

# WSF Freediver

## - Environment



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## INTRODUCTION

The inspiration to explore is a natural emotion. The aspiration to discover is widely experienced and very human. Our blue earth is 70% covered by water and it is beneath the surface that we find endless adventures just waiting for volunteers.

The RAID “World Series Freediving” program offers anyone the chance to explore, discover and become part of their own underwater adventures, with minimal environmental impact and sleek, form fitting equipment. WSF is a mixture of challenge and maximum enjoyment. The modern WSF Freediver has an abundance of great experiences, personal goals and huge enjoyment to look forward to. The modern freediving manual is designed to make freediving success an adventure, easy, enjoyable and safe.







Whether you aspire to great depths, times and distances on a single breath of air or to simply observe marine life and discover the underwater world in the most natural way possible, there is a WSF Freediving Program close by, waiting for you to step into liquid.

Freediving techniques and skills have made many huge advances over the years. WSF recognises this change and has accommodated accordingly. Doing away with unnecessary and dangerous practices of old, the modern freediving manual will make your freediving experience easier, more accessible, more enjoyable and far more successful than ever before. Our innovative and industry-leading freediving programs open the door for everybody to join the freediving world, breaking down the myths of old and introducing new modern freediving techniques to both the novice and experienced freediver alike.

The WSF philosophy encompasses a path of least resistance to maximise your success. Our unique, innovative approach has identified the four main elements of freediving success. As you learn to master these four elements then you, the freediver, become the fifth element. This is the key to making the skills an active motion - without the freediver, the skills are merely theoretical.

So what are the four elements? They are four fundamental concepts that guide all freediving:

1. Conserving Oxygen 
2. Equalisation 
3. Flexibility 
4. Safety 

These will be referred to in all the WSF Freediving manuals by the use of their abbreviation and icon.

The positive emotive response that guides the freediver's approach to skills are what takes the freediving experience to the next level. If you exhibit the relaxed and positive emotion necessary to bring the four elements together, then you become the fifth element and make freediving success a reality.

Freediving that is safer, with greater confidence and greater success is WSF Freediving. This is freediving for everybody and our goal is simple, to create the best freedivers in the world!

## EQUIPMENT

Objectives:

- List 2 benefits of the low volume freediving mask.
- State the advantage of long bladed fins over short bladed fins.
- List 2 different types of freediving suits.
- State 2 fitting techniques for donning an open cell freediving suit.
- List 2 advantages of the correct freediving weight system.

**Value: The skill and knowledge to be able to select, with confidence, your own high quality freediving equipment that is suitable to your level of skill and budget.**

### Freediving Mask

The freediving mask is our window into the underwater world. Without the mask our vision is blurred and our eyes are unprotected. The human eye lacks the ability to see clearly underwater so the freediving mask creates a pocket of air between the eyes and the mask lens. This airspace allows the eyes to focus, creating sharp underwater vision allowing us to be inspired by the wonders of the deep.



A true freediving mask has unique features that empower the freediver to conserve oxygen and equalise pressure easily so they can enjoy the time underwater in the most relaxed way possible. Some key features of the freediving mask are:

1. Low internal volume (ease of equalisation – less air is required to equalise internal volume of the mask).
2. Low profile (creates a streamlined profile with less drag, conserving oxygen).
3. Fitting nose pocket for ease of equalisation.
4. High quality silicone skirt for optimum seal (the colour of the silicone can vary – freedivers prefer a black skirt which helps stop light entering the peripheral vision and straining the eyes while on the surface).



Correct fitting of the mask that is right for your unique face is paramount. Once you have selected the colour and style of your desired mask, try it on first! Simply place the mask skirt onto your face with your head slightly tilted back (avoid using the strap at this stage). Next breathe in through your nose to create a slight vacuum hence sealing the mask in place on your face. Now slowly tilt the head forward to check if the mask stays in place with a comfortable seal around the eyes, above the top lip and around the nose/cheek area.

A good quality freediving mask will have tempered glass lenses and, in some cases, a flexible modern plastic lens that offers greater ease of equalisation and flexibility of the mask frame and lens. Talk to your WSF Freediving professional for advice on which mask is right for you.

## Freediving Snorkel

The snorkel allows a freediver to relax on the surface and breathe while watching the underwater world and their freediving buddy. This affords the freediver the empowerment of breathing with the face submerged which is great for initiating the DR (Diving Reflex) and for watching their freediving buddy. More on this later.

