

Anna-Marie Richardson

Hi Freediving buddies...I have a quick question....

I would love to get some feed back on your own personal preferences on pre diving meals, that you feel works best for you and possibly why? covering statics/dynamics/open water dives.

Any information would be great, thank you!

Wolf Lupo beet root

Aharon Solomons yeah don't eat 4 hrs before diving !

Aharon Solomons No Vodka

Anna-Marie Richardson Damn no cosmos then!

Blue Straggler Couple of beers the night before, and one cup of crappy instant coffee approx 2 hours before diving. Serious answer. Last year I cut out alcohol and caffeine entirely for 7 weeks before a training week for a competition, and it spoiled my equalisation. Went back to normal after the comp and it solved all my problems!

Anna-Marie Richardson anyone drink lemon juice water before statics?

Louisa Collyns Personally I prefer not to eat before training. If it's late in the day, then I'd give myself a long window between eating and training, as Aharon says. This is a recipe I'll make for post- training: www.freedive-ibiza.com/alkaline-post-freedive-post-pilates-smoothie/

Patrick Thümmeler Assuming a pool comp day, nothing except water before statics. Right after that usually (dried) fruits and dissolvable oats to get some power for dynamic. When I train in the evening, big lunch and approx. 3-4 hour break before diving

Aharon Solomons Yeah Adam but scotch or Tequila are another matter !

Natasha Darke Ginger tea. I drink a whole pot 1-2 hours before training. It settles the tummy, reduces appetite, and is particularly good at reducing gas and crampy feelings. Just chop or grate some fresh ginger and add hot water. Also has anti-inflammatory qualities which I think are good for muscle stiffness, but that could just be wishful thinking.

Louisa Collyns Anna-Marie, I'm definitely a fan of lemon water before freediving (whatever discipline). Have a look on Freedive Earth for the article on alkaline diets: freedive-earth.com/alkaline-diet-by-dr-otter-md/

Bill MacLachlan I like water and a very light meal 2-3 hours before, and a visit to the restroom about an hour before. Not a competitive diver, but this seems to help keep me comfortable and focused.

Aharon Solomons The digestive system draws a lot of blood for the digestive process at the expense of other priorities .

Anna-Marie Richardson Has anyone noticed eating more oily fish, if this has helped with deep dives, helping with the cold?

Iasonas Panagos for a simple daily freedive: wok up 6:00 oatmeal with dry fruits, 11:00 small protein meal, then approx 15:00 dive!!

Simon Bennett about 3 hours after eating i start to get hungry again, and there is nothing worse (for me) than sitting on the line ready to start a dive with that hungry/weak feeling. I have gradually started eating more/earlier before dives, with only positive effects.

Anna-Marie Richardson i always found an early breakfast of banana pancake with honey digested quickly

Luke Clayton Pancakes with honey and chocolate for breakfast was just another reason for freediving in Egypt, eh **Anna-Marie**

Jöhnnie Be I agree with the above comments , just adding that fasting prior STA attempts is ideal..

Rebecca Coales Dynamic is quite energy intensive so I find I need to eat about 3 hours before but nothing too stodgy. I feel better when I'm on a plant based diet, meat makes me sluggish

Tomas Schiffer Avoid protein at the last meal before DYN CWT due to the diet induced thermogenesis (DIT) which increase the resting metabolic rate for several hours.. better to load with carbs around 4 h before the performance. DIT after carb intake fades faster (already much lower 2h later)

Adriana Bantu avocado and a glass of water with magnesium at the last meal, but no later than 3-4 h before the dive

Ioannis Aliazis This is great information, thanks for posting this question! I see that it varies from person to person (personal preference, size, weight, build, digestive "issues" etc play into it, right?) but the overall "rule" is to eat something that won't be too much of a "burden" and will give you enough energy to not get hungry during your dives. Personally, if I eat for example an avocado and a glass of water, I'll be starving an hour later

Aharon Solomons Beet root juice 70ml from raw beets can increase breath hold 10%-15%. This according to experiments by **Erika Schagatay**, it ups the NO it should be drunk 45 mins before a performance .

Erika Schagatay NB, we tested effects 2,5 h after drinking concentrated BR juice. Schiffer did not find this effect after long term supplementation however, we found it again in a follow up acute experiment, and we are currently trying to find out the mechanisms and why this differed between studies.

Erika Schagatay Quite clear that fasting works for STA, for above stated reasons. Not tested for DYN disciplines etc.

Ioannis Aliazis **Erika** maybe the body builds some sort of "tolerance" long term so the effects are not as drastic, if at all? Btw, out of curiosity, how many subjects did you have for these tests? Thanks for the great info!

Wolf Lupo red gabbage is not bad either, i use it as a salad or put it in the juicer

Anna-Marie Richardson Interesting comments from everybody, great!

Anna-Marie Richardson Red cabbage, would that not make you gassy pre dive?!

Wolf Lupo never had any issue with gas from red gabbage but if , it could help eq

Anna-Marie Richardson Or speed the accent up!

Gletwyn Rubidge I found the beet root juice 70mL per day was inclined to disturb my gut. Cooked beet root did not disturb. I used it before static, dyn and depth. Its hard to say conclusively that I felt improvement due to the beet root. I did improve static, dyn and depth but I could not say conclusively as it may have been a training improvement. I have also tried moderate coffee intake (1-2 cups) about 1.5-2 hours before dives or 10 min before dry apnea resistance training. The coffee does not appear to have any negative effect. My dives were submaximal but the apnea resistance training was to breakpoint.

