

APNEA TOTAL

# INSTRUCTOR MANUAL

FREEDIVER COURSE

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## WELCOME

During this outline we are going to cover important points to consider before, during and after finishing your theory and water classes. Each point should be read and remembered before teaching your first courses until they come naturally to you.

We have a philosophy that should prevail: to maximise the student's experience. Therefore we must adapt our teaching style according to each student's needs-particularly in the water. At the beginning of your instructor career, it is important to teach your courses with more strict structure and without improvisation, as improvisation will come naturally with more experience. However, regardless of your level of experience, courses should cover all areas, without omitting, or adding extra information that we do not teach in Apnea Total courses.

Never say derogatory comments about other freedivers or institutions. In the classroom our focus and responsibility is on giving the correct information according to *our* courses. It is always better to use the term "different" rather than "wrong" when referring to other freediving methods and techniques. Remember this throughout all courses.

*Always remember - there are no bad students, only bad instructors.*

### **When preparing and conducting courses, take note of the following:**

- All students fill out **medical forms**. Please check these before starting class, so that you are informed of any potential issues.
- Present yourself well. Ensure you have good personal hygiene and give your class in fresh clothes, with a tidy appearance. First impressions are important.
- Remember that you are in a position of authority and an example to your students. You have the power and control during the classroom and in the water. Doubts and insecurities are not acceptable as an instructor, as they are easily detected by students, and a lack of confidence in the instructor will result in a loss of students' attention during theory classes and poor performance in the water.

- You are a role-model, teacher and representative of the Apnea Total Educational System as well as your school, and as such should maintain a professional student-teacher relationship. Remember that your students trust you and this should not be taken advantage of.

## FREEDIVER COURSE DAY 1

### INTRODUCTION

Welcome to the World of Freediving.

We are happy that you have made the decision to take your first step into the world of freediving with Apnea Total, an organisation dedicated to freediving education and training that has certified over 12,000 freedivers to date. During this first Freediver Course we will help you to discover your natural underwater potential. You will learn breathing, freediving and rescue techniques that will help you to enjoy the ocean in safety and with confidence in the new breath-hold abilities that you will develop throughout this course.

#### Points to remember during the introduction:

- Do not refer too much to yourself or your personal achievements - your name and your title as an Instructor are usually enough.
- Try to gain as much information about your students as possible, including their personalities and experiences with SCUBA diving/ snorkelling/ freediving/ spearfishing etc. Pay attention to their names as well as what they say about themselves.
- Explain the schedule of the course and the plan for the day.
- We are on a time limit. Don't extend this introductory period, as with large groups this can become very time consuming.

### DISCIPLINES

When covering the freediving disciplines with students:

- Try to make the subject as interesting as possible, emphasising the disciplines that will be practiced today, thereby stimulating the imagination of the students.

- Your personality as an instructor will determine how interesting or tedious this part of the class is. Use the video as an important visual aid to keep the attention and energy level of the class high.

There are several disciplines in the sport of freediving; some can be practiced in the open ocean or in lakes, and others can be practiced in swimming pools.

For ocean and lake disciplines, a guide rope, also known as the descent line, is used as a visual reference and for safety. These disciplines include:

- **Constant Weight (CWT)** - This discipline is considered the original freediving discipline. It can be practiced either with bi-fins or a monofin. As the name indicates, the same amount of weight is carried down and back up.
- **Constant Weight No-Fins (CNF)** - This discipline consists of swimming without the assistance of bi-fins or a monofin, using only your own power. Likewise, as the name indicates, the same amount of weight is carried down and back up.
- **Free Immersion (FIM) Video** - This discipline consists of pulling yourself down and up the guide rope, using only the power of your arms, without the assistance of bi-fins or a monofin. Just as during Constant Weight, the freediver carries the same amount of weight during the entire dive.
- **Variable Weight (VWT)** - In the early days of freediving the diver was assisted on their descent by an amount of weight of their choice that would be left at the target depth. The diver would then ascend under their own power using bi-fins combined with pulling the rope. In modern times there are more sophisticated and more efficient methods of descent by use of hydrodynamic sleds that are weighted and guided down the descent line.
- **No Limits (NLT)** - The diver descends with the assistance of a weighted sled down the descent line and ascends with the aid of an inflatable device that propels the diver with high speed to the surface. This is the deepest of all disciplines and the least popular among freedivers due to the difficulty of logistics and the risks involved. However, No Limits has gained the greatest media exposure worldwide in the news and in popular culture such as movies like *The Big Blue*.

When you have no access to open water, you can still freedive and practise different breath-hold disciplines in a swimming pool. These disciplines include:

- **Dynamic with Fins (DYN)** - The diver swims the longest distance underwater on one breath using either bi-fins or a monofin.

