

Sports Nutrition

A complete Guide



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Please diet and exercise with caution and at your own risk

Introduction

Athletes are often concerned with dietary manipulations in the period around competition. However, the main role of nutrition may be to support consistent intensive training which will lead to improved performance. Meeting energy demand and maintaining body mass and body fat at optimal levels are key goals.

Often overlooked elements of Sports Nutrition however, include optimal dietary requirements for health, minimal systemic and muscular inflammation and enhanced immune function. A general feeling of wellbeing and energy are undervalued in Sports Nutrition but are fundamental for performance.

Nutritional Goals should include:

Maintaining energy supply to working muscles and other tissues

Promoting tissue adaptation, growth and repair

Promoting immune function

Reducing inflammation – a crucial marker in association with both recovery and general health.

Disclaimer – Consult your Doctor before adopting any dietary changes



Caveat for this book

Talking about nutrition has become like discussing politics and religion – everyone has an aggressive opinion. Sports Nutrition is certainly no different.

Throughout my time as a student, reading Sport & Exercise Science at Loughborough and Nutrition Science at Chester; I was taught that fat was ‘bad’ and carbohydrates were ‘good’. As athletes, we were encouraged to drink carbohydrate drinks with meals for extra calories.

To be fair, the high-carbohydrate protocol is supported by a large amount of research, showing that for sports such as rugby, football and boxing, it can improve performance, at least in the short term.

Inflammation

High carbohydrate diets, particularly high sugar diets (and other high glycaemic carbohydrates) can in some individuals, cause high levels of inflammation. Inflammation is directly linked to depression, physical diseases and poor recovery from physical activity. Again, in some, inflammation is heightened when processed foods, dairy and/or wheat is consumed.

In this book I have included carbohydrate drinks – e.g. maltodextrin based drinks as this is what research supports for optimal performance & recovery.

To avoid inflammation (and potential issues with gut flora) some may wish to replace some carbohydrate drinks and meals with those healthy fats, and sports drinks with coconut water and fruit such as a ripe banana.

Do what works for you

If you feel great, and you are full of energy and focus on a high carbohydrate diet, then great, carry on. In fact, there is a high-carbohydrate diet-plan included in this book, as research shows it can improve performance.

If however you are suffering any symptoms of high levels of inflammation, and/or high any gut problems like IBS, then consider switching to a diet with no sugar, no processed foods, and high levels of healthy fats, like those found in coconut milk, olive oil and fish.

Removing whole food groups from your diet, like dairy and/or wheat is controversial, and many doctors would be against it. I however found that removing dairy from my diet completely, literally changed my life and increased my energy levels dramatically. I would recommend listening to the arguments for and against the likes of dairy, carbohydrates, ketogenic diets etc and make your own mind up. The [Ted X talks on youtube](#) are a good

place to start.

As far as I am aware none of the adaptogens, supplements or herbs listed in this book are banned by the FA, IOC or FIFA, but please check with your manager or governing body.

One last thing – some of this book is written from the perspective of an MMA fighter, but the principles are pretty much universal.

My General Principles

- Focus on health & wellbeing as a base for recovery, mental focus & performance
- Eat a diet high in healthy fats and moderate in protein & carbohydrates day to day
- Increase carbohydrate intake on the day before and the day of a competition / match for sports such as tennis & football
- Eat lots of organic vegetables and fruits
- Avoid refined carbohydrates. They are useful (arguably) post match or workout when recovery is paramount. However refined carbohydrates will tend to impact gut health and cause inflammation

Despite my reluctance to recommend supplements over whole foods, research still supports the use of supplements such as maltodextrin - a refined carbohydrates and whey protein post training for optimising recovery.

Where possible this book will present both a supplement and a food viable alternative.

Creatine & Whey protein are also supported by many studies in terms of their use for improving athletic performance. Appendix 2 and 3 cover these supplements in detail.

Although I am very open minded in regards to vegan and ketogenic diets, at the time of writing there isn't enough research that I am aware of to support their use for athletes.

Gut Health

“All disease begins in the gut.” - Hippocrates

When looking to optimise health and performance through nutrition; gut health is often ignored in favour of nutrition immediately before and after exercise.

Inflammation often starts in the gut, and can lead to low energy levels, injury and burn-out. Importantly too – over 50% of the body’s immune system is in your gut, so you need to take care of it.

