

MAXIMUM EFFORT

WITH MINIMUM TRAINING

Sebastian

NASLUND

**50 hours training
leading up to a 10th
place in the World
Championship
(Constant no fins)
in Bahamas 2009**

SUBJECT DATA

Name Sebastian Naslund

Age 42

Weight 72

Length 187

Resting heart rate 56

VC 6.3 (5.9 when starting freediving)

RV 1.9

HB 145

Training philosophy: do as little as possible.

DIVING HISTORY

Started competitive freediving 1999

Prefer depth and all disciplines without fins.

Equalization problems at 14, 19, 27, 33, 45, 60+

Like the feeling of depth and risk involved in freediving.

NR: CNF 40, 44, 51, 56.

FIM 68, 73. DNF 103, 108

Have been selected for four WC's, taken part in three.



The story starts two months before the world championships.

Motivation

I am lying in an apartment in Bangkok staring at the fan turning and turning. I am thinking: "If I going to do it, I will have to start now, I have delayed this far to long. I need to start training".

I peaked in freediving two years ago doing 56 meters CNF in the world championship in Sharm 2007. I finished in 5th position. But 56 meters is nothing now a days, and I cant even do that any longer. And I have lost the my national record in this discipline. The current 61 meters seems unapproachable.

Of course I could do it, most things in life are possible - but do I want to? Am I motivated to train that much? I dread the feeling coming up from depth: the burning lactic acid spreading out in the arms (I even get it in the pectoral muscles), the feeling of weakness and helplessness, the suppressed breathing contractions ripping at my lungs, the negative thoughts bordering to anxiety. Will I make it to the surface? I must reach the safety divers before I blackout.

I have lost a lot of my physical self confidence.



Science

I am studying sport psychology at university and I know this is the basic issue of motivation. Why? Whats in it for me? What are the rewards? What will have to sacrifice in order to have time for all that training? How important is a record?

There are external motivations: the respect I will get, the attention. But that is not enough, external motivation is an untrustworthy ally - it can easily disappear if other rewards appear.

Intrinsic motivation is the strongest, doing something for the joy of doing it. But freediving training can be terribly tedious, boring and damn hard.

The psychology scientist Mihály Csíkszentmihály

has said wise things about motivation: we need very clearly defined goals, that are hard to reach - that is challenging - but still within our skill. A 50-50 chance motivates the most ambitious people. And I am supposed to be one of them.

The weak link

I have freedived competitively for 10 years, I know a lot about what is needed for a maximum dive right up to the edge of my capability. There is no general training scheme that could apply to everyone; we all have our own weakest links. I will have to find out what mine is right now.

Motivation is the primary one, without that you have nothing. But motivation is nothing unpredictable that may or may not occur like inspiration, it can be nurtured. I try to focus on the positive. I know I like what freediving training does to me, it keeps me fit, forces me to stay healthy and sharp in mind. If I could

Physical fitness

Some high level freedivers are awfully fit (cardio VO2max - O2 uptake capability). Although freediving is about dealing with VO2min, I believe starting with a high VO2max is important.

- And you need muscles that are tuned in for the movement intended (breast strokes).
- And muscles that can endure lactic acid (when O2 is finished lactic acid appears).

Habits and routines

With good habits you can achieve most things in life. Get into a routine, and stick to it, no matter what. Pride yourself in your discipline. The most important part of training is actually starting to deal with all the excuses.

As it happens I have seen an abandoned stairmaster outside my apartment, situated on a veranda with a view towards some distant skyscrapers. That's nice, atmosphere is important.

What can I train here in Bangkok? The swimming pool is far away and I could hardly find someone to train with, and besides that I hate pool training. I can't afford a gym-card and there is nowhere to jog among all this cars and crowded roads.

find some joy in the training, somehow. So I will have to do this with a scientific approach.

I need a small goal that is not too hard - but still gives me some rewards.

What for instance if I held my breath for 5 minutes every day for a month (70% of my PB) - that would be interesting to find out what it leads to. And since one of my weak links is CO2 endurance (both physical and mental) I could force myself to never stop before I have endured 2 minutes of breathing contractions (caused by high CO2 during breath hold). That is a good start, every morning before breakfast.