Wolf Lupo your system needs to get used to raw beet root over time

Ioannis Aliazis **Gletwyn** let's not forget the placebo effect, since a significant percentage comes down to the mental aspect of the dive

Gletwyn Rubidge Yes Ioannis...that certainly could have been the case with me

Tomas Schiffer Our study showed significant negative effects on STA after 3 days of nitrate supplementation (e.g beetroots) on arterial oxygen saturation at the corresponding maximum breath holds, exhaled oxygen at 4 min supporting the results on arterial oxygen saturation and breath holding times (interesting variable but not crucial since it is driven by motivation etc). Actually, we could also detect negative effects on the diving response with an attenuation of the reduction in heart rate and indications of an attenuation of the increased blood pressure. Based on our results, if you hold your breath until blackout it would appear sooner with nitrate ingestion. However, during DYN (in this case cycle ergometer) we could detect a weak (not significant) positive effect on above variables which (if there) may be attributed to the improved mitochondrial efficiency that we observed in a previous study and reflect the lower oxygen consumption seen during exercise .

Tomas Schiffer "above variables" in the previous part referred to arterial oxygen saturation, exhaled oxygen and breath holding times, Diving response was attenuated during DYN.

Erika Schagatay We just did a study with BR effects on the diving response - no effect by BR. We are trying **Tomas Schiffer** to understand why you have a negative effect while we in two studies (one on DYN), and also one other study on STA see a positive effect. Do you have a clue to these differences?

Erika Schagatay You used salts for longer duration - we one single concentrated BR shot, but is this why we get different effects?

Wolf Lupo people react different on food as they can have different doshas

Erika Schagatay We had 12 subjects Ioannis, which is enough to determine a general effect. Your idea about long term use is interesting - perhaps this explains the difference between studies.

Tomas Schiffer If you got positive results on DYN, then our results point in the same direction. We think that the positive results during DYN are as I mentioned improved mitochondrial efficiency and in addition the hypoxia induced NO formation which is probably initiated much earlier due to the muscular work in combination with the diving response mediated peripheral vasoconstriction which probably inhibit cytochrome c oxidase previously shown to improve mitochondrial efficiency. Our differences when it comes to STA is harder to explain since with an acute dose you will of course not have an effect on the down regulation of the proteins we found increase the mitochondrial efficiency. Therefore, you will be more dependent on the hypoxia mediated NO formation (if its not explained by some other mechanism such as nitrite mediated S-nitrosylation of proteins). You observed effects on the arterial oxygen saturation already after 2 min where the subjects are still pretty normoxic and nitrite mediated NO production probably are very low. In your paper you also showed that the subjects with the longer apnea times ended up with lower arterial oxygen saturation which points towards a blunted respiratory drive which is very interesting. Can that partly explain the longer apnea times? How did the arterial oxygen saturation look after the presented 2min (3-4min)? If the differences did not dependent on the different methodological approaches, I would suggest that your results may be partly cGMP independent, maybe through s-nitrosylation of some proteins. We could only detect significant inhibition of the diving response during "steady state" DYN probably since it is very standardized.

Fondue Set For cold water open water dives I like Oatmeal - with garlic, cider vinegar, curry, salt and a chopped date - sometimes with sesame Tahini added. This about 45 minutes pre-dive. At the start It's still there - but I burn through it in about 1 hour if the water is < 67f.

Eric Fattah What you eat (if anything) before diving depends 100% on the system of diving that you are using and the desired respiratory quotient (RQ) that you are aiming for. If you are using the pinniped system you are aiming for $RQ=0.7$ (pure fat burning) where you produce 0.7 molecules of CO_2 for every O_2 molecule burned. If on the other hand you want highest efficiency, you aim for $RQ=1$ (pure carbs), which produces 1 molecule CO_2 for every molecule O_2 (i.e. 50% more CO_2 produced on the same dive), and you are likely to get cold much sooner as the lack of FFA's in the blood will inhibit heat generation.

Fondue Set For warm water - I pretty much don't eat. Electrolytes matter though.

Aharon Solomons Erika and Tomas , I thought the whole point of BR supplementation was to raise NO levels . This discussion has become so esoteric it has become virtually unintelligible to the layman ,the non scientist . My understanding of the importance of NO to both freediving mammals and deep human freedivers is its behavior as an anti oxident (i am aware NO is not an anti oxident ,but behaves like one) in dealing with ROS ,produced by Ischaemia and reperfusion in the DR during deep dives . This massive attack by ROS helps to explain exhaustion after deep dives ,And the necessity for a rest day after 2 consecutive days of maximal depth training . Whether this is applicable to STA -DYN or DNF begs the point - too many unresearched variables here . "Delaying the onset of the DR in DYN " ??? What are the results for DEPTH .I do not believe pool experiments are transferable or conclusive .We have not established that the pattern for the onset of the DR in DYN or even the tiggers for the mechanism are the same . This is in danger of becoming ivory tower science.

Aharon Solomons I am interested in [Eric Fattah's](#) comment - that If you are using the pinniped system you are aiming for $RQ=0.7$ (pure fat burning) where you produce 0.7 molecules of CO_2 for every O_2 molecule burned. Please complete the thought ,what would the dietary recommendation for this be?

Anna-Marie Richardson and Pinnied system? can some one explain more, I'm guessing to do with seals?

Ken Kiriama Almost as many dietary approaches as there are athletes. Some of the best Freedivers who have ever dived our oceans, had different dietary approaches. Good to get some challenges in our freediving so we start reflecting and experimenting on ourselves, what works and what doesn't. Of course a (scientific) study showing what food items support the different modalities of Freediving the best (physiologically), would be highly valuable for us. As pointed out above, different things need to be considered regarding when to eat and what. Your habits is one thing. That doesn't mean that doing something else would not be more beneficial!! Maybe it just means you need time to adjust to this. The same goes for the feeling of hunger. You can also get used to diving "empty". Remember also, when the food is no longer in your stomach, it is STILL in your intestines and the digestive process is still going on. Whether or not this "bulk" affects your deep diving is up to you to experiment on. Whether or not you need carbo meals before deep diving and DYN/DNF, try it out. And placebo, good point **Ioannis**! I still believe in antioxidants post dive, so I eat accordingly and presently I feel better than ever, though I'm far from crediting it all the diet. There are much more profound implications in Freediving than the diet. If investigated by ourselves and reflected and tried resolved, can help more than diet I believe. These are behavioural and psychological patterns or tendencies, however that's a whole other story.

