the sea bottom and suspend particulate matters in the water columns.



My first dive was very different from what I had imagined. The water was murky and I could barely see what was in front of me. It was very different from what I had experienced during the training pool dives.
- Mohd Rizal, 18

DRIFT

If boat crews are not conscientious, the boat may drift far away from its initial position due to strong currents or surface drift. Even experienced divers; and more so inexperienced ones, can get disoriented or swept away by currents, and get lost or separated from the group. This danger is significantly worsened in poor weather conditions.

Always begin your dives against the current, if possible. It is best to spend the first part of the dive; when you are more energetic, swimming into the current as it can be strenuous. Thereafter, you can complete the dive by drifting with the current back to the exit location. However, there will still be the likelihood of divers overshooting the exit location due to strong currents. Unless the dive is a planned drift dive with a co-ordinated recovery plan by the dive boat, a diver who begins the dive swimming with the current will be in for trouble.



When we resurfaced, we were quite shocked to see the boat so far away from us. It didn't help that the sea was getting choppy. We tried shouting for attention but they didn't hear us. Luckily, they found us after close to an hour. By then, we were all quite exhausted. - Dhillon Singh, 37

ROUGH SEAS

Once a diver descends more than 5-10 metres, he may not be aware of the conditions on the surface. If the weather builds up, the tired diver can be in for a rude shock when he returns to the surface. Even with the aid of a buoyancy compensator device (BCD), getting into a rocking boat safely can be a real challenge.

Weather changes can happen quickly. A moderate breeze of 20-30km/h can generate waves of 1-2 meters. A strong breeze of 40-50km/h can easily generate waves of 3-4 meters high.

Divers should research the intended diving area to find out when is the most favourable period to do their dives. They should also check the local meteorological station to get the most updated weather forecast for the day before heading out to sea for the dive trip. Always be prepared to call off the dive if you assess that the weather may turn for the worse.