- **Dynamic no Fins (DNF)** - The diver swims the longest distance underwater on one breath, without the assistance of bi-fins or a monofin, using only his/her own power.
- **Static Apnea (STA)** - The diver performs the longest possible breath-hold lying motionless on the surface of the pool with airways submerged.

It is important to mention that Static Apnea is a discipline that the students can do immediately after they finish the Freediver Course. Refer to the incredible results that they can achieve in the Static Apnea Clinic, but remember that subtle information and inspiration is much more effective than an obvious sales push.

## **IMPORTANT**

All these disciplines, as with any other form of diving, are potentially dangerous when practiced without the correct supervision. Always, always, always dive with a freediving buddy and within your limits and knowledge.

During this course you will learn and practice some of these disciplines and you should not attempt new disciplines that have not been covered in this course. New disciplines should only be practiced once you have received the proper education.

## **NOTES:**

## EQUIPMENT

While covering equipment remember to:

- **Consider experience levels in regards to equipment** - During the Freediver Course, the equipment we use is the ideal equipment for beginners, which is what you should focus on. More advanced equipment should be mentioned very briefly as many students are curious, and it is good to feed this curiosity, showing that there is more beyond this beginner level. However, extending too much information on more advanced equipment (monofins, carbon fins, fluid goggles, neck-weights, open-cell neoprene wetsuits etc.) is not beneficial for beginner level students, as our purpose in this first course is for students to see freediving as a sports experience *for everyone*.
- **Maintain the level of energy in the classroom** - Passing equipment around for the students to inspect is a great tool to keep their attention and curiosity.
- **Emphasise the advantages of them acquiring their own equipment** - Although we provide all the freediving equipment for the students during the course, always remember to stress the importance of students acquiring their own personal equipment if they continue to freedive. Obviously, it is preferable that the student purchases the equipment from the school in which you are teaching the course.

It is very important to choose the correct equipment when you freedive. The equipment should fit correctly and feel comfortable.

- **Mask** - One of the most important pieces of equipment. When we freedive it is preferable to use a low volume mask. As we descend we need to equalise the pressure in our mask by exhaling small amounts of air through our nose. Flexible, low-volume masks are most efficient for freediving, as these masks can withstand greater pressure and require very little air to equalise.

- **Snorkel** - The simplest designs are the best for freediving. Choosing a comfortable mouthpiece is important, as during longer water sessions we may spend several hours using the snorkel. **VERY IMPORTANT** - *always* remove the snorkel at the beginning of the dive.

### Time to interact with the students:

Ask the students if they have any experience in regards to dealing with a snorkel, for example; while underwater, do they keep it in their mouth or remove it? Preferably ask students individually, as you want to keep gaining information about the experience of each student.

After the students answer, always stress the correct way to use the snorkel during freediving. Remember this is a safety issue, so you must have the attention of every student when covering this subject. A different tone of voice, pauses and using the words "important" and "safety" will ensure that the class pays attention.

### Important points to cover as to why we remove the snorkel:

- Keeping the snorkel in, leaves your airways open for water to enter.
- Our natural instinct is to keep our mouths closed when under water.
- Once we reach the surface, our main purpose is to breathe. "Blast clearing" a snorkel after a strenuous dive can make you feel dizzy and unbalance the gasses; and if the snorkel is not cleared properly this can lead to water entering our airways.
- Additionally, the snorkel is not hydrodynamic and at high speeds during the dive can move our mask if attached to it.

**Remember** that the students will come across photos and other media where snorkels are used underwater; therefore we have to ensure that the student understands the logic and importance of these points.

- **Fins** - A *full foot pocket* that feels comfortable is more efficient for transmitting energy directly to the blade than an open-heel foot pocket. Longer fins are also more effective once the proper finning technique has been achieved.
- **Wetsuit** - When we freedive, we need to ensure that we don't get cold and it is imperative during a freediving session that we don't begin to shiver. Shivering increases our oxygen consumption, which greatly reduces our breath-hold capabilities. Choosing a flexible wetsuit, appropriate for the temperature of water we are diving in, and that fits us correctly plays an important role in the comfort of our dives.

- **Weight belt** - Rubber weight belts are better for freediving than the nylon weight belts used for SCUBA diving. The benefit of using flexible rubber belts is that they stay in place on our bodies and don't move or slip during the dive. It is important that the placement of the weight belt doesn't restrict our breathing; therefore we wear it very low on the hips.
- **Weights** - To overcome the buoyancy of our wetsuit and sometimes our own bodies, it is necessary to use weights when freediving. Choosing the right amount of weight for our freediving sessions is crucial to the comfort, energy consumption and safety of our dives.
- **Surface Float** - We strongly recommend the use of a highly visible surface floatation device when diving in open water. They add safety to our dives, allowing us to rest and breathe effortlessly and also serve as a visual marker for passing boats.