Tomas Schiffer Aharon Solomons, I will give a comment later on ROS and NO.. advantage/disadvantage of antioxidant supplementation.. working right now

Aharon Solomons thanks Tomas

Tomas Schiffer Aharon Solomons, NO is actually a free radical (weak) but can scavenge superoxide (another free radical that is formed in the body both in mitochondria but also via other enzymes) but this reaction generates peroxynitrite which is powerful oxidant and considered to be worse than superoxide. The main known function of NO is vasodilation (increasing the diameter of the vessels and eventually the blood flow). The diving response mediated peripheral vasoconstriction due to the sympathetical activation may therefore be attenuated if the NO production is too high and counteract the constricting effect of norepinephrine.

NO is a pluripotent molecule that affects several systems, it also has the ability to inhibit mitochondrial respiration especially during lower oxygen tensions (the powerplant of the cells) and by doing this the efficiency of the ATP-production in the mitochondria is increased (the molecule used for all energy demanding reactions in the cells), meaning that more ATP is produced

in relation to consumed oxygen. In addition, we found that the general mitochondrial efficiency was increased as a result of nitrate intake due to down regulation of 2 proteins that are involved in reducing the mitochondrial efficiency.

Antioxidant supplementation to counteract production of reactive oxygen species (ROS) during regular exercise is probably NOT good for the training effect. It is shown that if you supplement with vitamin C in combination with exercise, most of the signaling in the cells that is involved in the recovery is abolished. In addition, several studies have actually shown that antioxidant supplementation increase the risk of several cancer types such as lung cancer and prostate cancer. When you freedive the vessels are less responsive for some time after the session which is shown by a reduction in the flow mediated dilatation. There is a study now showing that ingestion of dark chocolate reduces this endothelial dysfunction after freediving which of course sounds great! However, what happens with the training effect? Nobody knows at the moment but I would not be surprised if it would have the same effect as for regular exercise. The general population think that free radicals are only bad for you and in excess they certainly are as shown in some diseases, however in the healthy human they are actually crucial as signaling molecules in a lot of signaling pathways. The addition of high doses of antioxidants interfere with the so called "redox status" in the cell and therefore the cells down regulate their own antioxidative defence systems which seem to be negative in the long run. If you regularly expose yourself to training induced ROS-production, the cells will automatically level themselves to the right redox status.

Eric Fattah I have found that upregulating nitric oxide has a greatly beneficial effect for freediving (both active & static), although this may seem counterintuitive. I am writing an elaborate e-book on freediving diet & physiology which should be available within 1 month or so.

Eric Fattah Keep in mind also (as mentioned earlier in this thread) that one can learn to perform well with no food at all, but this does take some practice. Sam Still was the first to use prolonged fasting with immense benefit (increasing his PB from 7'20" to 9'55" after 10-days on water and later winning the world championships doing 9'17" in the warm-up of the competition day after a similar fast). However prolonged fasting is extremely complicated (as I found out myself), I do discuss this in my e-book as well.

Aharon Solomons Thanks Eric -Sam was a student of mine who followed a path we discussed to a teacher in India and later to Thailand .I was not aware he had taken it to the extreme of a 10 day fast , we had lost contact after his unfortunate meeting with the suicide bomber in Dahab .

Eric I would be gratefull if you could find time to answer my question about your remarks concerning the pinniped system and RQ-7

Aharon Solomons Tomas your observations seem to contradict the findings of Tanya Senteno with pinnipeds ,where NO seemed to be the major line of defence in avoiding their systems being overcome by free radicals as a result of Ischaemia and Reperfusion (blood Shift) . If I read you correctly any attempt to try to re-enforce a return to natural balance would have negative results . Would this also include supplementation with CQ 10 ?

Yaron Hoory When I started diving I was ignorant of nutrition planning before a dive I ate a cheese pastry and a sabih sandwich which had hard boiled egg fried obergine Tehina in a sandwich dived 30 minutes later and vomited it all out at 30m depth which precipitated a feeding frenzy from the fish . Now I eat a date or 2 with a few nuts 2-3 hours before a dive. If I'm diving in the afternoon I'll have early breakfast Quaker with honey nuts and banana

Yaron Hoory Sorry for breaking the conjectures concerning Cq10 Rq7/ free radicals and anti-oxidants and their effect on free diving disciplines please continue

Fondue Set Pretty radical difference between cold and warm water diving. When it's cold it's almost unbelievable how quickly food is digested. I first experienced this during the Telegraph Cove dives in BC. One day my daughter and I decided to have a huge breakfast pig-out. Unusual for me - eggs, hash-browns, toast... As we were eating the other divers walked by in their suits so we were off immediately - packed full. Really uncomfortable for the first hour or so - then; starving! Eric, looking forward to your book.

Tomas Schiffer Aharon Solomons, you are completely right that NO seem to be protective in ischemia reperfusion, this is however not through "direct" antioxidative effects. Instead NO contributes to S-nitrosylations of proteins that in turn leads to lower ROS production and signaling involved in cytoprotection, for instance Shiva and colleagues showed that a complex in mitochondria is S-nitrosylated which leads to a lower production of superoxide. It is shown that nitrite (probably through NO formation) is protective in several organs. For instance, the activity of another ROS producing enzyme "NADPH oxidase" seem to be inhibited by NO. Ischemia reperfusion is a huge area of research and a lot of things are going on. NO is an important molecule and for instance eNOS activity (that produces NO in the vessels) are reduced in the elderly which contributes to the progress of cardiovascular disease. I would probably not call freediving (when performed by humans) an ischemia reperfusion event, it is probably more in the ischemic preconditioning range which actually is shown to be protective in a subsequent real ischemic event.

Ioannis Aliazis Hello all, just a reminder that I've saved the entirety of this thread here: <https://www.dropbox.com/.../food%20before%20dives.pdf>

Aharon Solomons Ioannis does that mean it will be used in evidence against us ? You don't need any of this to be a good freediver . It is pub chat for days when the sea is not an option.

