



SUPPLEMENTS 101



Written by
Martin MacDonald

Table of Contents

Foreword.....	3
Introduction	4
1. Optimal Health.....	6
Omega 3 Fish Oils (EPA+DHA).....	6
Vitamin D3	8
Organic Virgin Coconut Oil	9
Almond Butter	9
SuperVeg XS.....	10
SuperFood XS	10
Coming Soon... ..	11
2. Fat Loss	11
3. Muscle Gain	11
4. Athletic Performance	11
4.1 Endurance Athletes	11
4.2 Team Sports.....	11
Disclaimer	12

MYPROTEINTM
FUEL YOUR AMBITION

Foreword *“A short introduction to a book, typically by a person other than the author”*

OK, so technically this isn't a foreword as I'm writing it... I simply wanted to write a short preamble to declare some interests I have as well as setting the scene for this eBook.

Writing this eBook is in part designed to save me time in the future. Every other question I get asked seems to be about supplements and hopefully this eBook will go some way to documenting all of my recommendations. There will be situations where an individual's needs denote that the exact protocols used here don't work but I can't account for that in a free eBook! Another reason for having this information as an eBook rather than as an article on the website is because it means I can incentivise 'liking' my [Facebook](#) page and signing up for my newsletter. Therefore, rather than forwarding this eBook onto your friends, please get them to sign up or 'like' the page as this way they will benefit from all the other information Mac-Nutrition has to offer.

There is so much misinformation in the world of supplements, mainly driven by money. Lies upon lies are told due to poor regulations. Big advertising budgets, clever writing and lazy consumers makes it possible to convince people that the new fangled products are just what they need to reach their goals. Combining 100s of ingredients and giving products fancy labels sells.... but I hope readers of my website will be clued up enough to see past that and start saving themselves a lot of time and money by following the recommendations that follow.

At the time of writing this eBook I am the nutrition expert for [MyProtein.com](#) therefore as you can imagine, their products feature! However, as you will see from my writings about MyProtein on my website, it is a perfect pairing. I have been using and recommending their products for something like 8 years now; MyProtein fit with my ethos perfectly. They do not try to hype their products or use clever advertising to trick you into buying it. The products are high quality at low prices and best of all you can buy individual ingredients! All too often other companies have a product that contains one good ingredient but there are several other pointless items in the product that you are paying for. With MyProtein you can buy exactly what you want in quantities you want.

For these reasons it makes it very easy for me to recommend MyProtein without undermining my credibility. This eBook is designed to give you information so that you can make educated decisions. A final word, if you do happen to find a product/ingredient sold cheaper than can be found at MyProtein, you can use their [Price Beater!](#) All angles covered.

Every product and photo of that product is hyperlinked to the page where you can view tub sizes, flavours and prices so you will not find any of that information here.

So, without further ado, let's begin.

Introduction

There are very few supplements that are necessary for optimal health. Certain ailments or issues may cause need for supplementation with a specific nutrient but do not fall down the trap of thinking that more is better! It can in fact be worse! If you are anaemic and for some crazy reason don't eat red meat then an iron supplement *might* be necessary however there is no need for everyone to take iron supplements. The same goes for many of the individual, synthetic vitamins and minerals. For these reasons, many of the 'supplements' within the optimal health section are not really supplements; more like 'convenient foods'. If you don't call butter a supplement then coconut oil isn't one. If cheese isn't a supplement then why should they be labelled in such a way? However, there are a few supplements that almost everyone can benefit from and these are detailed.

Enhancing performance is one area that lends itself to supplementation. We are no longer looking at optimal health or eating based on our ancestry; we are looking at specific nutrients that, with higher doses than are provided by normal food consumption, can enhance performance. I remember reading a UK Sport document a few years back that said something along the lines of *"there is no need to take supplements, everything you need can be gotten from food."* The first supplement that came to mind was creatine and the thought "yeah! If you want to eat a kilogram of horse meat per day!" There are some supplements that taken in a specific amount and in a specific way can enhance performance either acutely or through improved training/enhanced adaptations to training.