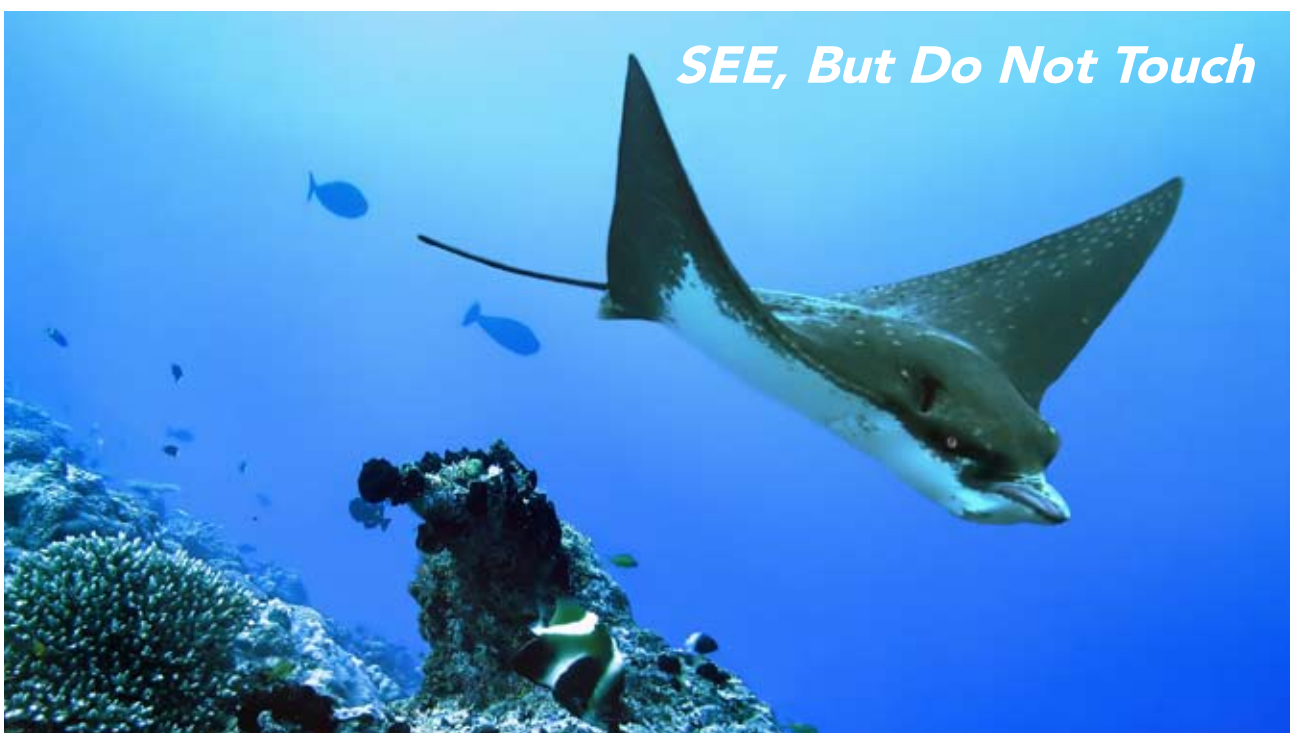


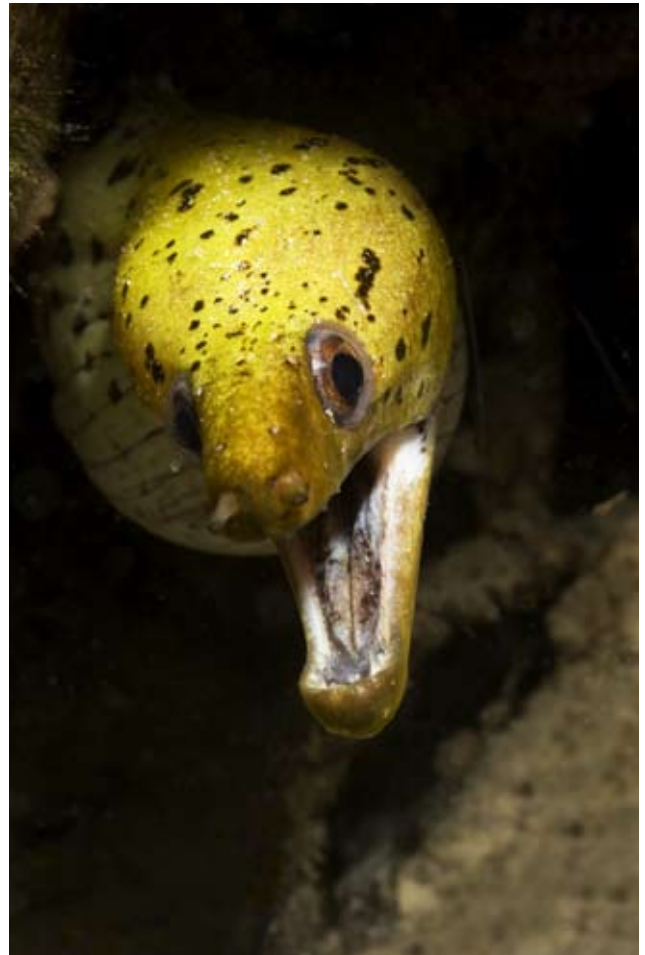
Getting onto the boat in the rough sea was really a challenge. It took quite a while before everyone was back onto the boat. - Tan Kehui, 29

DANGEROUS MARINE LIFE

Marine creatures have different types of predatory and defensive mechanisms such as venomous stings and bites. Avoid provoking or touching them as they may leave a stinging reminder that we are infringing upon their habitats.

Practising good buoyancy control and avoiding accidental brushes of your hands, arms and legs on coral and other animals, can help reduce the most common cause of aquatic injury for divers. Wear appropriate protection including gloves and boots to minimise contact of the skin with marine life. Always research your dive area and know what hazardous marine life to expect and how they look like.





Despite our constant reminder to our students to avoid contact with creatures and be contented just to observe them, there will be always be some who will have to learn their lesson the painful way. - Travis, 47

NIGHT DIVES

For those of us who have spent our entire lives in cities, it is difficult to imagine utter darkness. Diving at night, in open waters, is like entering a lightless abyss. Even so, night diving has its lure as the marine environment springs to life. Underwater animals, which hide during the day, come out to feed at night and can be easily spotted in a diver's torch beam.

If divers become separated from their diving group at night, it is highly likely that they will not be found until there is light, by which time they could be in poor condition. For this reason, it is a good practice for divers to carry extra torches when night diving. In the event of separation or other emergency, they can signal for help.

You should note that night diving should only be attempted by experienced divers. Diving at night is physically more demanding than day dives. The coldness of the water will give a diver more stress plus the fact that the natural body clock is signaling the body to settle down and rest. If possible, you should do a day dive on the same spot where you will be diving at night. This lowers the risk of being lost at night and gives you more confidence in a more familiar area.