Ioannis Aliazis It's good food for thought as well as diving, Aharon
Us newbies at least will need to do some serious reading to be able to decipher some of it

Eric Fattah Aharon Solomons, aiming for RQ=0.7, the classic method is to eat zero carbohydrate for many days, getting most calories from fat (avocados, olives, shots of MCT oil, and small amounts of meat/cheese, with some green salads with oily dressings). This is hard for most people-- the quickest way to drop RQ is to go for 1 day with no carbs, then the next day take 30ml shot of MCT oil with water 1 hour before apnea. This should get you down to RQ=0.8.

Aharon Solomons Thanks Eric but forgive my ignorance what is MCT oil?

Tyler Zetterstrom For anybody exploring fasting or intermittent fasting, be very careful with depth dives. Although the specifics will be significantly variant between people, while training depth dives I suddenly began blacking out/LMC'ing on almost every dive as shallow as <70% of my diving capability of the time. I had never suspected before that blood sugar was an issue for me, never concerned with circumstantial intermittent fasting and always involved in numerous high-intensity activities.

Before identifying the pattern, I experienced 5 successive days and dives all having the same characteristics; namely easy dive, distinctly aware and clear-minded as I reached the safety diver, often smiling in confidence towards the anticipated successful dive, and then as I arrived to 10m suddenly blank and surface BO or best case a sudden onslaught of semi-conscious shaky LMC. I was on a low-carb, primarily vegetable diet at the time doing successful deep dives. I began simply skipping breakfast to fit with others' schedules and to minimise digestion on the dive line. However, dives were taking place usually around noon-2pm. A light snack followed of nuts, dried fruit, and other random additions and dinner usually around 7-8pm of the vegetable main meal. In hindsight of course it was ridiculously low caloric intake, but having come from a life of often doing lengthy exertion with little food throughout and before, I didn't feel concern or abnormality in any other way. However, I was experiencing a tendency to also have drylands faints upon standing up, which had been occurring off and on for years and I had not been able to identify the pattern and had been to the doctor in this regard to no avail. The faints often have the same characteristics as freediving LMC's.

Anyhow, as soon as I began eating breakfast, my dives returned to normal. Marijuana, magic mushrooms amidst other (recreational) drugs have a strong ability to lower blood sugar. From personal experience, homemade burdock tea in the wrong dosage can kill you (lower your blood sugar dangerously low)! Took me a few days to figure out that one as well.

Walter Steyn Oats, I know a number of world record holders who will eat these 5 - 6 hours before a depth dive. I don't know too many people that really fast before big depth dives, you need a lot of energy for a dive.

Aharon Solomons True I was turned on to the Hypoglycaemic conundrum by first Tanya Streeter who always ate a snickers bar before a deep one , and Later by Armando Torres who asked me one day if I knew that all the BO cases tested were found to be Hypoglycaemic.

Walter Steyn Fasting would make the most difference for statics but also result in negative effects for depth and DYN even though you lower your BMR.

Tyler Zetterstrom "Marijuana, magic mushrooms amidst other (recreational) drugs have a strong ability to lower blood sugar. From personal experience, homemade burdock tea in the wrong dosage can kill you (lower your blood sugar dangerously low)! Took me a few days to figure out that one as well." - just recapping this separate from fasting.

Aharon Solomons I completely agree with you Walter concerning fasting for depth ,a bad idea , but allow sufficient time for digestion 3 to 4 hours dont you think ?

Ken Kiriyaama I used to eat oats 3-4 hours before deep dives too Walter. Again, I think its an individual thing, though I suppose its possible to make a real study on the optimal pre-dive (and post dive) nutrition and supplementation. Im not an expert, but I would guess we want the energy in our stores (glycogen in muscles + liver?) ready to be utilised. Not in our stomach or intestine, still being digested or absorbed? If we eat a well balanced dinner (for a morning dive, say approx 12 hrs later) isn't that sufficient? I know that Herbert is strictly not eating anything before diving for example. I discussed this with Will T. the other day. He is off the other school, who also needs the energy.

Ken Kiriyaama I don't mean fasting. And if you dive at say 10am and eat you dinner "late" at around 8 or 9pm, I don't really call that fasting in my book, though it is 12 hrs without food.

Aharon Solomons Watch out guys Ioannis is following and recording this "Anything you say....."

Mihalis Filinis Fasting before Static. Dried figs, raisins, or honey before or between pool dynamics. Water soaked dark bread rinsed with olive oil 3 hours before open water dives. Best food is pleasant happy thoughts

Ken Kiriyaama By a balanced meal, I mean sufficient protein, carbs and fat. (pasta/rice/grains + fish/chicken/veg. protein like beans/lentils/tofu/nuts/seeds etc and of course good fats like olive oil, coconut oil etc). Not just salads or vegetable dishes. They are just water, fibre and vitamins/minerals.

Tyler Zetterstrom Ken, I believe because digestion efficiency, energy consumption (metabolic rate), and insulin production are going to vary dramatically through a population, I doubt there is a safe recommendation in general for a before sleep meal being enough.

Ken Kiriyaama I guess your right Tyler, thats why I think we should be our own scientist and learn from experience. But of course these discussions are valuable to inspire people to try different things out!

Wolf Lupo with the fast it can be beneficial also for depth in my experience.. if your body is used to fast it will be different to a body who is not.. doing a deep dive just at the beginning of a fast, thats where the body goes in an energy conserving mode but still has lots of energy resources stored, so there is enough fuel for 1 dive, but i also strongly believe that this has to do with the doshas/ body type a kapha type works well with a slit feeling of hunger !

Mihalis Filinis I have heard many positive freedivers' remarks on the importance of iron in diet, as it helps the movement of oxygen through blood.