Believe it or not, I am not a huge supplement advocate. There are other practitioners who I believe deserve no other title than 'snake oil salespeople' for their complete disregard for proper evidence based recommendations. These individuals recommend every supplement under the sun using other people's hypotheses and animal studies to 'prove' their effectiveness. Whether it is money or a desire to be 'radical' or both that causes this I do not know but you won't get that from me! Aside from this you also have the 'broscience' that pervades the internet, fuelled by marketing from companies and muppets who just love the placebo! Over the years I have heard this phrase all too many times:

"When I take Supplement X I get absolutely amazing muscle/performance gains."

I generally have one of two responses. Response A doesn't generally leave my head:

"If you get such amazing gains from Supplement X... Why aren't you bigger or better? Or were you just really REALLY terrible to begin with?"

Response B is generally what leaves my lips or finger tips:

"Even taking a supplement like creatine, which is one of the most proven supplements in the world and one that can have fairly dramatic effects on performance, whilst also having a pretty good grasp of my diet and how my body works, I still don't notice 'amazing gains'. Therefore I find it hard to believe that Supplement X is actually making that much difference to you.... ever heard of the placebo effect?"

In essence what I am trying to say is that, I am not a supplement pusher. I am still highly sceptical even when fairly convincing research is published... sometimes to my own detriment. This eBook is designed to outline a few ingredients/products that have a good level of backing in well-conducted human studies. Various bodies have levels or groups of

supplements: 1, 2, 3 and 4 or A, B, C and D. Generally the supplements in Groups 'A' and 'B' are considered worthwhile. As far as I know, all but one or two of the supplements (as opposed to convenience foods) in this eBook sit within those two categories.

Group A: *“have been shown in scientific trials to benefit performance, when used according to a specific protocol in a specific situation...”*

Group B: *“have received some scientific attention, sometimes in populations other than athletes, or have preliminary data which suggest possible benefits to performance...”*
<http://www.ausport.gov.au>

I will highlight the supplements that do not sit within these categories and explain why I have still included them. There may be some supplements that I do not include too either because I do not think they warrant mention in a general sense or because I simply don't think they work due to experience with clients using them.

If you have any questions or comments relating to the eBook I have created a page on the website where you can ask these and see any discussion that goes on relating to it. This page can be found here: <http://www.mac-nutrition.com/supplements-101-ebook-discussion/>

Before we get started, I want to outline that this eBook will not be a literature review of every supplement. I will save that for articles on the website in future, even perhaps [written by some of yourselves!](#) Instead, I will reference studies that are particularly helpful or of interest and save the rest of the writing for explaining the what, when and why's of this topic. So let's begin with a topic that everyone, no matter what their goal needs to pay attention to! Optimal Health and functioning of the body!

1. Optimal Health

As I mentioned, there are very few supplements that are completely necessary for optimal health. I will not be covering any specific vitamins or minerals in this section for the very reason that the need for individual supplementation with micronutrients is rare. It is worth noting that this section is important not only for those concerned with their health but also for those concerned with optimal performance. An unhealthy body will not function optimally.

There are actually only two products in this section that I would consider supplements. The first of these I believe may actually one day become a population recommendation...

[Omega 3 Fish Oils \(EPA+DHA\)](#)



In particular here we are focussing on the EPA and DHA here. These are two omega 3 (n3) fatty acids that can benefit literally hundreds of different processes in the body and on many markers of health. These fatty acids are able to exert such profound effects due to their capability to alter the lipid composition of cell membranes, impacting cellular metabolism, signal transduction, and regulating gene expression (Froyland et al, 2011). A quick [pubmed search](#) on fish oil and health will bring up over 3000 papers! I can't even begin to scratch the surface of the strength of research behind supplementation with EPA and DHA, which is an article or eBook in and of itself!

One well-known benefit of n3s is their anti-inflammatory effect. It may well be that by supplementing with n3s we are simply increasing the ratio of omega 3s to omega 6s which indirectly reduces inflammation. Therefore, those who have a good grasp of their diet and are not cooking with vegetable oils (high in omega 6) and consuming cast amounts of processed foods, may actually not need to supplement with as much EPA and DHA. In fact, someone consuming a 200g piece of salmon, 4 times per week, would be getting approximately 24,000mg of omega 3s per week, which is likely enough to get most if not all of the reported benefits. Note, you must eat the skin to get all of the EPA and DHA and make sure your fish isn't burnt! EPA and DHA are highly unsaturated oils and are therefore easily damaged by heat.