As with most freediving equipment, the freediving snorkel should be low profile and streamlined. This creates less drag and enhances the oxygen saving ability of the Freediver. A snorkel with a larger round bore will allow greater respiration. If too thin and small in diameter, the snorkel could hinder the breathing process.



Shortly before descending under water, the freediver's snorkel should be ejected from the mouth – this will stop the possibility of water entering the airways. Your WSF Freediving professional can advise you on the many great products available and the procedures for using them.

## Freediving Fins

The most obvious characteristic of the freediving fin is its length. This affords the freediver greater propulsion and minimum effort.

Freediving fins come in a variety of materials: thermoplastic, fibreglass and carbon fibre. These materials all have benefits of their own whether it be budget, performance, endurance or longevity.

A true freediving fin will have an angle on the blade and this angle can vary. The objective is to keep the fin in line with the body when finning and free-falling. By placing an angle in the design, we can compensate for the rigidity of the ankle. The angle of the fin makes the profile continue straight and streamlined when in the water, rather than bent and creating drag.

Long bladed fins will come in a variety of blade width. The wider fins (22-23 cm) are more suited to spearfishing where you may require short bursts of speed and torque in waves or washes. The thinner blade width (around 19cm) are suited to freediving where longer distance or greater depth and endurance is required. The thinner blade offers less resistance but keeps its active thrust due to its rails and length.

Good quality freediving fins will exhibit a round bend in the blade when put under stress. The bend should have a mid-point of inflexion around half the blade length. This means not too close to the foot pocket (too soft) and not too close to the tip (too stiff). Blade stiffness or flexibility is dependent on your body mass. Larger, heavy people will require a stiffer blade, whereas small-framed, light-weight people will require a softer blade.

When donning long bladed freediving fins, it is best to put them on with the support of your buddy when already in waist deep water, or alternatively, just before you slip into the water from the boat edge.



Do not use the giant stride entry while wearing freediving fins as this can damage the fins with the excess force and could put you in a dangerous position. Ease your way into the water with the path of least resistance.

## Freediving Suit

Water removes heat from the body rapidly - even in tropical waters it is possible to feel the effects of this. The freediving suit offers a full protection and streamlining system. Traditionally, this is by encompassing the full length of the arms, legs and body. This allows protection from environmental conditions.

The freediving suit is cut to be optimum for movement, with your arms up or down or in swimming motion. The freediving suit does not feel restrictive like other suits. The materials and colours will vary, but what is common is flexible and light materials. The freediving suit offers protection from heat loss and exposure to the environment while remaining streamlined.

The 2 piece suit with high waisted pants is a great choice. This style offers the least amount of breathing restriction and is commonly available in open cell or closed cell lined neoprene. The open cell material is closer fitting and forms a suction seal with the body. This style of suit will require a slippery water solution to assist donning (use bio-degradable soaps or conditioners for sensitive skin). The suit can alternatively be donned while in the water, making sure the body and suit are wet for ease of donning. The one piece suit has become popular in recent times, used in mainly tropical water temperatures above 28C.



## Weight Belt

The most distinctive feature of a freedivers weight belt is the elastic properties. This stretch benefits the freediver in many ways as it prevents slippage, allowing the belt to be worn low on the hips to allow maximum diaphragm movement and ease of breathing. These stretchy belts have the ability to retract and expand with the freediving suit on descent and ascent to prevent annoying belt movement.

Freediving belts are usually made of rubber or silicone. The buckles can vary from the Marseille style tongue to the alligator style clamp. The length may vary, so make sure to try on the belt and test if it has enough holes or length to fit around your hips with ease.



## Monofin

If you have ever wondered what it feels like to swim like a dolphin, then the monofin is for you. The monofin is designed to be worn with the feet side by side. The larger fin, shaped similar to that in nature, offers even greater propulsion and minimal effort than the long bladed bi-fins. Blade materials will vary, similar to bi-fins, and the point of inflection and blade stiffness ratios to larger and smaller people still apply.

The dolphin kick technique works best with the monofin. Ask your WSF instructor about opportunities to learn the WSF Monofin Specialty Course.



## Nose Clip

Whether it's in the pool or confined water, the nose clip is an invaluable piece of freediving equipment. Used to hold the nose shut without the use of the fingers or hands (hands-free). The nose clip benefits the freediver by allowing them to use either swim goggles within the shallow pool environment, or use of no mask in the open water for depth. This means there is no mask to equalise.