Ken Kiriyaama Ayurvedic guidelines are a complete science of itself and out of the scope of the topic here as most people don't have a deeper knowledge about the doshas etc. Most Ayurvedic doctors would not recommend extreme breath holding (kumbhak) or deep diving anyway, as Ayurveda is about balance. I doubt they would see deep diving as balance

Tomas Schiffer Here is a newly published article on the adaptation to the oxidative stress during free diving, <http://www.ncbi.nlm.nih.gov/pubmed/26036219>

Aharon Solomons This was very interesting Tomas , I will have to re-read it several times to make sure i have taken it all in as I am not a scientist . But thanks for that , much appreciated .

Tomas Schiffer This study would be interesting to repeat with high doses of antioxidant supplementation. I would expect an abolished or at least attenuated adaptation

Ken Kiriyaama That was a challenging read as Im not a scientist either. **Tomas Schiffer**, if you have the time to shed light on this in normal plain english, its much appreciated. Cant think Im the only one needing a competent translation of this

Ioannis Aliazis I just ran this by a cousin who's studying to be a molecular biologist and he said what it boils down to is that the more you dive, the better your body gets at dealing with hypoxic conditions, "maybe".

Ioannis Aliazis There's only so much to make out of the abstract alone though, someone would need to read the full thing and translate for the rest of us

Aharon Solomons It seems like that is the whole point of training -the adaptive process .Is this another one of the revelations of science that the "Grass is green". . I do not agree that supplementation interferes with the adaptive process . Observation on decades contradicts this . Is vitamin C the best you could do ? Pico magnesium , CQ10 ,Astaxanthin are a little bit more interesting -all for different reasons .-including recovery .

Walter Steyn Most of the adaptation occurs in the brain, not the body

Tomas Schiffer Glutathione reductase is an enzyme that reactivate oxidized Glutathione which is one of the major antioxidants in the cells (increased). Glutathione peroxidase "uses" Glutathione as a substrate to scavenge ROS (increased).

Superoxide Dismutase convert superoxid to hydrogen peroxide (increased)
Catalase scavenge hydrogen peroxide and in that process oxygen and water is formed (increased)

The take home message is that if you expose the body to ROS, it increases the antioxidative defence.

If you add exogenous antioxidants at high doses during the time you are exposed to ROS, there is no need to adapt and the bodys own defence will be the same or lower if you constantly provide exogenous antioxidants even when not training. I will put up some links later in the evening on the effects of antioxidant supplementation on training and cancer.

Supplementation might be positive during long endurance "competitions" but there are no evidence that it would be beneficial during training periods.

Maria-Teresa Solomons yeah ,...I dont think chemical alterations with complicated names are the answer at all! However a good Matcha through the day tastes great and could become part of your training meditation in just its preparation...take time and breathe and calm down as you stir, watch the greenness froth nicely.....and as you sip it , it just feels good. The rest.....on a good calm day, the right focus, and of course with the training behind you that embues you with confidence you can do most anything!

Yaron Hoory This morning missed my alarm woke up 20m before the transport boat leaves for the dive site, last meal was supper 12 hrs prior 70/30% protein/carb meal. Felt legs on the way up (78m CWT) dive (yesterday rest day) more tiring than previous dive; day before yesterday (75m CWT) similar dinner 12hrs before and 2 dates a few nuts 1.5- 2hrs before dive. I made both dives clear protocol however without taking dates/ nuts prior to the dive felt more tired on the way up and slightly light headed when reaching surface. I am also taking liquid iron supplement during the day and mineral and electrolytes mixture added to water immediately following the dive.

Tomas Schiffer Here is a summary of some studies looking at cancer incidence and antioxidant supplementation.

Trial	Date of study data collection	Type	Populations studied (n)	Interventions	Findings	Ref.
Chinese Linxian Cancer Prevention Study	1986–1991	Randomized controlled trial	Mixed (29,584)	β -carotene, selenium and vitamin E	Lowers all cancer rate, particularly gastric cancers, no benefit seen with retinol and zinc, riboflavin and niacin, vitamin C and molybdenum cohorts	[41]
SELECT Trial	2001–2003	Randomized controlled trial	Men (35,533)	Vitamin E and selenium or placebo	Stopped early due to an increase in prostate cancer levels by 17% in vitamin E group	[49]
Women's Health Study	1992–2004	Randomized, double-blind, placebo-controlled trial	Women (38,408)	Low dose aspirin and vitamin E	Vitamin E supplements increased risk of prostate cancer by 17% after 7 years ($p = 0.008$)	[20,39,40]
CARET	1988–1994	Randomized, double-blind, placebo-controlled trial	Male smokers/those exposed to asbestos (18,314)	Vitamin A, β -carotene and retinyl palmitate	Mean 4-year follow-up. Stopped trial early. Lung cancers increased by 28% with 17% more deaths	[55]
ATBC	1988–1994	Randomized, double-blind, placebo-controlled trial	Male smokers (29,133)	β -carotene and α -tocopherol	Mean 6.1-year follow-up. 18% increase in lung cancer and 8% increase in all-cause mortality compared with placebo, 32% less prostate cancer	[37]
Physicians' Health Study II	1997–2007	Randomized, double-blind, placebo-controlled trial	Male physicians (14,641)	Vitamins E, C, β -carotene, a multivitamin and aspirin	No association with vitamins E or C. β -carotene supplementation linked with increased lung cancer incidence	[42]
SU.VI.MAX	1994–2002	Randomized, double-blind, placebo-controlled trial	Mixed (12,741)	Vitamins C, E, β -carotene, selenium, zinc and placebo	No association with cancers in women, all cancer types were 31% less likely. No long-term protective benefit after ceasing supplements	[56,57]
Women's Antioxidant Cardiovascular Study	1993–2006	Randomized, double-blind, placebo-controlled trial	Women (7627)	Vitamins C, E, β -carotene and B vitamins	No associated benefit of supplementation in cancer incidence or mortality	[90]
Prostate Cancer Prevention Trial	1994–2003	Randomized, double-blind, placebo-controlled trial	Men (3461)	TFAs and DHA	DHA and TFAs associated with high-grade prostate cancer	[38]

DHA: Docosahexaenoic acid; TFA: Trans fatty acid.