- And you benefit from the increased blood volume that muscle training gives you.

I don't train cardio, I don't lift weights, I look almost malnourished with my 70 kilos against 187 in length. I pant when I walk up stairs. There has been far too much computer in my life the two last years.

I need to train cardio and muscles! But as little as possible.

The minimum amount of cardio needed to improve your VO2 max is sessions of 30 minutes of 75% of your maximum heart rate. (maximum heart rate = 220-your age). Annelie Pompe that works as a personal trainer taught me this (she finished second in the WC in Sharm 2007 with a 77 meter CWT dive). Doing this 2-3 times a week, will show effect already after 3 weeks. The first part of VO2max increase is the easiest.

I will do 30 minutes of cardio every second day for a month. And let's pretend my heart rate is that of a 20 year old (to make it slightly harder for me). Thus 150-160 in heart rate for 30 minutes.

And let's every second day do 30 minutes of: pushups, situps, pull ups, knee bends at high

space so that my heart races. And lung stretching to prepare me for the depth.

That will be 15 sessions of cardio and 15 sessions of muscles and 30 apnea sessions.

I find my motivation in trying to train as little as possible to achieve as much as possible.

Specialized training

I return to Sweden. I am a freelancer in many trades so I have a lot of freedom if I plan everything right. Back in the office I set new goals. I feel much stronger after only three weeks training in Bangkok. I change the stairmaster to 30 minutes of interval training in my 7 floor building. Elevator down takes 40 seconds, then running up 1.15 minutes. If done 16 times = 30 minutes.

I stop doing 5 minute breath holds and switch to 3 minutes walking apneas with breaststrokes (40 second freefall). This produces lactic acid tolerance and dive response sensitization.

I manage 10 walking apneas then interval stair trainings before I have to head towards the Bahamas and a totally new chapter.

Lots of water but no depth

A week later I am heading north from West Indies in a 27foot sailboat, moving along the chain of islands called the Lesser Antilles aiming for the world championships in freediving on Long Island Bahamas 4 weeks later. Me and a friend has invested in this though little ocean cruiser.

We seldom find calm water and have to keep pushing north with little time to train. The boat has to be repaired often and sailing at night takes its toll.

Fine tuning

In the cabin I get back into the routine of 5 minute breath holds with minimum 2 minutes contractions. I don't want to lose my apneic ability, or rather, forget the awful feeling of contractions.

I manage 10 more of these sessions.

I also need to train to dive with out mask or with fluid goggles. The mask takes too much air - down to 60 meters- one liter is lost in the mask. My equalization sort of locks when I go without mask, some reactions to the water flow across the eyes maybe. So I do shallow

dives around the boat with fluid goggles. I need a feeling of "belonging" in the water.

The pushups, situps etc... has made some effects, but now I need to train to the specific muscles. I tie a shock cord to a waist belt and to the aft of the boat - and against this resistance I do 200 breaststrokes and then 200 kicks - focusing on technique. I manage to do 5 sessions of this.

I need to adapt my lungs to depth. The yoga stretching on empty lungs has been good, but now I need water. But everywhere we anchor it is shallow and at sea it is always too rough.

We find 20 meters a few times and I start with empty lungs (first one longer dive on FRC (half lungs) and then a few with totally empty lungs, down to RV (residual volume). On a bad day my dives will progress from 7-12 meters, on a good day I go from 9-15 meters in three

four dives. This resembles very deep dives if they had been done with full lungs.

At the surface I take a mouthfill before I go empty lungs. This helps me train mouthfill equalization. I do the same thing between 0-10 meters, as I will do from 50-60 meters.

A dry approach to training

Generally freedivers believe that they need to do max attempts to progress, but I want to prove that land training and shallow (even a deep pool) training is enough to do as preparation for deep freediving above your personal best.

During these 6 weeks leading up to the World Championships I have managed the following training.

40 x 5 minute breath holds with 2 minutes contractions. 20 hours
18 x 3 minutes walking apneas with swim movements (3 minutes). 4 hours
20 x 35 minutes cardio training at 75-80% of max pulse. 10 hours
15 x 25 minutes general muscle training. 7 hours
4 sessions with swim movements against resistance. 2 hours (too little)
20 severe yoga stretching with the purpose of preparing the lungs for depth. 10 hours
4 empty lung sessions in water to max 15 meters. 2 hours (too few).