The sensation of using just a nose clip can take some getting used to, or you may find it a comfortable, interesting and unique experience from the beginning. As you start to freedive deeper you can also wear the nose clip with fluid goggles. This enables you to see better underwater when not wearing a mask.

## Freediving Gauge



A freediving gauge is an important piece of gear. The modern freediving computer will give you live information on current depth, max. depth and dive time. Most gauges will give you real time surface interval times so you can keep track of your recovery and breathe up intervals. Other features include water temperature display, depth alarms, electronic dive log, dual time zones, time alarms and much more. Some are equipped with a download cable to sync with your home PC, laptop computer, tablet or smart phone. Some freediving computers are equipped with a heart rate monitor. This information is important for keeping record of your freediving progress.



## Freediving Buoy

The freediving buoy is designed to be a floatation device for surface visibility, an attachment point for the freediving reference line, and a breathe-up device that offers support and control. The freediving buoys of today also incorporate storage areas for extra equipment such as weights, cameras, clips and lanyards. A freediving buoy is a must for all keen freedivers and is an important safety support station.



## Freediving Accessories

There are many accessories to enhance your freediving including knives, torches, lanyards, dry bags, gear bags, spearfishing equipment, soft socks, gloves, hoods, mask cleaner, photographic equipment (such as GoPro) and much more. There is a plethora of amazing freediving equipment available from your WSF Freediving Centre. All this equipment is designed to make your freediving experience more enjoyable, fun and exciting. Talk to your WSF Instructor about what equipment is recommended for you.



**WSF Pro Tip: Remember to take proper care of your freediving equipment. To keep your gear in great condition, soak and rinse in fresh water after use. This will remove any dirt, salt, chlorine or pool chemicals which can cause damage to your gear.**

**Make sure to dry equipment thoroughly before storing it. Dry your suits properly otherwise mould can form, ruin the materials and create areas of bacteria inside the suit which can form a rash on sensitive skins.**

Your WSF freediving professional will workshop the features and use of all the freediving equipment components. This will empower you to make excellent equipment choices based on your experience level and budget.

## ENVIRONMENT SFE

Objectives:

1. State 3 environmental factors to consider before we plan a depth session.
2. List 2 different environmental types of depth sessions.

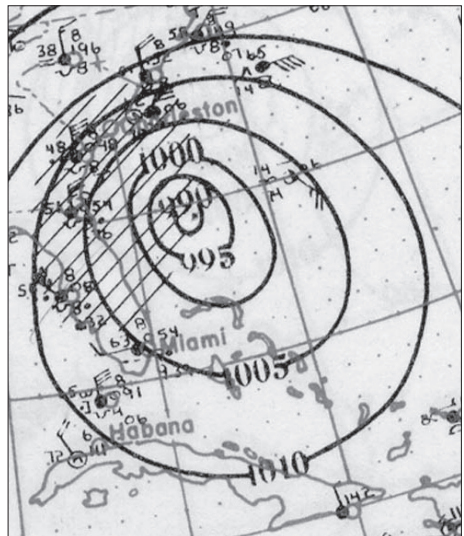
**Value: By having a greater understanding of environmental factors involved in dive planning and freediving sessions, we can maximise fun and safety.**

The environments in which we freedive are many, from open oceans to inland seas, quarries and lakes. This supplies us with a vast diversity of diving locations with endless discoveries waiting for us below the surface. With so many different environments, we must consider the factors that weather can play upon our conditions. Heavy rainfall can bring changes in salinity, visibility, depths and currents. With strong winds come big waves and swell; with full moons come big tidal movements. The environment and the weather is an ever-changing force that is as amazing as it is powerful.

As freedivers, we become a part of the environment as soon as we enter the water. We must respect the natural wonders and take care in planning our sessions to maximise our fun and minimise dangers.

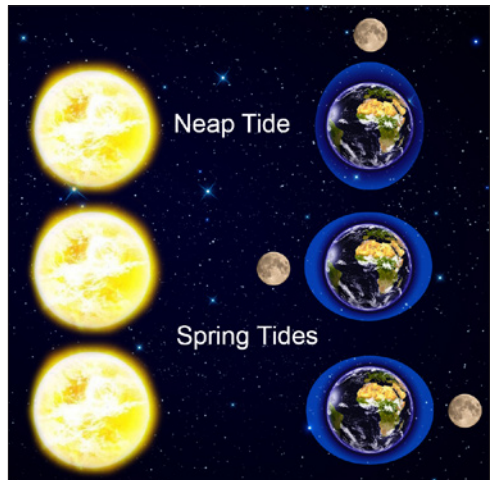
Salt water seas and oceans cover the vast majority of the earth. These waterways are directly influenced by the forces of nature: the wind, waves and tides.