**NOTES:**

## TECHNIQUE

**This is one of the most complex subjects of the theory class.** The kicking technique and body position are usually difficult for students to visualise whilst on land. You'll need to be in the water with the students in order to apply the correct tuition, so it can be tricky to express yourself well enough in the classroom.

**Your main tools will be the videos,** which give visual information, as well as **your step-by-step explanations** of the duck-dive, body positioning and kicking technique.

A significant factor that determines the length of our dives and comfort under water is our technique, which includes correct body positioning and correct finning technique. During this course you will learn how to perform each freediving technique correctly, in order to increase your confidence and comfort during dives.

**Duck Dive (Video)** One-leg or two-leg entrance.

This is the most common and efficient way to break the surface while practicing Constant Weight. A breakdown of the duck dive is as follows:

1. One hand holds the snorkel as we take our last breath, we take two or three kicks forward and bend at a 90° angle at the waist and push the body forward and down with one or both arms extended forward.
2. In a continuous motion we raise one or both legs in the air, using their weight combined with an arm stroke to pull the body below the surface.
3. We start equalising immediately, by bringing one hand to our nose in a hydrodynamic position, with our elbow tucked in.
4. Once we feel that both of our fins are under the water we can start to kick.

### Body Position

Our head position acts as a steering wheel. Keeping the neck aligned with our spine will help to keep us vertical and prevents stress on our neck muscles, thereby helping the equalisation process.

Students should understand importance of keeping the head in the correct position for the duration of the dive. Your students will likely forget this by the time they jump in the water but making a point to emphasize this subject in the classroom will help.

Use these 3 points as a basis for your explanation in the classroom as to the importance of maintaining the correct head position.

- Keeps the body in a vertical, hydrodynamic, streamlined position.
- Makes equalization easier.
- Looking straight forward at the line rather than at the 'target' makes it much easier to focus on relaxation, equalisation and technique. This keeps us in the present moment and prevents us from getting too excited or anxious which burns up oxygen unnecessarily.

Hands should be relaxed by our sides with palms facing inwards, or one directly above the body in a hydrodynamic position, keeping one hand on the nose to equalise throughout our descent.

### **Kicking**

- Kicking must be strong but not too fast, relaxed but not too slow, finding an efficient middle-ground.
- Knees and ankles should be relaxed.
- Kicking starts with the upper part of the legs.

**During the descent** - During the first 10 meters of our dive, stronger kicking is required to overcome positive buoyancy, after which we can enter a more relaxed phase of kicking.

**During the ascent** - Once we reach our target depth and complete a relaxed turn, our kicking should be powerful enough to overcome negative buoyancy. Once we reach the last 10 meters of our dive, the kicking can become more relaxed, but we do not stop kicking until we reach the surface.

**Interact with the students by having them practice in the classroom**, the removal of the snorkel, body position, head alignment with the spine, hand on nose, elbow tucked etc., as we know that these are things they will forget the moment they jump into the water.

### **NOTES:**

## EQUALISATION

### IMPORTANT

Ensure that you understand, for your own knowledge, the relation between depth, pressure and volume (Boyle's Law). If there is anything that you are unsure or confused about, ensure to ask your instructor trainer.

First, briefly explain the equalisation of the mask, the way it is presented in the Freediver Course Manual, followed by the ears and then move on to the sinuses.

Pressure increases as we dive below the surface, which affects our natural and artificial airspaces. Equalisation is a manoeuvre that balances the pressure inside an airspace, with the pressure outside an airspace as we dive deeper.

### **The artificial airspace is our mask.**

#### **Mask**

- The volume of the airspace and the elasticity of the mask will determine at which point during descent the pressure begins to feel uncomfortable. A small, gentle exhalation through our nostrils will equalise the pressure inside our masks.
- Generally speaking, a low volume mask should be comfortable and does not require equalisation during the first 20 meters of our descent, however it is more comfortable during the dive to make a small exhalation if we start to feel any kind of pressure.
- As we ascend, the air in the mask will expand and we should attempt to gently inhale this air through the nose.
- Remember not to inhale the air from the mask during the descent as this will increase the pressure of the mask rapidly, which will also increase the risk of a mask squeeze.

### **Our natural airspaces are our ears and sinuses:**

#### **Ears**

Our eardrums have a sensitive membrane that flexes as pressure increases. If we do not compensate for the increased outside pressure during our descent, we will experience discomfort or pain and if the pressure is too great the membrane can even rupture. This is easily avoided by equalising.

