THE ESSENTIALS OF DEEP DIVING

A TRIBUTE TO THE FRENCHIES

If this article resembles Les Cles de la Profondeur, by Claude Chapuis it is no accident and I admit I have in part borrowed unashamedly from his origional piece. We are in essence saying the same thing, which is no great wonder great as we have shared great Similarities in our training philosophy for too many years .

So let me pay tribute to Claude Chapuis Loic leferme Guillaume Nery and Pierre Frolla. Not only for Les Cles de la Profondeur but also for their superb work in forwarding the very best interests of our sport and most of all for an esprit that has rendered this sport accessible to so many who might have been intimidated by it.

The purpose of this article is to bring their ideas as well as our own to an English Speaking public. I have wrestled too many times with Claude's English and often lost.

For those who wish to compare and have no difficulty with French I heartily recommend Enseigner la Profondeur ou Les Cles de la Profondeur by juxtaposing both Articles it is possible to see where they diverge.

A frequently asked question is ' how can I progress in depth'.the answers to this question are complex but usually it can be best answered with another question 'what is Stopping you ?' and the answer to this is usually specific 'equalisation'or concentration Or some other particular aspect of the dive. Further examination however often reveals that this answer is erroneous or at best incomplete ,the real answer is usually a combination of factors.Tension ,the multi-headed monster the Hydra is often the culprit. But 'why' ah! There's the rub. To this there are many answers.

So our purpose is to name the elements of a dive ,to show the forces that oppose them ,and how best to deal with them.And above allto show that the achievement of a good and rapid progress in depth is dependant upon successfully mastering the total combination of all these factors together. Based on the discipline of constant weights, the most accessible discipline to the majority , but is also applicable to free immersion.

The following suggestions for effectively mastering the main problems of depth are proposed,on the understanding that they take place in a safe environment where all the Safety rules are respected and there is a good understanding of methodical progression that allows time for physiological adaptation.

Here I quote Claude literally 'no performance is the result of a single factor, of an exceptional physical capacity,or a super fin. It is not ,in effect, because you have bought The fin of the centuary or because you have a 10 lt total capacity or that you are a master of yoga that you attain 87m in constant weights. One can more accurately attribute this to the mastering of a combination of different factors which together produce the results . Performance is a mutli –factoral issue.

The main factors involved are—

Physiology and Biomechanics Psychology and Mental Controls
Technique and Tactics Constant Weights Sensory Perception
Equipment Environment

It is not the subject of this article to discuss the merits of different pieces of equipment, which in the end are on of the least important factors,nor to compare specific training regimes , but to offer suggestions to formulate a strategy to combat the effects of pressure And depth, both physically and psychologically. And how best to prepare the diver to meet these challenges.

Initially one of the most important considerations is understanding stress. Stress is necessary to produce results ,results are not due directly to stress but to the body's Adaptation to stress. Too much stress produces stress overload and creates a 'wall' or Possible regression. One of the main factors in training is an understanding of.

. How much stress to apply.
. Selection of the correct area of application
. And duration of the stress applied i.e. in negative pressure dives(empty lung dives), drastic physiological changes take place in very shallow depths, and it is important that these dives are conducted at a measured pace; racing down and up can severely stress the system and is dangerous , and speed can send the wrong signals to the psyche .

TECHNICAL SESSIONS

If we are 30m divers we do NOT train to our maximum every session or try to exceed it. Technical sessions are an excellent practice .
Dive to 18m then practice. the glide from 18m to 25m . For this you need to be neutrally Buoyant at 8- 10 m (check this by pulling down to10m then in a head up position with out touching the rope check to see if you float ,sink or stay in the same place). If you stay in the same place in relation to a mark on the rope you are neutrally buoyant at that depth.
The glide is one of the secrets of deep diving and needs practice in order to reap the rewards of energy / O2 conservation that it potentially offers when the technique is mastered and a diver is totally relaxed.. This is harder for the mono-finner than the bi-Finner and requires more practice.
In order to check ones finning/ hydrodynamic efficiency, try counting your undulations before going into the glide and on ascent. 1 movement should cover about 2 m therefore it should take you about 9 movements to attain 18 m.
The glide is indespensible for deep diving it is a colossal waste of energy to fin all the way to the bottom. In order for the glide to be truly effective the following points must be born in mind:

- This of course must be practiced along a weighted line.
- A depth must be fixed for going into the glide. This can represent 50% to 75% of the total depth depending on the actual dive depth.
- Weights must be adjusted to achieve neutral buoyancy at about ½ to 60% of the distance between the surface and the point of entry into the glide.
- A totally hydrodynamic position must be maintained to minimize drag.
- The body and mind must be totally relaxed to permit concentration on equalization.

• An ideal entry speed must be arrived at. Too slow leads to mental stress and the temptation to make extra movements. Too fast and you are ineffectively using the energy you are trying to conserve on the glide.

Ex.2 In technical sessions it is invaluable to have the feedback of an instructor, a partner or a video in order to observe the following. The shallow sessions are ideal for this.