Winds are formed as the earth is affected by an inequality of heat energy from the sunlight that also feeds plants and animals. This creates a vast differential in air temperatures. Warm air expands and rises up into the atmosphere, while cold air condenses and sinks down toward land – the results are the flow and movement of air. A greater difference in opposing forces creates stronger winds which can feed powerful storms. This strong wind can create bad surface conditions and strong waves and currents for unaware freedivers.



Waves are formed by the wind. The harder and longer the wind blows, the larger the waves will become. You can test this by simply blowing air across a bowl of water and watch the rippling waves start to form. Some waves can also be formed by strong currents/tidal movement, and also movements in the earth (which can cause tsunamis). Where there are large waves, there is poor visibility and bad conditions for freediving.

Tides - The moon has a gravitational force which acts on water in the oceans and forms a bulge. The moon will pull water toward it (full tide), similar to the force a magnet has on metal, leaving a lower area of water on the other side of the planet (low tide). These forces are constantly changing as the moon and earth continue their eternal dance. This creates tides that ebb and flow all over the earth. It is easy to find a local tide reading chart for your particular area. Tides can create problems for unaware freedivers as changes in currents and visibility can affect your session.



Other environmental factors to consider when planning your sessions are:

- Depths
- Bottom structure
- Local marine life
- Water Temperature
- Distance from shore
- Entries and exit points
- Rip currents and undertows
- Salt water/Freshwater (buoyancy)



**WSF Pro Tip: When freediving a new area, local knowledge is key to success. Ask around and talk to local WSF centres, or other diving centres in the area. Local fisherman are also a good source of information on environmental factors.**

## WSF ECO MESSAGE

As freedivers, we are ambassadors to the ocean. Just like our humble dolphin friends, we should leave nothing in the environment, except our footprints in the sand. Take any rubbish with you and place in the appropriate trash bins. Do not harm or touch any of the corals and respect all creatures that call these amazing places home.

### UNDERWATER LIFE

Objectives:

- List 3 different kinds of marine life
- List 2 types of marine life that can be hazardous for freedivers

**Value: By developing an understanding of marine life you will be able to identify species you see on your freediving adventures. Having knowledge of the marine life will help maximise fun and minimise risk during your freediving interactions.**

The underwater world is filled with life. An abundance of creatures and plants inhabit the waterways, ranging from colourful marine corals, fish and sea stars to temperate water sponges, sea horses and large pelagic fish, and let's not forget the marine mammals like dolphins and whales, seals and mysterious manatees. The real action lies beneath the waves, with so many things to see and discover it is no wonder the world is going crazy about freediving. As a freediver, you can interact with the marine creatures in the most natural way possible.



Silent and sleek, we can move through the water with the style and grace, similar to a dolphin.

There are many unique species in the marine world. With such a vast amount and variety of life to discover, let's get started with a look at the different categories of species.

There are over 200,000 species of animal that inhabit the salty oceans and seas, and every day scientists and biologists are discovering new species. A species of marine animal that we will have a common link with is the Vertebrates.



## Vertebrates

Vertebrates are identified as having a backbone/spine. There are estimated to be over 40,000 species of vertebrate fish in the oceans and seas. Marine mammals, such as dolphins and whales, are vertebrates. There is such an array of different and colourful vertebrates out there to explore.



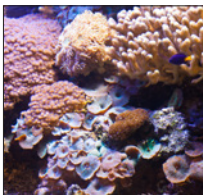
## Crustaceans

A very interesting species that exhibit an external skeleton. These amazing animals are characterised by jointed appendages, such as crabs, lobsters and shrimps. The crustaceans are restaurant regulars and favoured by many as delicious. Whether you freedive to take photos, just watch and observe or collect and hunt them, crustaceans are great to see.



## Echinoderms

The most famous of echinoderms are starfish, sea urchins, sand dollars, and sea cucumbers. Most mature echinoderms are bottom dwellers, so as Freedivers we must take care to not stand on them when entering the water.



## Corals

Corals can be hard or soft. The hard coral is a colonial animal which construct large skeletal structures of limestone. These animals form the vast coral reefs in the shallow tropical seas we enjoy discovering so much. Corals offer homes and food to many of the oceans inhabitants and, like all animals and plants, the corals are an important species for the health of the oceans. Coral is delicate and they are for the eyes only.