Different techniques can be used to equalise the ears:

- **Valsalva:** The nose is pinched, close to the bone, combined with a gentle blow through the nostrils, ensuring no air will escape from the nose. The air is forced from our lungs by using our abdominals and diaphragm, and while an effective technique it is not the most relaxing or energy efficient.
- **Frenzel:** This technique involves pinching our nose and pushing the air with the back of our tongue against the soft palate (much like a piston). It involves no effort from our diaphragm or lungs, therefore keeping our entire body relaxed during the dive. Many divers use this technique naturally, without realising, however a little practice might be required for beginners who are not familiar with this technique.
- **Other manoeuvres** that will help our equalisation include moving our jaw down and forward, swallowing simultaneously and tilting the head from side to side.

Demonstrate the Valsava and Frenzel techniques and explain the difference between the two. Then have the students practice for a few minutes using whichever technique comes naturally to them. Watch the students individually and give them tips on how to make improvements.

#### REMEMBER:

- **Everyone can equalise.** Convince yourself of this, or it will be difficult to convince your students. We know for a fact that there will be difficulties once we jump into the water, but remember that you'll rarely encounter a student that has a true medical condition of the ears that prohibits them from diving. Colds, fear and stress will be the main challenges to overcome in order to improve equalisation.
- **Do not give students the excuse of equalisation problems before they've even jumped into the water.** Instead, build their self-confidence and their confidence in you as their instructor so that they know everything will be ok.
- Never allow students to force an equalisation.
- If a student has equalisation issues, **allow them to descend feet-first.** It is more important that your students are able to reach depth and feel satisfied with their dives, spending time under water, than it is for them to descent head-first, battling with equalisation problems. In the feet-first position, neck and head alignment will instantly improve and for many, fear will be alleviated. You can always try head-first descents again later.

With the information that you've gained in the classroom regarding your students' backgrounds and experience, you should already know **how you are going to approach equalisation with each individual**. Individually ask them to equalise in the classroom, so that you can see the technique they are using.

**Sometimes students with lack of confidence and/or experience will not be able to feel the pop of the ears during the classroom.** Don't jump to conclusions before entering the water - repeat once more that everything will be ok, and remind them that sometimes it can take a little bit of practice to equalise, but not to give up, because it will happen.

### **Sinuses**

The sinuses are cavities located in the skull that are connected to our nasal cavities. These normally equalise automatically when we equalise our ears as we descend, however allergies and colds may make this process more difficult and we might feel the need to consciously equalise our sinuses during the dive.

### **IMPORTANT**

- Equalisation should be performed gently, without forcing, and must be done *before* any pain is felt.
- Equalisation begins at the surface and must be performed continuously, every meter of our descent.
- Equalisation during the ascent is not necessary.

## BREATHING

### IMPORTANT

*Your instructor trainer will guide you on breathing and give you further information for your own knowledge. However, if there is anything that you are unsure or confused about, ensure to ask your Instructor Trainer.*

This is the **most exciting part of the theory class** in the freediving course. It involves the most interaction with your students, so it is quite easy to keep their attention and focus.

### Hyperventilation

Start with a simple question - Do they know what hyperventilation is and have they ever used it? Without going into too much complicated detail, follow the manual to prove the logic that this technique is not suitable for freediving.

**Hyperventilation**, or very shallow, short, fast breathing is not suitable for freediving and can be dangerous. Hyperventilation will fool the body into feeling that you do not need to breathe, when in fact there is less oxygen in our body due to the high oxygen consumption of an increased heart rate, and there is a lack of physical alarms that notify us that it is time to return to the surface and breathe.

### Breathing Technique

The next step is to explain and demonstrate the correct breathing technique. A breakdown of the stages of breathing is the most effective way to demonstrate it. The students should perform one stage at a time before putting the cycle together.

You will see that some students take to Breathing Cycles more quickly and easily than others. **Some students need more care than others**, but remember not to change the rhythm of the class according to slower students. Depending on the number of students in the class, it can be quite challenging to pay equal attention to all of them.

Perfection will be impossible to achieve in the first day of breathing, but repetition and practice will help. Remember that we are looking for **improvement** in the students in relation to the level at which they started.

## Breathing Cycles

The correct breathing for freediving is with a very slow and deep pattern, both for inhalation and exhalation, with a small pause in between.

### Breaking down the breathing cycle and technique into steps:

- **Sitting down position** – with a straight spine, sit at the edge of the chair, with relaxed arms resting over your legs.
- **Emphasise the 'O' shape of the lips during the inhalation and “tssss” sound during the exhalations, making the breathing sound and asking them to repeat back to you.** Your breathing sound should be loud- just as you would like to hear from the students. You will have to encourage and remind your students of the loud breathing sound, as they often feel shy or forget. As an instructor you'll find that this is an important tool that will help you to follow your students' breathing.
- **Diaphragmatic breathing (stomach breathing)** - Demonstrate by extending your stomach. First, ask the students to make the *motion only*, with one hand placed on their stomach. Once they're reasonably successful, incorporate the inhalation into the movement at the same time. You will find that there is not enough stress that can be put on the sentence "Do not over exhale". You'll notice that some students have a tendency to push a bit too much air out at the end of the exhalation. Emphasize this point throughout the breathing section of the course.
- **Upper Chest Breathing** - Demonstrate by moving your chest forward. First, ask the students to make the motion, and once they're reasonably successful, incorporate the inhalation into the movement.