55 hours = 9 hours a week = 1.5 hours a day for 6 weeks.

This might seem a lot for the leisure freediver, but ridiculously little for the elite freediver.

Yes it is not much, but done in right amounts, at right time, with right intensity it has effect. Also if you live a healthy lifestyle not forgetting, rest, sleep, no stress, special diet, hydration. It will have effect.

Specially important is that all the breath holds are done with visualizations of the dive - and if possible rehearsing the future dive. I have apneawalked with water filled goggles and noseclip. I have done swim movements, but above all mouthfill technique (which is quite subtle and contains much more tricks than just filling your mouth). I have done

the mouthfill in all my 5 minute breath holds, and equalized against contractions without loosing the mouthfill.

6 weeks land training above led to:

Resting heart rate of 52 (-4)

1.2 kilos of added muscles and 0.5 kilos of loss of fat (yes I have some).

And above all a feeling of fitness and added physical self confidence.

If I had time I would add 10-15 sessions of workload apnea, like repetitive breath holds while walking, spinning or better swimming. Up to the lactic acid thresh hold.

Land o'hoy

I moor at Long Island Bahamas. William Trubridge the executive organizer of the coming World Championship turns up and leaves me a car and a spending account. I am supposed to do most of the practical work needed to get the competition running smoothly. But I am also registered as a competitor. So I go to the famous Deans Blue Hole and start training. Before the comp day I manage the following series of CNF dives:

40 (fim), 52, 57, 59, 50 (early turn), 62, 62 - this, during a 10 days period. On the competition day of no fins I have announced 65 meters, 3 meters above my recent personal best and nearly 10 meters above my competition PB from the last world Championship 2 years ago.

65 meters without fins

I take part in the measuring of the rope (done along a road). I stand at the 65 meter mark and look back on the rope on the ground, and guess what, it looks damn easy. A few strokes and a long nice freefall. I feel strong and confident.

Trubridge donates me a blue full bodied swimsuit with a lot of glide, I look a bit silly in this slim bodystocking but feel hydrodynamic and I feel confident. And with confidence you can go far (or deep).



Dive strategy

I have identified 17 factors involved in a freedive. Cardio fitness and fine tuned muscles are two.

Now I have the following challenges:

- 1. The risk of BO (using too much energy).**
- 2. Failing equalization and turn early (loosing mouthfill).**
- 3. Squeeze (alveolis "breaking" and blood spit).**

Squeeze is not a problem any more down to these depths (due to the yoga stretches, the empty lung dives, the FRC warm-ups). I will also be even more protected from this if I chose a dive strategy that involves contractions slightly later than usual.

Failing EQ is easy to solve: take more air (and/or train more mouthfills with RV at shallow depths). But more air is not always beneficial. I don't want to spend energy at the start of the dive (dragging all that air down), a heavy workload will delay dive response and increase metabolism and earlier contractions as a result. I want only as much air needed for the EQ.

BO is my main concern (low oxygen). It is easy to solve as well. Just don't increase breathing before the dive and have more CO2 in the blood and get more blood flow (=O2) to the brain (vasodilation).

But less breathing also means earlier and more contractions. And contractions at depth may increase risk of squeeze on me, but foremost, contractions will interfere with equalization, and make me loose faith in the dive already on the way down.

So how do I balance all this?

My strategy is:

- More weight than needed (less work down, later contractions, easier equalization).
- Slightly more breath-up than is prudent (later contractions, less risk of squeeze).
- 3 warm-ups (later contractions, less likelihood of squeeze).
- Swimsuit (colder but hydrodynamic and less work).