Try not to touch coral as it is a living animal – respect the coral's beauty and there will be many more vast reefs to provide homes to other marine creatures so that we can enjoy their beauty for years to come.



**WSF Pro Tip: Corals are a living creature, some corals can inflict stings when touched. Look with the eyes only!**



## Molluscs

The most famous of molluscs are the octopus, cuttlefish and squid. Exerting intelligent behaviour, they are a marvellous animal that are a special treat to observe underwater. Most molluscs have a shell – bivalve animals like snails and clams. The cephalopods, like squid and octopus, have an internal shell. The mollusc is a fascinating animal, admired by scientists for its wide range of shapes and sizes, molluscs should be high on your must-discover list.



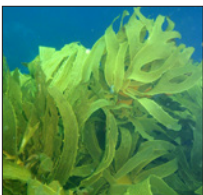
## Sponges

They may look like plants, but sponges are bottom dwelling creatures that attach themselves to structures strong and solid enough to support their filter feeding habits. They have quite a porous form and draw water in and out which, in turn, helps them acquire the nutrients and oxygen they need. There are many different sponges lining the sea floors, from large to small, and an abundance of colourful varieties. Both beautiful and wondrous, the many sponges in the sea will amaze.



## Hydroids

The hydroids look beautiful, but beware as they can deliver a nasty sting. Hydroids can look like delicate seaweeds, but they are in fact animals. Jelly fish, sea anemones and Portuguese Man O War are all hydroids. They are common along coastlines all over the world. The soft appearance of these delicate looking animals is deceiving. They are carnivores and are equipped with nematocyst-laden feeding tentacles with which they deliver powerful stings and catch passing animals, such as shrimp, worms and animal plankton. Look, but do not touch these amazing animals.



## Marine plants

Marine plants are actually an algae. Some are enormous, such as the giant kelp forests, others can be microscopic. The best represented are the sea weeds – these areas make a great habitat and food source for many other wondrous ocean inhabitants. If you look closely within the realms of seaweeds, sea grass and kelps, you will discover many other creatures who call these forests their home.

## Freshwater life

Although the salty oceans and coral reefs are most famous for creatures of wonder, there is also an abundance of life in freshwater areas around the world. From many species of fish, shrimp, lobster, muscles, freshwater plant-life and other species that can live in both salt and freshwater, there are some amazing creatures to discover in these water locations.

## Ocean life



One of the most thrilling things about freediving is the possible interactions with the many incredible creatures that live in the world's oceans. An interaction with a whale or dolphin can be life changing and leave you with high positive emotions and powerful memories. Swimming with the enormous gentle whale sharks, or gliding alongside a noble turtle are humbling experiences.

Cold water oceans and warm water oceans will have a different group of animal inhabitants. Also, seasonal waters will have certain species at certain times of year. Local knowledge is key to being in the right place at the right time to see the all of the action.

The ocean has many creatures that can be potentially harmful to freedivers. This is usually out of defensive behaviour. Keep in mind that the ocean is their home and we are visitors. If an animal displays aggression then we should leave the area and let it be. Grabbing or touching animals can trigger a defensive response – so look but do not touch! Sharks have been given a bad reputation as generally they are cautious animals and not out to attack randomly. In fact, many freedivers can interact with sharks very successfully.

Many species of shark are only fish-eaters and will not be interested in mammals on the menu, such as the raggy tooth or sand tiger shark. It can be thrilling to freedive with these amazing animals. Other species of shark should be shown respect, such as the great white, tiger shark, oceanic white tip and bull shark. Although not out to attack humans, they can be unpredictable. If you happen upon a rare encounter, it is best to leave the water and let the animal go about its regular behaviour.

From sea snakes to sting rays and stone fish, most animals that can inflict harm to us as freedivers do so defensively, so we must be careful to watch where we step, or put our hands or where we sit down in the sand. Many animals inhabit the waters close to the shorelines. Watch where you walk, respect these creatures and their habitats and you will experience great adventures and excitement. If you stand on, intimidate or touch and grab at ocean creatures, this will invite a defensive response and can be harmful to us and the creatures.

From sharks to cuttlefish, there is an endless source of adventure and discovery that awaits you beneath the surface. The best way to interact with all these animals is as a freediver. Now you are equipped with the skills and knowledge to freedive successfully, make sure you spend as much time as possible with your buddies on freediving adventures!





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