A Breathing Cycle consists of two phases - inhalation and exhalation.

**Inhalation** is relaxed, consistent and slow. We focus on the lungs as divided into two different sections:

1. The lower section – (stomach and diaphragm).
2. The upper section – (ribs and upper chest).

**Exhalation** is also relaxed, consistent and slow, however we do not focus on any particular section of our lungs as we exhale.

- **Full Cycle** - Explain that we will now be putting the 2 sections together and adding the pop. Explain the pop and demonstrate the full cycle, putting special emphasis on the duration of the inhalation and exhalation. Explain that there are no sections on the exhalation, just release the air naturally. Have the students practice breathing a few cycles, and keep reminding them to concentrate on the act of breathing; paying close attention to the feeling of the air going in and out.

**One Breathing Cycle** is performed as follows:

- **Inhalation** - Firstly we focus on the lower part of our lungs by extending the stomach outwards, which stretches the diaphragm and creates room for the lower part of our lungs to expand. In a continuous motion we move our focus to the upper part of our lungs by opening our rib cage, moving our upper chest outwards and inhaling as much as possible without forcing the air in. The entire inhalation is relaxed and performed without tension in any part of our bodies.
- **Pause** - Between the inhalation and the exhalation we make a small pause - half a second is sufficient
- **Exhalation** - The exhalation commences with a small pop of our mouths, this allows a small portion of air to escape from between our lips, which releases pressure and tension from our body and allows us to continue exhaling in a consistent, long and slow manner. We exhale only until the air stops to flow naturally from our lungs, and without forcing our muscles to expel more air than is necessary.

Following the Freediver Manual, explain how many cycles should be done during our 'breathe-up'. The instructor in the water will tell them how many cycles to do.

## **Breathe-Up**

"Breathe-up" refers to the time that you will spend at the surface relaxing the body and performing your breathing cycles. In this first Freediver level before our target dives we will be using 8 to 10 breathing cycles.

## **Final Breath**

**Final Breath** - Demonstrate the final breath as described in the Freediver Course Manual below, placing special emphasis on relaxation. Practice the final breath with the students a few times until you are satisfied with the results.

The Final breath should be made as a fluid and continuous motion, starting from the diaphragm and finishing with the upper chest. The Final Breath is a little faster than the inhalation of a normal breathing cycle (about 4 to 5 seconds) and without making the breath too stressful or forced, particularly at the end of the breath. It is always 100% of our lung capacity.

**Never exhale before reaching the surface** as the positive buoyancy of our full lungs at the end of the dive assists us in reaching the surface.

## Recovery Breathing

Recovery Breathing is one of the most important parts of our dives. This is the breathing at the surface that will complete the dive. Breaths will be short and strong, making sure that we inhale the same amount of air that we exhale, and never more than 50% of our maximum lung capacity. Hence, recovery breathing is also known as 50/50 breathing. It is necessary to perform at least 5 to 10 of these recovery breaths before doing anything else.

**Recovery Breathing** - The students must understand the importance of the recovery breathing technique as a safety issue. The majority of students won't feel the natural urge to do a *proper recovery* after every single dive, as most of the beginners won't be tired. It is our aim to instill in the students a natural habit of performing recovery breathing, so that they will do it automatically, as a natural reflex, on occasions where the body and brain are very low on oxygen.

Don't over complicate your explanation of the 50/50 recovery breath. Simply compare it to the way we would naturally breathe after heavy exercise.

### ***Respiration is our top priority upon reaching the surface!***

This process should happen as a natural reflex once we reach the surface. In order to achieve this as a natural reflex we must ensure that we always perform our complete recovery breathing cycles after every dive, regardless of what depth or time was achieved or how easy or difficult the dive felt. Repetitive practice ensures that recovery breathing is incorporated into all our dives, which increases our safety at the end of each and every dive.

After demonstration, practice recovery breathing with them, ensuring that they are not breathing too fast or carelessly.

## IMPORTANT SAFETY POINTS

Finalise the class with important safety points as described in the Freediver Course Manual below:

- **Always dive with a trained buddy.**
- Stay hydrated when you freedive – drink plenty of water – it allows for better o<sub>2</sub> transportation, maintains balance in our blood and helps us to focus.
- Never freedive directly after scuba diving - a safety margin of at least 12 hours after a single dive within the no decompression limits, and 18 or more hours after multiple or repetitive dives is recommended.
- You will feel more comfortable underwater with an empty stomach as digestion both consumes oxygen and can make us feel uncomfortable while we dive. It is, however, important to have enough energy to dive, so it is recommended to eat a light, easy to digest meal, a couple of hours before diving.
- We should perform a *maximum* of 10 cycles before diving – more is considered “over breathing”.
- Always use a surface marker, preferably attached to a floatation device when you freedive, to ensure you are easily visible to passing boats and have somewhere to rest if you need to.
- Freediving can be dangerous after partying the night before! No matter how good you think you feel, you are highly jeopardising your safety.
- Some medication may affect your safety when freediving – it is always best to speak to your doctor if you are unsure.