Here are some tips for improving gut health

- Improve the profile of your gut flora by consuming fermented foods and/or a probiotic supplement
- Again, improve your gut flora profile by reducing sugary, high GI carbs (unless required to meet high energy demands and for recovery)
- Drink glutamine on an empty stomach, first thing in the morning if ‘leaky gut’ syndrome is suspected
- Drink organic, apple cider vinegar – a tablespoon (or more, assess your tolerance) in water, drunk about 15 minutes before a meal improves digestion dramatically in most people.



- Gingko Biloba and NAC powder have personally helped with the IBS that I had. Gingko has a multitude of health benefits, but can thin the blood (usually not a bad thing), and increase the likelihood of a bleed on the brain

After giving up dairy and sugar I saw the biggest improvements in IBS. See appendix 1 for the FODMAP diet for IBS. The diet is a (long list) of foods to cut out for people who have trouble with IBS and bloating. Onions and garlic seem to be a problem for most people with IBS and/or bloating issues.

VSL 3 is also touted as a great supplement for those with gut issues, although I have not tried it myself yet.

General Eating Habits

If you take one message away from this book, please remember that Sports Nutrition starts with healthy nutrition, organic whole foods, preferably cooked from scratch. If you are eating protein bars full of additives and collagen, you are just being duped by Sports Nutrition marketing.



Omega 3 to Omega 6 ratio

Western diets are full of Omega 6 fats, and highly processed, heated fats, that cause inflammation. Omega 6 causes inflammation, which is the enemy for recovery and general health.

The easiest way to adjust this balance is to supplement with fish oil and cook with coconut oil, instead of vegetable oils. EPA is the anti-inflammatory element of omega 3. Look for fish oil (and krill oil) high in EPA.

Addressing the omega 3 to omega 6 ratio can have a drastic impact on health and in turn on performance due to a reduction in inflammation. If inflammation is a general issue, then addressing omega 3 and 6 intake is the best place to start.

Pre & Probiotic Foods

Back in the day, we had dairy from one cow, it was raw, untreated etc. and full of goodness. Nowadays the milk (and most other products) come from about 1,000 cows, mass milked, full of drugs to make them produce more milk and anti-biotics to stop them getting infections, the milk has to be heated to 97 degrees so it doesn't kill us...what you end up with, is a product that is on a different level (a lower one) to what our great, great grandparents and their mates drank.

If the balance of bacteria in our gut isn't right, we'll feel sluggish and generally less well.

Although for most people, an imbalance in gut flora may cause mild fatigue, it can't be over-emphasized how important this bacteria is. Imbalances have been linked to everything from autism to chronic fatigue and auto-immune issues.

Look to get some of these in your diet:

Raw honey, miso soup, kefir, dark chocolate, sauerkraut, kombucha tea (might be a bit on the yeasty side for some people), pickles and olives. Alternatively take a high quality probiotic supplement, 1 on an empty stomach and 1 later in the day with food.

High Quality Carbohydrates

Include sweet potatoes, buckwheat, quinoa and oats. Avoid sugar and High Glycemic carbs, except for post-training, as sugar is highly inflammatory. More on this later....

Coconut milk and/or oil for extra calories

If you are struggling to consume enough calories try adding coconut milk to a smoothie with hemp seeds and fruit. Most commercial coconut milk, is 95% water and about 3% coconut milk. For extra calories get pure coconut milk, or as near as possible to pure coconut milk – try the tins or the dried coconut milk, rather than the cartons of coconut milk, which tend to be watered down.

Nuts have also been used in the past for extra calories, however recent research suggests that the human body is only able to assimilate around 70% of the calories found in nuts ([source](#)).

Avocados are also great blended in smoothies, olive oil and some people even throw in raw eggs. Having not researched the likelihood of salmonella I wouldn't recommend the eggs myself

Experiment with Dairy and Wheat Free

Controversial but if your energy is low, this is worth a try. It's not for everyone, but try

it for a week and see how your body and digestive system feels. Dairy is also known to cause inflammation in many people. This is an especially good idea if you suffer from any bowel complaints such as IBS. See the appendix for the FODMAP diet for (potential) IBS treatment.

I personally used to have horrendous problems with asthma and sinusitis which have greatly improved since switching to dairy-free.

Experiment with Alkaline Foods

Some nutritionists claim that alkaline diets are superior for health and also endurance. Try adding wheatgrass and spirulina to your diet, and minimise the consumption of citrus fruits and of course – soft drinks.

The whole alkaline diet concept remains controversial. Some claim it can prevent cancer, whilst others claim it does nothing for health. There is some research to suggest that [baking soda](#) (which is highly alkaline) can inhibit tumour growth.