One concern I am often faced with is the issue of heavy metal contamination in both farmed and fresh fish! This is something I simply can't give an accurate answer on. The levels of contamination will vary but should at least be below government guidelines... lets just hope these guidelines are better than the Eatwell Plate! It is for these reasons I actually prefer to recommend people get the majority of their EPA and DHA from supplemental sources where the heavy metals have been removed. MyProtein guarantees a maximum of 0.1ppm Heavy Metals in their product, which is 10 times less than is allowed in foodstuffs!

A note on Flaxseed and Cod Liver Oil (CLO) vs Omega 3 fish oils. Firstly, Flaxseed is an excellent source of omega 3, however this is in the form of Alpha Linolenic Acid (ALA). ALA is an essential fatty acid, meaning we can't synthesize it in the human body. ALA converts to EPA and DHA via a very inefficient process, around 1-10% efficiency. Therefore, it is better advised to get your EPA and DHA from marine sources. Cod Liver Oil is one such marine source but it also contains both Vitamin D and Vitamin A, two important fat-soluble vitamins. While there is a wide prevalence of Vitamin D deficiency/insufficiency, the same can not be said for Vitamin A. Therefore, while I have no real issues with supplementation with CLO, I prefer to supplement with Vitamin D separately and not risk any potential Vitamin A toxicity.

Dosing

Those who don't eat oily fish

For those who don't eat oily fish regularly or at all, to get the minimum recommended amount of EPA+DHA you should take **2 capsules daily**, which will provide 600mg of EPA+DHA. This sits in line with population recommendations for minimum intakes (Gebauer et al, 2006). For the average person eating the average UK diet I think this is too low considering the prevalence of vegetable oil consumption. Similarly, taking into account the research looking at the beneficial effects of fish oils on fat burning I tend to recommend a baseline of 3 capsules per day for anyone who is interested in looking good naked...

Pre-existing cardiovascular issues

The goal for someone with pre-existing cardiovascular disease is to get at least a total of 1000mg of EPA and DHA. Therefore, supplementing with **3-4 capsules** per day will take you to 900-1200mg. Remember you can factor in your intake from food also.

Pregnant and Lactating women

Supplementation of EPA and DHA by pregnant and lactating women has shown some promise in improving cognitive function, visual acuity in infants as well as maintaining maternal HDL (good) cholesterol levels. Doses of up to 2000mg of EPA+DHA have been used. It seems in research, supplementation is done from week 18 of pregnancy until 3 months after delivery but this varies by study. I see no reason a moderate dose can't be taken as per normal throughout pregnancy and tapered up if you wish to during these important periods of neural development of your baby.

Joint Health

"Many of the placebo controlled trials of fish oil in chronic inflammatory diseases reveal significant benefit, including decreased disease activity and a lowered use of anti-inflammatory drugs." (Simopoulos, 2002).

The problem is that dosing has not been tied down to one effective figure. However, it does seem that high doses are needed if inflammatory disorders such as rheumatoid arthritis are going to be touched! I would recommend you start off with a standard dose of 3 capsules daily (900mg) and work your way up to 40mg/kg bodyweight. So for a 70kg individual working up to 2800mg, which is around 9-10 capsules.

Blood Pressure

1500mg, the equivalent of 5 capsules was able to significantly reduce both systolic and diastolic blood pressure in overweight adolescents (Pedersen et al, 2010).

Fat Loss

See Fat Loss section

Warning: Taking more than 3000mg EPA+DHA (10 capsules) might cause adverse effects on the immune system or blood clotting. If you are taking blood thinners, speak to your doctor before starting to take fish oils. If the Dr recommends staying on the drugs and not using natural alternatives you may want to find a new Dr.