**Class Time** - Class time should be 90 minutes, and no longer than 2 hours for large groups.

**Remember that you are in charge.** Questions from the students should be answered at an appropriate time. Do not make the mistake of disrupting the flow of the class by incorrectly focusing on answering individual questions that are irrelevant to the progress of the course.

**Homework** – After the Water Session, explain the homework; to practice the 10 cycles and the final breath. Students should time their cycles, which should take approximately 4 to 5 minutes. If it's less than 4 minutes, try again and increase the duration of the exhalation.

**Equalization improvements** - Next, review students' equalisation techniques. It is our aim for all students to be using the **Frenzel technique**. Remind them of the difference between the Frenzel and Valsalva. Explain the advantages of using Frenzel and give them some very simple exercises to learn or improve Frenzel equalization. Remind students that the Frenzel technique uses no effort from the abdomen. They can practice by placing one hand on the abdomen and equalizing; being careful not to use the abdomen to push the air. Also, use the 'K' and 'T' sounds to show the movement of the tongue. Don't let students get discouraged if they are having difficulties grasping Frenzel equalization. Reinforce that with more practice it will become easier.

**Feedback from other instructors** – If you weren't in the water with some of your students, find out how they performed from the instructor who was with them, in preparation for Day 2's theory class. i.e. depth, nervousness, technique, equalisation issues etc.

## FREEDIVER COURSE DAY 2

### FEEDBACK

**Before starting Day 2**, if you weren't the water session instructor from Day 1, ensure that you have spoken to the instructor from the previous day to get feedback on the students.

At the beginning of Day 2's class always get **feedback from the first day of diving**, speaking to each student individually and reinforcing that the second day is going to be even better. Explain the schedule of the course and the plan for the day.

Depending on the feedback from the students, from the other instructors and from what you observed in the water you may now explain the **Vagus Nerve** (Remember that not every student will feel this strong urge to breathe, so you do not always need to explain this).

### THE VAGUS NERVE

Brief the students on how the **Vagus Nerve** plays a role during diving for beginners. Explain that during the dive some of the students might feel the urge to breathe when it is actually not necessary as our body still has plenty of unused oxygen; but there is an instinct in our head that tells us to turn around and come back to the surface. The students should ignore this instinct because it will disappear once the body adapts and after they have dived a few times.

### FLUSHES

Check whether the students performed their **homework** - 10 cycles within four to five minutes - and let them know that if they felt a little bit short of breath after the seemingly long exhalations, we are now going to introduce an additional breath between the cycles called a "**flush**".

**Demonstrate** how a flush should be made, ensuring that your students understand that **no more than one flush** should be made in between the cycles.

Also explain that **two flushes before our final breath** will help to relax the body in preparation for the dive.

Have the **students perform a whole breathe-up** of 10 cycles. First 5 cycles without flushes (like the previous day) and the next 5 cycles with one flush in between each cycle. Tell the students to count their cycles on their hands, and point out to them how their breathing technique has improved in comparison to the first day.

Then proceed to explain proper **safety procedures**, the buddy system, and Shallow Water Blackout.

**NOTES:**

## SAFETY DIVER AND RESCUE PROCEDURES

### Safety Procedures

The most important rule in freediving is to **NEVER DIVE WITHOUT A BUDDY**. Your diving buddy should have knowledge of the proper safety procedures and the ability to swim to 10 meters in Constant Weight. They are your “Safety Diver”.

Following the Freediver Course Manual below, explain the importance of the Safety Diver and the signs that they are looking for in order to detect if someone is in trouble. Then reinforce the importance of proper recovery breathing.

#### Safety Diver

The buddy, known as the Safety Diver, escorts the diver face to face, in the last 10 meters of the dive, watching the diver closely as they ascend together, and once at the surface, watches the diver closely for one minute to ensure that there are no signs of hypoxia (extremely low levels of Oxygen).

Talk about the positioning of the safety diver both under water and at the surface. Emphasize the importance of the safety diver paying close attention and being ready to perform a rescue, within reaching distance of the diver at all times.

During the final meters of the ascent, the safety diver looks closely at the eyes of the diver and observes the movements of the diver's body. Scared or wide eyes and uncoordinated movements are clear signs that the diver will soon be in trouble. Another sign is an uncoordinated exhale under water.