Glow sticks are very useful underwater. You should attach some glow sticks to your air tank, or perhaps wrap them around your legs and arms so that you and your buddy can clearly see each other. You must never attempt to do a night dive alone. Your diving buddy is your only hope if something goes wrong.





It was like walking in the forest at night. Your light illuminates a small area but everywhere else is pitch dark. It was both exciting and scary.
- Magdelene Lee, 28

IS DIVING FOR ME?

If you are considering learning to dive, keep in mind that every dive is different - water and weather conditions vary from dive to dive. You may be required to manoeuvre through strong currents to reach your dive site, or perform a long surface swim at the end of a dive. Divers need to be able to perform unexpected strenuous physical tasks. Also, they should not have any adverse health conditions or be taking any medications that may cause problems while diving.



Pre-dive Physical Examination

It is important that your doctor has an understanding of dive medicine. It is recommended that all first time divers undergo a pre-dive physical examination. However, you should definitely consult a doctor before diving if you suffer from any chronic illnesses, including the following:

- History of heart disease or diabetes
- History of asthma or other lung disease, chest injury or surgery, or shortness of breath
- History of seizures (fits) or unexplained black-outs
- Difficulty equalising the pressure in the ears

No upper age limit for participation in scuba diving exists, provided a diver is fit and healthy and has no disqualifying medical conditions. However, due to the increasing incidence of cardiac-related deaths in older divers, it is recommended that any diver 45 years and above undergo a pre-dive medical assessment.

Diving While On Medication

Let your dive instructor know if you are taking any medication, whether prescribed or not. Most medication will have no effect on diving, but some may cause drowsiness or fatigue, which may increase susceptibility to nitrogen narcosis. Consult your doctor to ascertain your medication will affect your ability to dive.



SOME RESTRICTIONS ON DIVING

Some medical conditions will temporarily restrict diving.

Cold or flu

With colds or flu, swelling or blockage in the Eustachian tubes or sinuses may prevent adequate equalisation of these air spaces with changes in pressure, resulting in injury to the ears or sinuses called barotrauma.

Injuries to joints and muscles

Such injuries may not only reduce diving ability but also increase susceptibility to decompression illness. Therefore, it is best to postpone diving until the injuries are fully healed.

Pregnancy

As little is known about the effects of diving on an unborn child, it is recommended that pregnant women return to diving after pregnancy.

Medical conditions that restrict movement of a diver's arms and legs

These conditions may limit the diver's mobility in the water.



SAFE PRACTICES

Preparation

Stay fit and healthy to dive safely. If this is your first time, or if you have not been diving for a long time, or if you are over 45 years of age, it is recommended that you undergo a pre-dive medical assessment which will include a general health screen, focusing on examination of your heart, lungs, and ears. If you are a trained diver, maintain your skills and refresh your knowledge if you have not dived for a long time. When diving in a new area, do your research and understand the unique conditions of the area in that particular season. Service your equipment regularly and inspect it before diving.



Pre-dive

Make sure you're feeling well, both physically and mentally, before you dive. Check the weather forecast before diving and do not dive in poor conditions or if bad sea conditions are anticipated. Plan your dive with your buddy and always plan for no decompressions diving. Dive conservatively and stay well within the limits of dive computers and tables. Be prepared for emergencies and have local emergency contact information on hand.

Diving

Always begin dives against the current, if possible. Equalise your pressure early and regularly. Stay with your buddy throughout the dive and be alert. Pace yourself and avoid overexertion to the point of breathlessness. Always dive with a buddy. Always stay well inside the limits of your dive computer or tables. Ascend slowly, do a safety stop, look up and listen before you break the surface. Plan to exit the bottom with a minimum of 35bars/500psi of air remaining in your cylinder.

REMEMBER

Know Yourself

Know your limits. Ensure physical and mental fitness for the dive. Be familiar with diving theory and drills.

Know Your Gear

Know how to operate your dive equipment. Ensure equipment is fit for use. Check before use.

Know Your Dive

Know your dive site. Know your dive plan for each dive. Be aware of the underwater conditions. Adopt a buddy system. Dive with a guide in unfamiliar sites.



OTHER SAFETY TIPS

Beyond structured instructions and preparations, you should also be familiar with a few simple pointers that could make the difference between a great dive and a bad and potentially dangerous diving experience.

Which dive shop to choose?

Choose a dive shop that is licensed by an established international dive training agency that fulfils the minimum standards set by established recreational diving bodies such as the US-based Recreational SCUBA Training Council. In this respect, make sure that you are trained according to these standards by qualified dive instructors. For the actual dives, make sure that the dive masters are qualified and current. In addition, make sure you are trained for the type of dive you wish to undertake.