Tomas Schiffer <http://www.ncbi.nlm.nih.gov/pubmed/19433800>

Ioannis Aliazis Personally, although I'm nowhere near the level in freediving as all of you, I'm inclined to side with Maria-Teresa Solomons on this, I'm weary of any "supplements", a balanced healthy diet, a calm mind and a decent but not extreme amount of exercise works wonders in any activity or just life overall.
Matcha is lovely btw!

Tomas Schiffer And probably most interesting for free divers, Hypoxia inducible factor - 1 alpha which is the master regulator of the adaptation to hypoxia is stabilized by ROS. <http://www.ncbi.nlm.nih.gov/pubmed/15905109>

Ken Kiriama Antioxidants does not mean chemicals or tablet supplementation. Spirulina, Wheat grass, Matcha, fresh fruits and vegetables, nuts, seeds, good oils, fresh juices, and much more. Who talks about chemicals?

John Mason I'll go with the above. I try not to adjust my diet or to eat obsessive specific foods. I eat crisps, cakes, chips, pizza, curry but in moderation backed by a balanced diet. I think obsessing about your food can be a dangerous thing to do.

Tomas Schiffer You are right Ken Kiriama, this is irrelevant for normal food intake. However, supplementing with antioxidants is very common among top athletes. For instance, my colleague is a coach for the Swedish team in orienteering and their former sponsor stuffed their energy drinks (and other products) with high amounts of Vit C, which my colleague of course banned as soon as he found out.

Erika Schagatay This seems to be an interesting topic to many divers

Ken Kiriama Hmm ok, I'm sorry if I wasn't clear. There is of course the natural occurring antioxidants in foods and then the supplements. I also mean natural super foods like blue berries, Goji Berries, High cocoa content dark chocolate, pure cocoa, and a lot of other super foods I don't even know about. Are these also considered to increase the risk of cancer?

Ken Kiriama I agree John Mason, no need to be obsessed about specific foods. Just because you choose to eat healthy foods and have felt the positive long term effects, doesn't mean you are obsessed about it. I almost see it as a natural or additional Long/Healthy Life Insurance. Also the vitality and well being good quality foods give you are incredible. "Just doing the thing because it's good" over and over, not so much more to it. Besides, look at the amount of junk food that is being consumed now a days and the diseases and declining health! It's not small numbers we are talking about. Most people and athletes, including myself, that generally eat healthily, do allow themselves pizza, curry and cakes when needed. Occasionally/socially. (I'm caring with me, a 2 pound Bahamian Baccardi Rum cake that has been soaked even more with Honduran Rum. Just telling you

Tomas Schiffer I'm not aware of any study showing a correlation between cancer incidence and intake of fruits and vegetables.. however, those so called "superfoods" may be potent as shown with the effect of dark chocolate on the inhibited flow mediated dilatation after freediving. "Normal" fruits and vegetables contain moderate amounts of antioxidants in relation to supplements whereas for instance Goji berries contain extreme amounts of Vit C but may actually contain other substances that attenuates the effects of these high levels (I have no knowledge regarding Goji berries and just speculating). One example is cruciferous vegetables that contain sulforaphane which actually activates the antioxidative master regulator (Nrf2) which contributes to the increase of antioxidative enzymes as shown in the freediving study. I would not recommend any person to avoid fruit and vegetables, personally I would probably not continuously eat "high amount" of a "certain" superfood such as Goji berries.. keep eating vegetables!

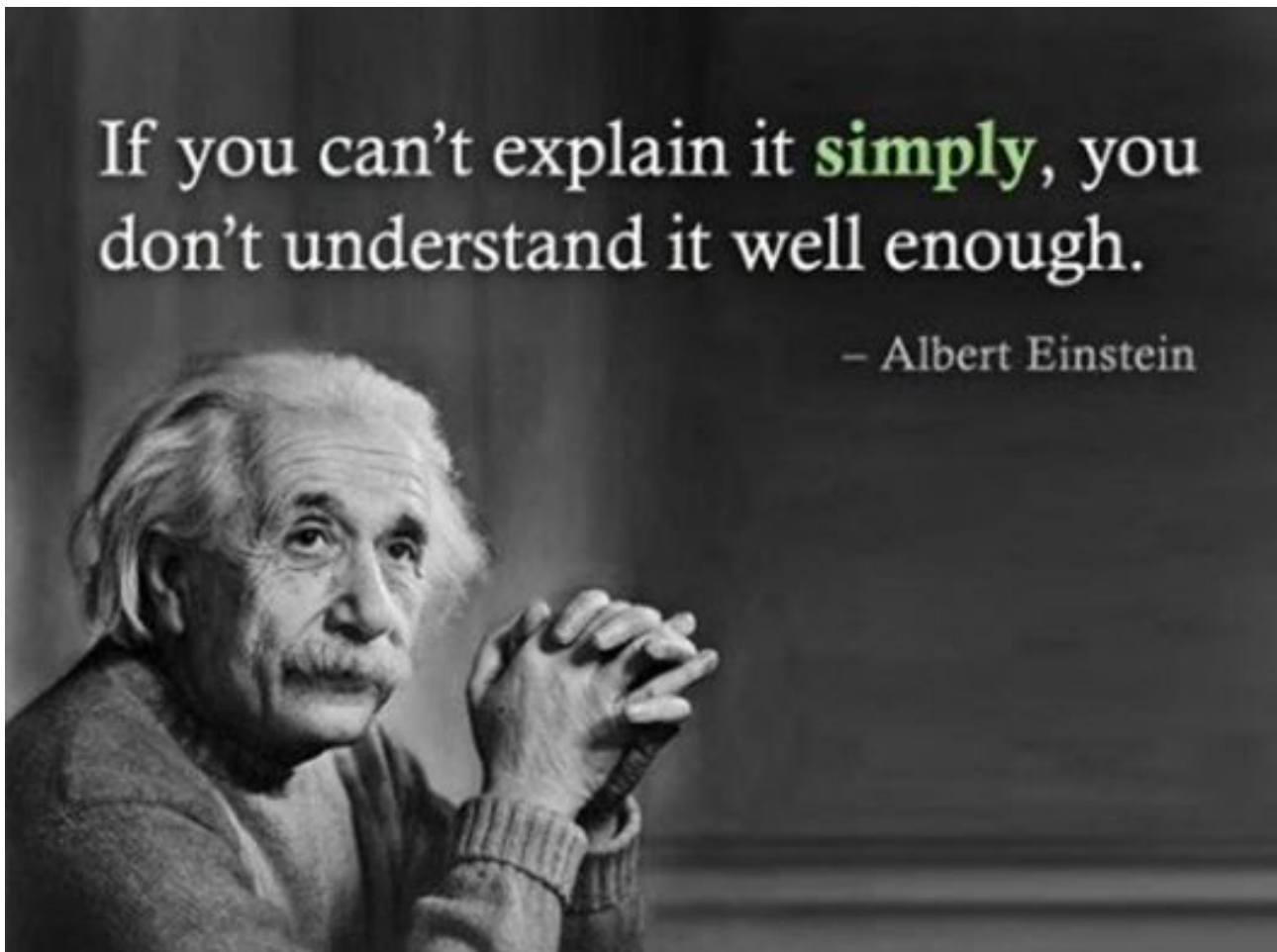
Eric Fattah For my CWT WR in 2001, I ate at 10am and dove at 4pm, this was always my pattern back then (6 hours before the dive). For AM competitions I do not eat anything in the morning (i.e. 9am-10am 100m/104m CWT records were done with no breakfast, which worked way better than eating anything, for me). The ATRC test which I have described on [deeperblue.com](https://forums.deeperblue.com/threads/blackout-trick.71120/) is the best way to test your blackout susceptibility, everyone is different, whatever diet/method you adopt, the ATRC test will confirm whether or not your plan is working.