Remember, as a safety diver, the dive only finishes when the recovery breathing has been completed. It is better to be over-cautious than too confident in your diving buddy's ability, no matter how well you know them.

Be sure to explain to the students that they will be safe in the water with you during their courses with us. That Hypoxia is not a normal occurrence and if it happens it is because the diver was being irresponsible and pushing themselves way beyond their limits.

Give some possible scenarios when Hypoxia can happen:

- In competition when divers are attempting extreme depths.
- If the diver is irresponsible and chooses to dive hungover, sick or jet lagged.
- If the diver is breathing incorrectly (hyperventilating) and completely ignoring the body's signals that it is time to come up and breathe.

#### LMC

Loss of Motor Control (LMC), also known as a Samba, is a sign of hypoxia (extremely low levels of O<sub>2</sub>) without loss of consciousness that is often precursory to a blackout.

Explain LMC, why we call it Samba, what it looks like when a diver is experiencing it and where it can happen (underwater as well as at the surface). We know LMC occurs most often on the surface so explain to the students how we can help someone on the surface who is experiencing a LMC.

### **Shallow Water Blackout**

A Shallow Water Blackout is a loss of consciousness caused by hypoxia or lack of oxygen at the end of a breath-hold dive. The danger zone is typically in the last few meters of the dive during the ascent and at the surface. However it is good to consider the last 10 meters as a risky zone.

Shallow Water Blackout can sound confusing - or even worse – frightening. Follow the Freediver Course Manual to explain Shallow Water Blackout without making it complicated. Remind the student that this is not a situation that will occur during the freediver course, however it is very important for them to learn the proper safety procedures and to familiarise themselves with the situation.

Remember not to scare your students and always finalise the safety explanations with the point that freediving is one of the safest watersports there are, when performed within your limits and following the safety rules that we are learning during this course.

Explain that when a diver loses consciousness underwater, muscles in the airway restrict automatically preventing water from entering the lungs.

**Explain, and practice with your students how the rescue should be performed underwater** and upon reaching the surface. Have them practice in pairs on dry land. Remind them that this is something they will need to perform correctly in the water later on in order to complete the course.

### **Rescue**

When underwater, a rescue is performed as follows:

- The safety diver quickly grabs the unconscious diver by the opposite arm, turning them, and passing one arm under the arm of the unconscious diver.
- With the other free arm, the safety diver tilts the head of the unconscious diver down, thereby closing the airways.
- The safety diver positions themselves behind, and at an angle from the body of the unconscious diver and kicks their way to the surface.
- Once at the surface, the safety diver rests the head of the unconscious diver onto their shoulder, thereby opening the airways and keeping the airways clear of water.
- This is followed by removing the mask and performing BTT (**Blow, Tap, Talk**). Blowing air towards the nose, gentle taps on the cheek, and calling the name of the unconscious diver, firmly instructing them to “breathe”.

Emphasize the importance of keeping the divers airway from dipping below the water upon surfacing. This is one of the most crucial points of the rescue and you must remind your students of this during your explanation in the classroom as well as in the water.

Also mention that when a diver blacks out, they will most likely have no memory of doing so. The sensation is not uncomfortable; sometimes like drifting into a dream, however this is not what we are looking for when we freedive, and only proves the misjudgement of the diver.

### **VERY IMPORTANT**

After a blackout or after a dive with signs of hypoxia, our diving session has ended for that day.

Reinforce the point that when someone has signs of hypoxia at the end of the dive, he should immediately stop diving for that day.

## **PRANAYAMAS - YOGIC BREATHING**

Introduce the **pranayama exercises** adapted to freediving that will greatly improve our breath-control and focus.

**Pranayama** is a technique where the breath is intentionally changed or controlled in order to produce specific results. The word is composed from two Sanskrit words “Prana” meaning life force (noted specifically as the breath) and “yama” to restrain or control.

Enforce that these exercises are not to be used as a breathe-up for diving, but used as highly effective exercises on dry land.

### **What are the benefits?**

- Has a general balancing effect, which can make regular apnea more enjoyable, with controlled, comfortable breath-holds.
- Can help to relieve the symptoms of asthma.
- Produces a drastic increase in both aerobic and anaerobic exercise capability and endurance, therefore making us stronger for freediving.
- Can strengthen the immune system, lower blood pressure, oxygenate the body’s organs and can remove toxins from the body.
- The practice can change mental outlook and reduce the craving for smoking and drinking. It also develops a steady mind and strong willpower.

### **When practicing Pranayamas:**

- Keep your spine, neck and head aligned.
- Don’t practice straight after a meal.
- For these exercises, breathe through the nose.

While practicing Pranayamas we can use 'Bandhas' (locks), which enhance the practice.

### **Jalandhara Bandha - Chin Lock**

This is one of the three main Bandhas used by Yogis.