- The quality of your preparation.
- Your entry, the duck dive and relationship to the line.
- Your head position and hydrodynamic form.
- Your rhythm of equalization and if you use your head for this, how you move and hold your hand.
- Fluidity of movement and finning technique (look for common faults).
- General speed. This is individual, but a good rule of thumb is roughly 1m/sec and the dive profile should be equilateral.

Ex.3 Remove a watch, gauges, etc.

- Count movements to the glide and then close your eyes (you should be on a leash for this) and totally internalize, feel the water flow.

Find the ideal point of equalization. If you head / neck is hyperextended this makes equalization nearly impossible.

Ex. 4 Practice finning to 20m on a leash with your eyes closed.

Ex.5 During winter training (without weight belt) technical sessions dominate and are interspersed with negative pressure sessions.

The next period is dominated by tables and negative pressure dives. (Dives after a passive, non-forced equalization).

PRESSURE

The focus now shifts to adaptation to pressure. Here the natural tendency when feeling the big squeeze is to tense up. If you allow yourself to do this, your dive is finished. It is not easy to relax in a head-down position while being progressively squeezed at an accelerating pace. Habituation is the key a lot of exposure to diving in a secure environment provides. That permits gradual, controlled exposure to increasing pressure.

DRY EXERCISES

You must be soft, you must become water. So, a primary quality is flexibility of the diaphragm, thoracic cavity and spine. Here the very best training is borrowed from yoga.

Udayana Islanders. See free divers manual or consult a good yoga instructor for the principle back-bend asanas.

The three techniques we have found to be invaluable for depth training:

- Negative pressure dives
- The Free-diver's version of variable weights with head down and eyes closed.

• A methodical, patient approach to depth not more than 1m per session allowing time for physiological adaptation.

NEGATIVE PRESSURE DIVES

Here we must understand that extreme physiological changes take place within a very short distance from the surface. So, the descents must be slow.

No weight belt for N-P Dives. The weight is unnecessary as buoyancy is greatly reduced by expelling the air from the lungs and is in fact dangerous as one can sink too fast to equalize.

• Head down position because that's the way you will be going in C.W.-F.1., etc. and there is little point in training head up.

• We favour pulling down and pulling up as there is less chance of damaging the ears or sinuses.

• Never compare yourself to your partner. In this exercise a lot about depth achieved depends on exactly how much air is retained. Your partner may not be able to attain your depth in N.P. dives but still may out perform you in C.W.

• We teach these techniques only to divers who can demonstrate a static, empty lung breath hold of 1 1/2 –2 minutes. So that we know they have the capacity to go slow.

• Very often, when there is a lot of current, we will devote a whole taining session to negative pressure dives varying the amount of air retained in the lungs and avoiding at all costs pushing too hard for depth on totally empty lungs too often. The main concentration here should be internal and eyes closed are recommended. Feel and understand the sensations and how you are reacting to them.

• What happened to the air you retained in your cheeks- did it disappear? Where did it go? Could you bring it up again?

• What happened to the air in your mask? When did it disappear? Did you sniff?

• If you were without a mask in a nose clip_ did you swallow air, etc.?

•Finally for more advanced divers descents finning on empty lungs in shallow (5-8m) depths, on a leash of course.

• Freedivers have long employed a version of variable weights for depth training, the diver simply holds a line 1m above and a 10-15kg weight. The other end of the line is cleated off at the target depth and the diver drops the weight. He can let go at any time or employ the slip and hold technique. He descends head down and eyes closed **without a weight belt.** Thus the ascent is extremely easy.

For this exercise we employ a counter-weight and leash system for security and a very rigid safety protocol. This should not be attempted without these measures in place.

THE MENTAL

Every one of us feels the same fears and distractions. The environmental distractions of current, cold, poor visibility, waves, etc. and the fears of blacking out, being short of breath on ascent and during a competition focusing so hard on the depth to be attained that one leaves the first equalization too late and makes an inglorious return to the surface.

If a diver does not train himself to be strong mentally he can be distracted by anything- a mask fogging up and inability to hold correct orientation on the rise due to waves and current being in opposition. Annoying short chop. Whoops, I forgot to shave today, my mask is leaking. I forgot to stretch, etc.

The qualities to be cultivated are; self-confidence "I can deal with Murphy," the ability to concentrate and relax immediately, and a lack of being spoiled.

Here is the basic methodology:

- Progress must always be from the known to the known i.e. if your limit today is 30m and you have done it ten times and you can spend 5-10sec at 30m then it is realistic to attempt 31m. On the other hand, to immediately attempt 35m when you have only done 30m once is to pass from the barely known into the unknown, a frequent recipe for disaster.
- Thus, 1m more in depth per training session and not more. The secret here is regular training and a systematic and gradual approach to depth.

Our nightmare is the student who has booked two weeks with us and wants to progress from 20m to 50m in two weeks. Yes it happens to us – about once or twice a season. Here I totally agree with Claude, there is no way to do this in a controlled fashion and if it is not controlled how can you have self-confidence?