Ioannis Aliazis Eric, is this your ATRC test?

<https://forums.deeperblue.com/threads/blackout-trick.71120/>

Eric Fattah Sort of, but not described exactly correctly. The ATRC test; crouch down fully, exhale fully, then stand up rapidly, inhale to the max and do 10 big packs. A trained person with good physiology can do this without ANY light-headedness. That means you will resist BO/LMC very well! If you blackout during the ATRC test you will blackout during a difficult freedive as well. I created a 'scale' of ATRC scores based on how light-headed you get during the test. This test is dangerous and needs to be done with someone standing next to you. If you feel the blackout coming, immediately exhale and crouch down to the ground.

Aharon Solomons Tomas I found your chart on antioxidant supplementation contradictory . I would also like to know who commissioned these researches .Also I found this , and hoped it might amuse you .



Aharon Solomons Eric that was a great one I didn't know that test I must try it . The ATRC

Ken Kiriya Interesting test Eric. Have you seen/ witnessed several freedivers doing this?

Marc Gr I always wondered if diets that aim to make our blood artificially more alkaline are not in reality having the same purpose and effect than mild hyperventilation...it may help some of us to perform longer static breathhold, but if it is by artificially delaying the breathing reflex, it is not a good thing.... As for my personal preference, I have no scientific data to back it up ,but i always found that for me a gatorade is a good breakfast, an hour before diving.. sugar, carbs, rehydration salts and water...and quickly after, an empty stomach. Might be placebo ,but i always felt better the days i drink one before diving.

Ken Kiriama Definitely some carbs in your stores and electrolytes

Eric Fattah I used to advocate gatorade right before diving, in fact I did that in 2001 (when I used to eat 6 hours before the dive then drink gatorade before getting in the water). Gatorade will certainly increase brain energy and make you more resilient to a BO, BUT it raises RQ near 1 and thus greatly increases CO2 production and therefore your pre-dive breathe-up needs to be far more aggressive than if you were diving closer to fat burning mode. The more aggressive breathe-up means a later diving reflex and all sorts of downstream effects.

Peter Scott The ARTC test requires a spotter. Eric can elaborate!

Aharon Solomons Anna - Marie I bet this is more than you bargained for . But look on the bright side as with nearly everything in freediving there is no single right answer.

Gletwyn Rubidge Eric, on your ATRC test, what effect does body temperature have? I tried it a few years back and found if I am hot I tended to get very dizzy after a hot bath(not in the bath!!!). However, I was much better when cool or coldish.

Aharon Solomons Tomas your article Anti-oxidants prevent health promoting - is so opaque to a layman it might just as well have been written in Mandarin

Tomas Schiffer Did you have access to the full article? I can try to explain later

Eric Fattah Body temperature plays a huge role in the ATRC test as it does with BO resistance in general. During a dive if you are too hot you will be far more susceptible to BO. This is why the hypothermic diving system is so effective at reducing the risk of BO... the cold increases peripheral vasoconstriction and indirectly increases blood pressure to your brain.

Aharon Solomons Absolutely right Eric !

John Mason Getting back to the original post. I think the post dive meal is just if not more important than the night/day before. If training for days weeks on end then failure to eat and drink for recovery will result in fatigue, even chronic fatigue.

I also have a hypothesis that blood shift can interfere with digestion and vice versa. Several divers have complained of constipation and i have experienced this too, especially from lots(too much?) of dry training. I would like to do a proper study on this if I had time !

So i try to eat food with this in mind if i am on a training plan !

Blue Straggler To elaborate on my earlier response...

I have a cold water CWT PB of 42m. Last year I got nowhere near 40m in cold water and struggled to hit it even in Dahab (where my PB is 45m).