Vitamin D3



Vitamin D is at present a buzzword in the medical community. Research over the last 2-3 years on Vitamin D has gone into overdrive. It's almost impossible to keep up with new publications showing the latest tissue (e.g. muscle) in the body that has been found to have Vitamin D receptors! The sudden increase in interest has been driven by the realisation that, using our current definitions, there is an epidemic of Vitamin D deficiency and insufficiency. Other than the fairly well accepted roles of Vitamin D in bone health and immune function there is now an ever increasing amount of evidence that implicates vitamin D deficiency with an increased risk of type I diabetes, multiple sclerosis, rheumatoid arthritis, hypertension, cardiovascular heart disease and cancer (Holick, 2005). Hopefully that highlights exactly why it is such a focus at present and why it makes it into my top two supplements.

Vitamin D is most commonly known as the 'sunshine vitamin' but with the lack of sun in the UK, as well as the wide spread use of sun creams, the ability to synthesise Vitamin D is hugely reduced. Even factor 8 sun creams reduce the skins ability to make Vitamin D by 97%! Because of the relatively recent discovery of Vitamin Ds wide ranging effects, the research database is still in its infancy so please do not take the information on Vitamin D contained within this eBook at face value. There is a lot left to be researched and confounding variables to be discovered and factored into statistical analysis.

Information for you and your Doctor

Its so frustrating that there are not standard units across the world for these things so to make life a little easier for you here are the UK references with the information you'd need to compare against US measurements.

25-hydroxyvitamin-D Levels (ng/mL)	
< 10	Severe deficiency
11 - 19	Deficiency
20 - 30	Insufficiency
30 - 50	Adequate
50+	Optimal

*1ng/mL = 2.5nmol/L

Dosing

Well, to start off, here is a quote from 400 BC that blows my mind. How cool would it be to be SO ahead of the game!?!

"Whoever wishes to investigate medicine properly should proceed thus: in the first place to consider the season of the year..." Hippocrates.

Amazing. Anyway, what this tells us is that the amount you supplement with depends on where you live, what time of year it is, how often you go on holiday etc; ultimately on how much sun exposure are you getting. A supplemental dose of 1000IU daily is supposedly enough to hit the bottom of the reference range, 30ng/l. The optimal range is thought to be 50 – 70ng/ml. In my experience, 1000IU has not been enough to bring someone up from the insufficiency range. A 'rule of thumb' is that every 1000IU increases levels by approximately 10ng.

The best case scenario is that you are able to go and get your 25-hydroxyvitamin D levels tested and then you can plan your dosing strategy based on this. However, where this is not

possible my personal strategy with athletes and clients alike is a standard dose of 2000-2500IU per day unless they are getting sun exposure that is significantly tanning their skin. This figure is well below any reported upper limits. Toxicity seems only to occur at daily intakes of 10,000IU for periods longer than 6months.

So that is the end of the 'supplements' but onto a couple of other useful additions, just to make you aware that they exist.

Organic Virgin Coconut Oil



Coconut oil not more a supplement than butter, however it does have some unique properties that make it a worthwhile addition to your nutrition plan. It is one of the few oils I recommend frying with. Due to its high saturated fat content it is much more stable at high temperatures.

The particularly interesting thing about coconut oil is the composition of its saturated fats. Coconut oil is mostly made from medium chain triglycerides (MCTs). MCTs are able to passively diffuse through the gut wall and not needing bile salts for digestion. They are digested much more like carbohydrates than fat therefore may have unique benefits in digestive disorders or in performance situations. Coconut oil is particularly high in lauric acid, which is known to significantly increase HDL levels. Coconut oil, along side animal fats just gives one other culinary option in terms of cooking. Something you will no doubt read throughout the internet is this:

"When lauric acid is present in the body, it is converted into monolaurin, a monoglyceride compound which exhibits antiviral, antimicrobial, antiprotozoal and antifungal properties."

These are things I am no expert in and don't feel I have the in-depth knowledge to pick apart research to really understand it enough to start making big statements about its effectiveness in such instances. Therefore instead I'll just stick to recommending it as a great addition to a health diet! The little research I have done on the topic has brought up some promising information; the most interesting was this paper: [Coconut \(*Cocos nucifera* L.: *Arecaceae*\): In health promotion and disease prevention](#). I'll leave you to do your own reading from here.