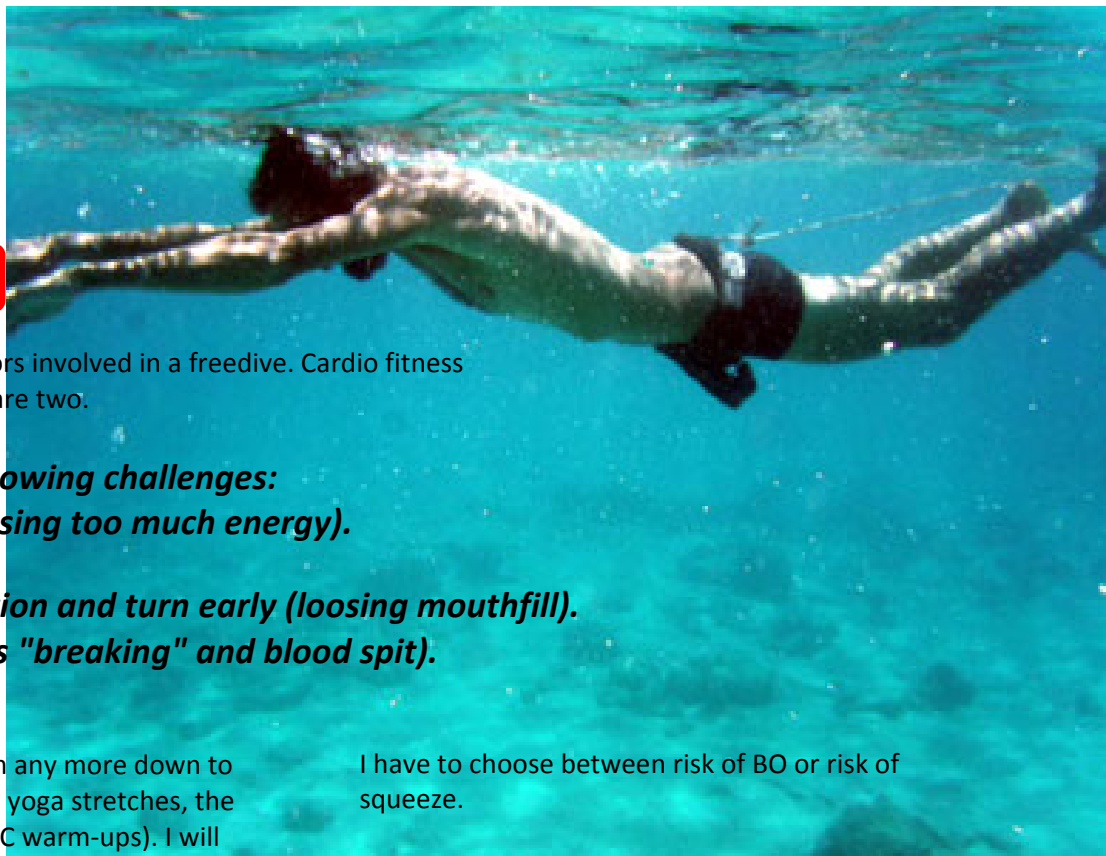
I have to choose between risk of BO or risk of squeeze.

So I have to find a middle way when it comes to breathing. The hydrodynamic suit will reduce my energy spending, and also expose me to a chill during the dive which is good for the onset and intensity of the dive response. This also means I can take less led weights.

No warm up will give a better dive response and less risk of BO.

But I will do warm-ups in order to get a spleen release (2-3 warm-ups is needed for me to get a full spleen release), this leads to more available red blood cells that buffer the CO2 slightly and delay contractions, thus I can breath slightly less before and still get contractions relatively late.

Breathing too much before the dive will change my blood PH (more acidic) and red blood cells will hold on to O2 and not release them in the cells just as easy as normally (the Bohr effect).



So last question. How much weight?

Heavy (advantages) = relaxed down = earlier dive response + focus on equalization + later contractions + less O2 spent + less chance of squeeze = better self confidence.

but also:

Heavy (disadvantages) = more strokes up = more oxygen spent = earlier lactic acid = negative thoughts = chance of blackout.

What equation shall I chose?

My normal strategy so far (55+ dives) has been:

Shorty neopren 1mm + 1500 gram neckweight = neutral at 11.5

I do experiments with swim down of 7 strokes.

With swimsuit = I reach 27.1 meters

With 1mm neopren shorty with 1000g weight = I reach 31.3 meters

I will go for swimsuit and 800 gram of neckweight. Fluidgoggles, Paradisia noseclip, waistbelt under the suit, swimcap.