How many is too many in a class?

While many dive agencies adopt an Instructor-to-Student ratio of 1 Instructor : 8 Students for open water dives, most experienced instructors maintain a lower ratio (e.g. 1:4-6) to make sure they can effectively impart the diving skills and watch over all their students. Reduced ratios may also be necessary for safety and control based on risk assessment variables such as water and weather conditions, number of certified assistants and the profile of students. You can always enquire about the instructor to student ratio before deciding on the agency to sign up with for your training.



Am I flying too soon after a dive?

As part of your training, you would have learnt to calculate how long a surface interval you should maintain before flying so as to avoid decompression sickness. As a general guide, Divers Alert Network (DAN) recommends at least 18 hours between your last dive and flying. Do not try to pack in more dives to get "value for money" just before your flight, and risk decompression sickness.

ARE YOU READY TO DIVE?

The Physical Activity Readiness

is designed to help you assess your level of readiness for physical activity

Regular physical activity is fun and healthy. Increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctors before they start becoming more physically active.

If you are planning to become more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are above 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: **check YES or NO.**

YES NO

- | | | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you feel pain in your chest when you do physical activity? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you lose your balance because of dizziness or do you ever lose consciousness? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you know of any other reason why you should not do physical activity? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart conditions? |
| <input type="checkbox"/> | <input type="checkbox"/> | In the past month, have you had chest pain when you were not doing physical activity? |

If you answered YES to one or more questions:

Consult your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may be able to do any activity you want – as long as you start slowly and build up gradually. Or you may need to restrict your activities to those which are safe for you. Consult your doctor about the kinds of activities you wish to participate in and follow his/her advice.
- Find out which community programmes are safe and helpful for you.

ess Questionnaire (PAR-Q)

y. It is simple and it only takes a fraction of your time to complete.



Personal Safety

- Know your own body. Are you ready to dive?
- Dive within your limits.
- Have adequate rest and water before you dive.
- Before you set dive, let someone know that you are going out.
- Warm up before diving and cool down after the activity.
- Wear a Buoyancy Compensator Device (BCD) at all times.

If you answered NO honestly to all PAR-Q questions, you can be reasonably sure to:

- Start becoming much more physically active. Starting slowly and building up gradually is the safest and easiest way to go.
- Take part in a fitness appraisal. This is excellent for determining your basic fitness so as to plan the best way to live actively. Evaluating your blood pressure is also strongly recommended. For readings above 144/94, consult your doctor before you become more physically active.

Delay becoming much more active:

- If you are not feeling well because of a temporary illness such as a cold or a fever – wait until you feel better, or
- If you are or may be pregnant – consult your doctor before you start becoming more active.

Please note:

If you answered Yes to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

Download PAR-Q in Chinese, English, Malay or Tamil from www.ssc.gov.sg For more information, please call 6500 5431.

Source: Canadian Society for Exercise Physiology

GETTING YOURSELF INSURED

Insurance

All divers should ensure that they are adequately protected before embarking on their trip. Although diving is a relatively safe sport, there are inherent risks associated with it. Divers can consider purchasing diving insurance or joining diving organisations that provide insurance coverage for medical and evacuation services in the event of a dive accident.

Emergency Evacuation Cover

In the event of a diving emergency, the availability of evacuation services can be most invaluable. This is because most dive spots are located a distance away from a full-service medical facility. Emergency evacuation by air plus the cost of the dive injury treatment can be extremely costly if you are not fully covered for those eventualities.

Ensure that you are insured with a reputable organisation that has the experience and expertise to co-ordinate an appropriate diver rescue effort and get you to a proper medical facility for appropriate treatment expeditiously.



Many are not aware but it is a common practice for most insurers to EXCLUDE "hazardous activities / sports" such as any underwater activities involving the use of underwater breathing apparatus. Please check with your insurers first to ensure comprehensive coverage before deciding on the policy to buy.

Diving Medical Help

In Singapore, diving medical assistance can be sought at the Hyperbaric & Diving Medicine Centres at the Singapore General Hospital or Tan Tock Seng Hospital. For diving emergencies, call (65) 6758 1733 (24-hr hotline).

When travelling overseas, divers can contact Divers Alert Network (DAN) Hotline for immediate diving medical advice 24/7. The number for the Asia-Pacific region is +618-8212 9242.