Dosing

As much as your nutrition plan allows and your taste dictates.

Almond Butter



Again, another excellent and tasty addition to your nutrition plan rather than a supplement. I mention almond butter in particular for a number of reasons. Firstly, due to its particularly good amino acid and fatty acid profile along with it being a good source of a number of minerals. However, the primary reason for its inclusion is as an alternative for peanut butter is for 'paleo' reasons. Peanuts are not actually nuts, they are legumes, and contain a lectin called agglutinin. Peanut agglutinin (PNA) has been shown in some cases to irritate the gut lining, which may lead to other inflammatory health issues. Peanuts are also much higher in omega 6 vs omega 3 therefore may be pro inflammatory in this way also.

Dosing

As much as your nutrition plan allows and your taste dictates.

Not a lot to be said about the next two items but I'll just give you the facts. They are not essential but I have found them to be useful with busy athletes and clients as well as myself.

SuperVeg XS

Super Veg XS contains:

Carrot, Red Beet, Mushroom, Broccoli, Cauliflower, Green Cabbage, Celeriac, Leek, Onion, Cucumber, Asparagus, Red Bell Pepper and Garlic.

These are not extracts, these are whole food actives and therefore contains almost all of the benefits as consuming the vegetables in their usual form. Obviously you will no longer be getting any water from your vegetables but I know this great other way to stay hydrated... Super Veg XS contains all the nutrients found in fresh vegetables including vitamins, minerals and antioxidants. With what we know about the effectiveness or should I say ineffectiveness of synthetic vitamins and minerals, this is an excellent supplement for anyone who doesn't feel they get enough from their habitual diet. In the world of sport it is currently being recommended that athletes consume 9 servings of fruit and veg. Super Veg XS also has the 'alkalising' effects that many hippies go on about. Now, as you may know I'm not a fan of all of the outlandish claims that are made about 'going alkaline.' However, in those consuming a lot of protein from red meat, I always recommend a substantial green vegetable intake and SuperVeg can be used to attain this.

Dosing

8g provides you with 1 serving of vegetables

SuperFood XS

Superfood XS contains:

Acai, Apple, Blackcurrant, Blueberry, Broccoli, Cranberry, Mangosteen, Pomegranate, Maqui Berry, Raspberry, Red Grape, Rosehip

As you can see, SuperFood XS contains many of the 'superfoods' that are so often talked about in the media. As I have said so many times, there is no such thing as a superfood, all REAL foods are superfoods in one way or another. As with SuperVeg, these are not extracts and therefore you are getting the same benefits as consuming the non dehydrated version. If you care about Oxygen Radical Absorbance Capacity (ORAC) values, SuperFood XS rates at about 5,500 ORAC units per 5g of powder. Unlike SuperVeg XS, I actually place the importance of SuperFood XS slightly higher. The ability to get such a wide variety of antioxidants on one small dose is excellent. With the negative effects of pollution, stress, training and at times sub optimal food choices, getting plenty of darkly coloured fruit and veg is a good idea. Likewise, if you have a wide variety of fruit and berries in your fruit bowl that you consume every day, don't buy this supplement. Simple.

Dosing

Use 5g on top of your usual fruit and vegetable intake.

And there we end the supplements for Optimal Health section. These are supplements and foods that can benefit everyone. There are others that can be useful when faced with specific issues or lifestyle restrictions but I have chosen to leave those out to hit the widest audience possible. The sections to follow will contain a lot of these supplements anyway so make sure you check back for updates!

Coming Soon...

2. Fat Loss

3. Muscle Gain

4. Athletic Performance

4.1 Endurance Athletes

4.2 Team Sports

Disclaimer

The information included in this eBook is for educational purposes only. It is not intended nor implied to be a substitute for professional medical advice. Reading the information in this eBook does not create a practitioner-patient relationship.

The reader should always consult his or her health care provider to determine the appropriateness of the information for their own situation, or if they have any questions regarding a medical condition or treatment plan.

Athletes should be reminded that they take supplements at their own risk. The information in this eBook does not constitute prescriptive advice, it is for information purposes only.