The dive

My dive starts the night before with yoga (asanas and pranayama), and I make sure I have the following vitamins/food supplements in my body: Creatine, Magnesium, Omega-3, L-glutamin, Iron & B-12 (long term, not short term), C-vitamin, and lots of water the night before.

In the morning, I eat 4 hours before the dive: porridge, grapefruit and apple. I can do dives on 12 hours of no eating but now I am platform manager for 4 hours before my dive and need something to keep me going.

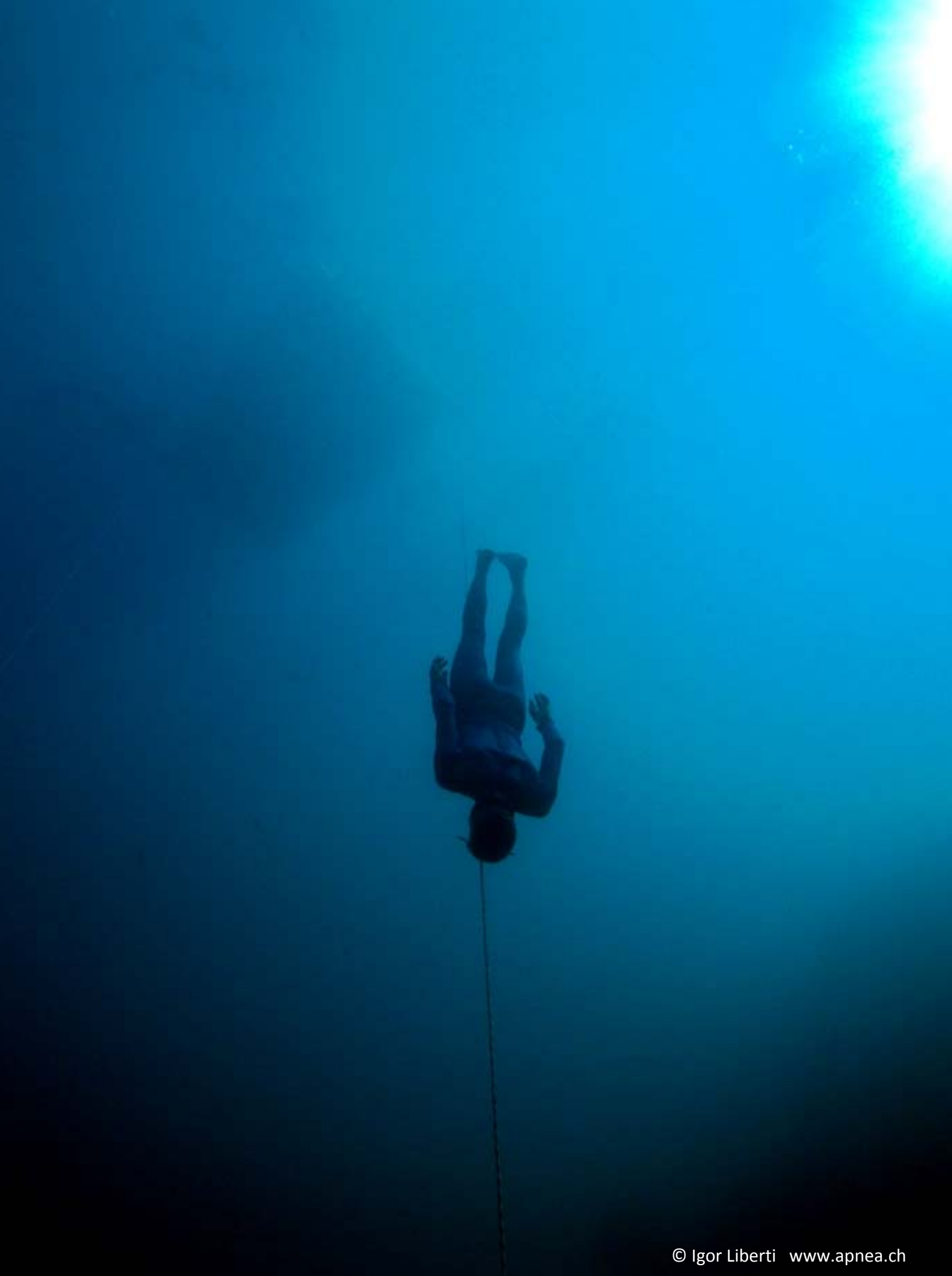
Warm-up

2 minutes breath hold at depth (pull down)
Rest 4 minutes

2 minutes breath hold at depth

4 minutes rest
1 minute RV to 10 meters
8 minutes rest

I started my freediving career with lots of warm-ups, then switching to a few FRC's, then inspired by Sebastian Murat I switch to no warm-up and nearly no-breath up. Until I lost all motivation to dive since the "dive response dives" (the purpose of the Murat strategy) is damn hard work with lots of contractions and lactic acid.



Breathe-up

The last 4 minutes I start with deeper slow breaths, the last minute a few purges down to RV (important to maximize O2 in lung). This is a critical point of "the dive", if I

breath too much I will go with too little CO2 and risk a Shallow water blackout (this is very individual what is too much).

"The 10th best dive in the world"

The dive will last about two and a half minutes and consists of many "check points".

I am cautious to be slow in the start. To lift my legs high above the surface and let their weight push me down. And not stress. This sums up the essence of the dive – to be where you are - not to - in your mind - be ahead of yourself - thus never longing for the bottom - I am actually not planning to go anywhere - I just try to perfect what I am doing in that very movement/moment. Sebastian Murat said: focus on process.

I am focused on doing soft strokes in the beginning, not being efficient. I do not want to arouse the body and delay the onset of the dive response (from Murat). (I have noticed this slow start in Guillaume Nery aswell).

I do count my strokes, I have to, because I am so focused at the moment that I will forget otherwise. I do seven strokes (just as Trubridge does), this takes me to around 30 meters.

This means that around my 5th stroke I will have to focus and fill up my mouthfill (thank you Fattah)

At my seventh stroke I might have contractions, that is early and makes equalizing harder, but I tell myself that it will diminish the chance of BO at surface (with high CO2 dives). This dive, I get contractions at 40 meters from the surface.