#### Benefits

Clears the nasal passages and regulates the flow of blood and prana to the heart, head and endocrine glands in the neck (thyroid and parathyroid). Activates the parasympathetic nervous system, lowers the blood pressure, reduces the heart rate and decreases oxygen consumption, and improves the ability to focus.

We perform this by bringing the head down and lifting the chest so that the chin is resting in the notch of the collarbones.

*(This can be used in every retention (hold))*

### **Uddiyana Bandha - Abdominal Lock**

This is the most powerful diaphragmatic stretch.

#### Freediving specific benefits

This practice will increase the flexibility of our diaphragm, so that it can withstand greater pressure, making equalisation easier and resulting in more comfort at depth.

#### General benefits

Tones the abdominal organs, increases the gastric fire (digestion) and eliminates toxins in the digestive tract; makes the diaphragm and rib cage flexible and massages all the internal organs.

*If there are female students in the class, explain that Uddiyana Bandha should not be practiced during the menstruation cycle.*

We perform this by

1. Exhaling fully through the mouth, emptying the lungs.
2. While holding our breath with empty lungs we pull the whole abdominal region back towards the spine and lift our diaphragm upwards, however we should try to keep the abdominal muscles relaxed.
3. Hold for as long as is comfortable.
4. Finally, relax the diaphragm and then inhale through the nose.

*(Practice Uddiyana Bandha 3 to 8 times)*

## **Kapalabhati - Skull Shining**

This is an invigorating and energizing practice.

### Freediving specific benefits

Strengthens the diaphragm, allowing for more comfort during long breath-holds.

### General benefits

Tones and activates your diaphragm, stomach, spleen, pancreas, heart and liver.  
Releases toxins from your lungs, improves digestion and cleanses the sinuses.

How to perform it:

1. Exhale forcefully and rapidly through the nose, using the diaphragm to push out the air.
2. Focus on the exhalation only, allowing an automatic inhalation.
3. Maintain a rapid but comfortable rhythm.
4. After completing a number of Kapalabhati breaths, inhale through the nose and hold your breath for a comfortable period of time. Engage Jalandhara Bandha during the hold.

*(This is 1 round. Repeat for 3 rounds).*

## **Anuloma Viloma – Alternate nostril breathing**

This is a meditative and balancing practice.

### Freediving specific benefits

Improves breath-control, calms and focuses the mind, aids in clearing the sinus and restores energy to the body.

### General benefits

Restores flow and balances the energy in the body, calms the nervous system and encourages better connection between the left and right hemispheres of the brain.

We perform this by

1. Inhaling through the left nostril to the count of 4
2. Holding to the count of 8
3. Exhaling through the right nostril to the count of 8
4. Inhaling through the right nostril to the count of 4
5. Holding to the count of 8
6. Exhaling through the left nostril to the count of 8

*(This is one round. Repeat for 6 rounds)*

*Times can be altered but the ratio should always be 1 : 2 : 2*

## Samavrthi Pranayama - Square Breathing

This is a method of pranayama where equal time is spent in each of the parts of breathing.

### Freediving specific benefits

Can be used as a warm up for the lungs (but not as a breathe-up), over time improves CO2 tolerance; helps us to become accustomed to the urge to breathe.

### General benefits

Calms the body and focuses the mind, improves breath-control and awareness.

We perform it by

1. Inhaling to the count of 6
2. Holding (full lungs), to the count of 6
3. Exhaling, to the count of 6
4. Holding (empty lungs), to the count of 6

*(We recommend each practice be performed for 5 mins. If the count of 6 feels uncomfortable, reduce the count until it feels good when performed for 5 mins).  
With practice, begin to extend the count, for example 8 or 10 seconds.  
The ratio is always 1 : 1 : 1 : 1*

## **IMPORTANT**

All of the pranayamas and Bandhas are a form of dry training and are not to be used in the water.

## **SAFETY DIVE PRACTICE**

For students who are strong in Constant Weight, take time towards the end of Day 2's water session to practice Safety Dives with them. Although they are unlikely to be proficient at Safeties by the end of the session, it is good practice for them, and on occasion, a student may be ready to do training sessions with a buddy by the end of this.

Upon returning from the water, meet your students for a final debriefing and cover the following points:

- Congratulate them on their completion on the course and get some feedback from each student about what they liked the most. Thank them for taking the course.
- Explain how they can apply the techniques they learned in the course to snorkeling and other activities.
- Remind them of the important safety points you covered during the course, especially the golden rule of freediving - never dive alone.
- They will receive two emails. One containing their user name and password for the website where they can access to Course Documents (manuals). Another one contains the certification card and diploma for completing the course.
- Take the opportunity to interest them in continuing education through the AT system and describe their options. (Static, AFD course, or coaching sessions).

## **NOTES:**