I had a long work week last week including schmoozing with colleagues and clients - greasy food and beer every night, and late nights too. Friday evening I swam, cycled, paddled a kayak and went bouldering, and then had too much beer and stayed up too late. Saturday I did two cold water 40m CWT dives easily. Saturday night, a friend's 40th birthday party, a fair amount of alcohol consumed to wash down some rich food - barbecued lamb, tiramisu etc. Late to bed (in a tent). Today, 40m CWT again (after bacon on toast with scrambled eggs, a cup of tea and a cup of strong coffee)

That's 97.5% of my cold water PB, or 89% of my warm water PB. PBs done under more sensible conditions.

I don't believe I would have done any better if I'd spent the last week living like a monk....

Blue Straggler (all these dives were solid and clean and I was totally prepared to turn early if required.....lest anyone reading this thinks I am a total dick)

Marc Gr We've seen a lot of different opinions in this thread ,but actually, it would be interesting to know if there are some top competitors who consider that nutrition is NOT very important with regards to performance..Not talking about eating junkfood obviously, just wondering if a normal balanced diet, eating a few hours before performing to have an empty stomach, and staying hydrated could be all we need.. After all, many divers "favourite diet"or "favourite brand of bottled water" may just have a placebo effect, since psychology plays a crucial part in freediving..

Ken Kiriama **Blue Straggler** with all respect to your dives, we still have to accept that there is a difference in doing relatively "shallow " dives (no offense) that are barely anaerobic (and that could be done repeatedly in a session) to deep max dives where your physiology is pushed to the "limit" and where appropriate preparation as well as recovery time and nutrition can make a difference. Im aware that the 40m range dives are also max dives for some divers, however maybe they are max in a different manner. If anyone disagrees please share your thoughts.

Blue Straggler Hi Ken , absolutely no offence taken, quite the opposite - I agree 100%. I've been saying the same thing for years, namely that at my current level I don't need to worry about diet etc. one day I will hit a "brick wall" in depth, and at that point I will start to look at diet etc more seriously. But my comments here are in a way directed to shallower divers (let's say sub-32m) because I see a few of these divers stressing about alkali and fasting and all sorts of stuff, whereas in my opinion at this level it simply doesn't matter! I know that if I want to hit (say) 60m, it won't happen after a night of beer and a bacon sandwich for breakfast 😊 thanks for your comment as it prompted me to post this clarification !
NB the OP asked for personal experience rather than experience specifically from "elite" divers which is why I felt welcome to comment

Ken Kiriama You can hit 60m after the things you described, no problem. But if you train ongoing to improve and prepare for comps maybe it wouldnt be wise to do that continuously, thats all. I know very good freedivers that would both drink coffee and beer after a dive and dive the next day. As we have seen, its so individual.

Ryan Curley Don't drink soda. You risk burping out your mouthfill.

Eric Fattah You can eat like crap and still do amazing things, but when it comes time to push the limit the margin for error is smaller. I have done 6:30 statics after eating a huge pizza; I have never done 8 minute statics after a pizza...

John Mason Spot on in my opinion Eric. And Marc Gr i think you could be on to something for most people. Remember the top divers are in a minority, as in any other sport. There is nothing wrong with being middle of even low down in the field if you enjoy what you do and your life is good. I certainly would not want the stress of operating at the top end of any sport in my life at present !

There is without doubt obsession with self and body in society and eating disorders and gym drug use are rife in young people(in the uk anyway - not globally yet)

There is a thin line between the benefits that dedication to a life's love can bring and an unhealthy journey into obsession. I cant quote any papers off the top of my head but there is a relationship with sport, in fact over exercising can be clinically classed as bulimia by frequency.

I think following obsessive training, eating patterns and supplement regimes should be approached with caution. The 'majority' of freedivers would gain more from improving relaxation and fining techniques than magic supplement gains - er and developing some patience !

Blue Straggler The phrase "diminishing returns" comes to mind. 40m diver like me doesn't need to adjust a rubbish diet very much in order to hit 45m, but a 100m diver has to live like a monk for 8 months to reach 102m

Aharon Solomons Marc Gr is right and he has hit the point that winds me up -20-30 40 mt divers agonising over their diet ,and whether they are allowed coffee or maybe 1 beer after a training session . Now I know this is going to sound bad ,but in 2008 when I was 59 years old I did a 63 mt CWT dive in competition for a US "Masters record" this was no big depth , it was a white card, but here is the point , It was a very few weeks before a total hip replacement , I had no ball on the top of the long bone in my thigh ,only a sharp point scratching on the plate of the hip . It was painfull and Maria Teresa had to help me out of the monofin. OK no big depth but apart from the 4 hour no eating before a dive ,no special diet . If we look back to the Greek Skandalopetra divers we are all spoilt bitches !

Blue Straggler (I have seen divers physically recoil from my table in a cafe when they saw that I had a coffee ice cream sundae, as if they might "catch" the caffeine)

Aharon Solomons Martin Stepanek ,who's father was a brew Master in Prague , is definitely not a spoilt diver ,and not adverse to a beer after a dive . His 122 mt CWT record in a mask says a lot about him .

Yaron Hoory When I was doing a deep dive workshop with Linda in Dahab Before walking into a Yoga session at one of the hotels I ordered a Turkish coffee from one of the waiters. He walked into the Yoga room with a tray and coffee 5 minutes into the Yoga session everyone was visibly shocked as I came to greet him took my coffee placed it next to my mat took a sip and continued stretching. I'm sure if it was hibiscus tea people would have been more forgiving for the intrusion

Blue Straggler Aharon what do you mean by "spoilt" diver in this context? Where is that coming from, I've not seen anyone else refer to "spoilt"?

Ken Kiriama No **Yaron Hoory** you were disturbing a whole Yoga class hibiscus tea or coffee doesn't matter

Ryan Curley Oh is that 'hot yoga'?

Ioannis Aliazis Hey all, just an update that the whole of this thread is saved here: <https://www.dropbox.com/.../food%20before%20dives.pdf...>
Also, I just scoured wikipedia for info on the research Tomas Schiffer posted and created a short document with descriptions of some basic concepts, to get us started on trying to understand the technical jargon, you'll find that here: <https://www.dropbox.com/.../ROS%20hypoxia%20background...>