I have changed into freefalling with arms along my sides (just as Herbert and Trubridge).

I have programmed myself to expect a longer freefall than I actually expect (!) aiming for 70 instead of 65.

Since I avoid over packing I am always short on air for equalizing - the last meters there is nothing left - so I wiggle my jaw and move my lips in front of my teeth (trick picked up from Nery).

I have velcro on my suit (everybody has) but I picked this up from Trubridge many years ago. There I put my tag.

In this dive I did a half bad turn, did not get a full pull. Even though the plate light warned me of the turn. In the future I might change to do double hand pull - if there is no risk of squeeze.

At the turn I do soft strokes again - to avoid squeeze. (Scientist have noticed that maybe 80% of all competitive dives may suffer squeeze, usually just noticed as fatigue after the dive). Of course soft strokes makes my dive longer but I spend less energy, and do not disturb my dive response.

I have very little muscles and when lactic acid comes it spreads out in the pectoral muscles as well as down into the calves and that produces a blunt feeling and some anxiety. I want it (since vasoconstriction and anaerobic metabolism gives the brain more O2), but I don't want lactic acid too early.

I start focus on gripping high in the water and really wait for the glide - a sprint would increase the risk of BO - even if it shortens the dive (advice from Winram).

I see the safetydiver and I concentrate to keep hazy thoughts away, there is a grey zone where you choose to relax and become unconscious, **you can concentrate and stay out of BO for a few seconds longer.**

The SP - I don't really have to think that much about it. I do it every day, every dry breath hold even after a 1 minute apnea. I train recovery breathing even if I don't need it. I even train to seek out an imaginary judge in every little swim, every static. Even every time

I happen to stand up and get a drop in blood pressure and feel dizzy, I remove imagined facial gear, I look for an imaginary judge (never my coach, never a camera) - and I do the rest of the SP - I could do SP at 50% saturation.

Quod erat demonstrandum



With this 65 meter dive without fins I feel that I have proven that you don't need deep training. I prepared with 50 hours land training and only 4 hours in-water training and 7 deep dives and then a competition PB to 65 meters CNF which gave me a Scandinavian record and a 10th position in the world championship.