One meter per session!

- Avoid being the spoiled diver who needs 20 minutes of ventilation attempting 20m the diver who does 30 packs before going to 10m. The diver who needs to compose himself with meditation and tapes for 1hr. before attempting 30m.

Instructors become very proficient at going down with a minimum of preparation. You have just finished giving feedback to one student when you realize your advanced student is about to go down to 50m and you are going with him and he is now beginning to pack!

You soon learn that you can do amazing things with very little preparation and your mind accepts your fins leaving the surface as a signal for total relaxation – you have to, you're committed.

You only need two or three big breaths to totally reoxigenate – the rest is relazation and concentration. To a vague extent the speed at which you achieve this is due to habituation.

- With some students we have found it helpful going down with them in tandem and that this diminishes fear of depth.
- Sometimes we have found it helpful to have the weight 1m above the bottom so the diver has a point of reference and feels more secure.
- Another important question is the way that you talk to yourself before and during a dive. "I must get to 40m" doesn't work. Usually the diver is so concentrated on the tag that he forgets the first equalization and never gets there.

If on the other hand you forget the depth and focus on the first equalization and time it perfectly then your subsequent shifts of concentration to the next point of focus are always building on the success of the last – and "Hey, this is easy, there's the tag!"

When in competition you are preparing on the line and you say to yourself… " I must concentrate!" **WRONG** – you are telling yourself that you are not concentrating now – and there is something stopping you from concentrating.

- To avoid becoming the spoiled diver go down with a minimum of preparation when someone else cue you.
- Avoid getting attached to a magical piece of equipment. "I can't dive because the dog just ate my 'Doc's Pro Plugs.'" Learn to improvise or do without. Don't complain about anything, just do it.

THE SENSATIONS

Try to vary your environment as much as possible. Time of day, place, tide, etc.

- Become less dependant on mechanical devices – watch, depth gauge, etc. learn to count your fin strokes, listen t your ears, watch for thermocline. Be aware of the diminishing light or it getting lighter as you approach the surface.
- In summer dive in a skin or just a bathing suit to feel the flow of water along your body and study it's behavior.

Soon you become much less disoriented in water, or you become less dependant on mechanical things and much more at home.

- Don't forget that freediving is a pleasure, not something you drive yourself in to achieve, achieve, achieve!

Some of the most profound progress can come when we are totally involved in play. Near our camp we have a sea lion colony and I have wtched divers do incredible things while interacting with the sea lions, and it's not just sea lions in the Baja but whales, dolphins, manta rays and more.

In the pleasure syndrome we achieve the dream. Don't forget to smile.

STYLE

One area where we perhaps differ from the French is in the question of mono-fin technique. Let us first render unto Caesar what is Caesar's. The Russian mono-finners have perfected the movement with this tool. Sorry guys it doesn't matter whether you're going in the horizontal or the vertical the problems and solutions are the same. Yes, I know their objective is speed and ours is not, but meditate on this; in order to achieve speed the propulsion must produce the maximum forward movement with the minimum force wasted on opposing drag i.e. maximum hydrodynamism.

Now the problem is this – this may be inarguably the ideal but wont happen when I have not got their flexibility – and I have a wet suit which is like a suit of armor and I have to overcome buoyancy.

My style may not be perfect, but our feeling is that as long as we maintain the aspiration to the classical style and approach it as closely as possible we are going in the

right direction. The big impediment for most guys is stiffness in the upper back and shoulders, so work on it. Yes there are exercises for improving flexibility in this area.

We define common mistakes as:

The Plank- Here the whole body is rigid and the propulsion comes from the lower legs by bending the knees. The motion is a kind of Start – Stop one.

The Mechanical Butler- He looks like a wind up toy doing mechanical Japanese bows. Here, half the body is propelling forward and the other half backwards. He ain't going very far.

The Snake- The snake swims with a languorous fluidity which is aesthetically seductive, but has the disadvantage of covering 0 – 60m in 50.

Hey guys, take a good look at the Mochinova and get back to your flexibility exercises and stop trying to make virtues of your limitations.

One final thought. Everybody likes to show off and work on what they do best, but he who works on his weaknesses and turns them into strengths becomes Superman!
A 10% improvement in style = 10% improvement in results.
A 20% improvement in fitness invested in poor style may equal zero improvement.

IN CONCLUSION

- Don't do maximums all the time.
- Make your worst day your best day – if there is a big current work on negative pressure dives, don't give up and go home.
- Don't have ten objectives in every dive. Give each dive a single theme.
- Vary your training to avoid monotony.
- Dive safely and never alone.
- Be patient and methodical in approaching depth.
- DO NOT PROGRESS TO NEXT DEPTH EVEN IF IT IS ONLY 1 METER IF YOU CAN'T EQUALIZE ON THE BOTTOM AT THE LAST DEPTH!

A Solomon