Fact boxes

Purpose:

Regain my Swedish record in CNF (was 61 meters)

My personal best in competition 56 meters.

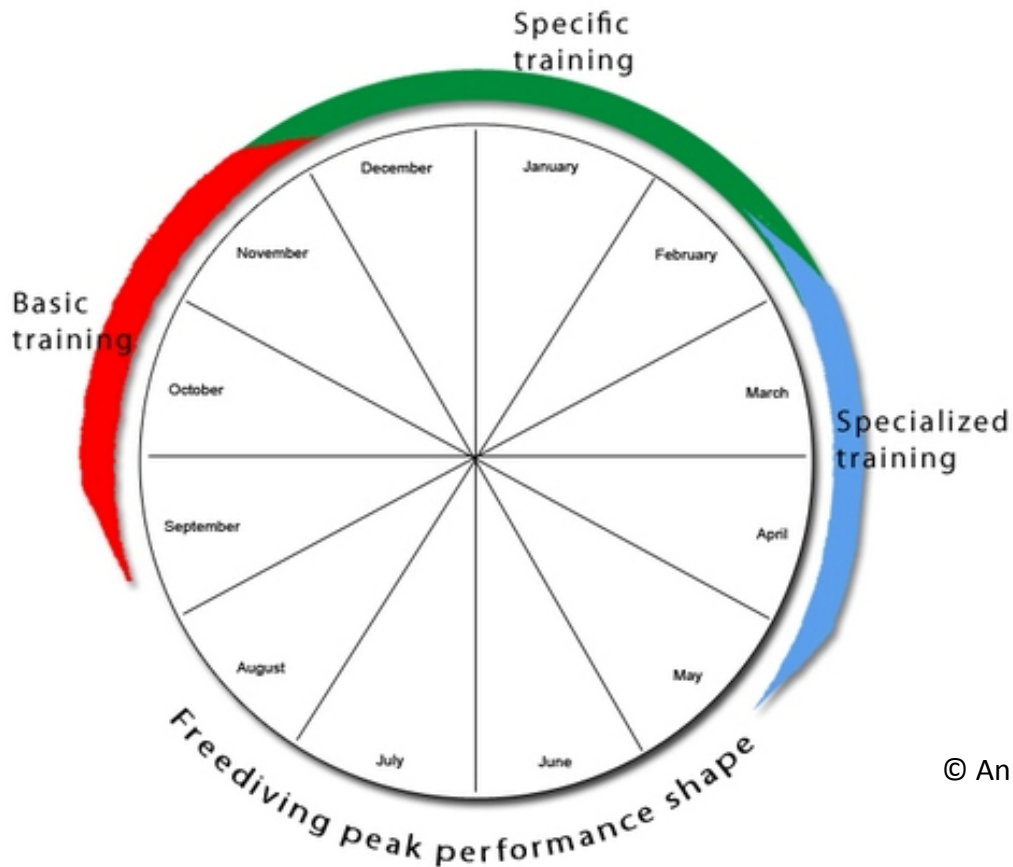
Main obstacles:

Oxygen consumption, I am unfit and untrained.
Trouble equalizing without mask and water in eyes.

Minor but possible obstacles:

Light chance of squeeze at 60+
Light chance of losing mouthfill

TRAINING FOR PEAK



© Annelie Pompe

	Purpose	Focus
Basic Training	Building general strength and cardio for a fit body.	<p>Cardio: Long and middle distance training to get a strong heart and strong legs</p> <p>Strength: General strength, basic exercises.</p> <p>Flexibility: Light yoga and general flexibility training</p>
Specific training	Training freedive-specific muscles and energysystems	<p>Cardio Interval training and swim training</p> <p>Strength: Working on lactic acid tolerance and endurance of freedive specific muscles</p> <p>Flexibility: Specific stretching on problem areas</p>
Specialized training	Specializing in your discipline and increasing your apneic ability	<p>Cardio: Technique training/swim training, increasing the hypoxic and lactic acid tolerance</p> <p>Strength: Specialized muscular strength and mental strength training</p> <p>Flexibility: Specialized yoga, pranayama and lung stretching.</p>