Consume natural anti-inflammatories

Eat more:

Ginger, Tumeric, Garlic, Onions, Red cabbage

High magnesium foods such as spinach, squash and pumpkin seeds and fish such as Mackerel

Try Pineapple for its bromelain content (you can also buy bromelain as a supplement)

Magnesium is also great for muscle relaxation if you are tense from training.

Eat/Consume less:

Alcohol, deep fried foods, artificial sweeteners and additives, sugar, vegetable cooking oils, dairy & processed meats as these can cause high levels of inflammation.

Nightshade fruits such as tomatoes are also linked to high levels of inflammation. Consider cutting down on these if suffering with knee, back or any joint inflammation.

Consume fresh, whole foods, in their original state if possible

Take table salt for example – consume sea salt or Himalayan salt, not table salt that has been bleached.

Another example – eat organic, grass fed beef, not processed meat. Eat organic food, that's as fresh and 'unprocessed' as possible.

Broccoli Sprouts

If you are a fan of Dr Rhonda Patrick, you may well have heard about the health benefits of broccoli sprouts. Unfortunately, you have to grow them yourself.

Broccoli sprouts contain very high levels of a compound called Sulforaphane – an extremely potent antioxidant and anti-inflammatory.



Supplements



An ideal diet would contain largely raw foods, and no supplements. Having said that, in practical terms, I still think there is a place for supplements:

Protein Powder

One of the most aggressively contested topics in nutrition is related to protein consumption. How much people need, and whether or not it is bad for the kidneys. Research suggests that animal protein consumed in large quantities is *possibly* harmful.

Looking at further research, which is the only thing you can really do, it is recommended that athletes consume between 0.6g and 1.2g of protein per pound of bodyweight. Whey, egg or hemp protein powder are usually recommended.

Research does also suggest that consuming protein after training increases [muscle mass](#) and when taken during rehab, [can increase recovery rate](#). I would personally recommend hemp protein, but any protein powder should be consumed as a supplement to a healthy diet, and ideally use unflavoured protein powder, make a smoothie with the likes of kale, ginger, spinach, flaxseed and coconut oil.

There a large body of research suggesting that leucine content is important in regards to the protein-synthesis that a particular protein source promotes. Whey protein has the

highest concentration of leucine. Interestingly however, the research into leucine has been largely funded by the Dairy Council (making some people very cynical about the claims related to it), and it has also been linked to accelerated tumour growth – especially in prostate cancer.

Hemp seeds, blended with other whole-foods make a great alternative to protein powders. Quinoa can also be used.

Medium Chain Triglycerides (MCTs)

Found naturally in coconuts, MCTs can provide extra calories when required and possess many health benefits.

Creatine – Consume Daily – Ideally Post-Training

Creatine monohydrate, consumed with simple carbohydrates such as dextrose have been shown in dozens of studies to enhance intermittent high intensity exercise performance. Research suggests ‘loading’ (taking 20g of creatine a day for 5 days) is not necessary. Instead consume 3g a day with 20-30g of dextrose or another simple carbohydrate such as maltodextrin. Post-training is the ideal time to consume a drink containing creatine and carbohydrate.

Research also suggests that consuming 1000mg of **alpha lipoic acid** immediately before consuming a creatine/carbohydrate drink, enhancing skeletal muscle uptake.

Acetyl-L-Carnitine – Consume pre-training / fight

Great caffeine free supplement for enhancing mental power and physical energy. Try a small amount to begin with, as it can cause stomach upset if you are not used to it. I use 200mg for an endurance boost, but others advocate 2-3g. Please note, although prior research suggested that L-carnitine was good for the heart, recent research suggests it may change gut bacteria if used frequently, which in turn can accelerate atherosclerosis.

Beta Alanine – Consume pre-training / fight

This amino acid raises carnosine levels, which helps to buffer the influence of H⁺ ions which cause acidity and fatigue. Watch out for the tingling!

Baking soda is a good alternative to beta alanine – don’t consume with meals and assess tolerance however, as it can cause GI distress.

Caffeine – Consume pre-training / fight

Some experts state that caffeine, taken for prolonged periods at high dosages can lead to adrenal fatigue. Either way, it does dramatically enhance endurance.

Caffeine can be consumed with beta alanine or acetyl l carnitine. Caffeine is relatively safe; however I was unable to find any research on the safety of long term use of beta alanine or acetyl l carnitine.

Carbohydrate & Electrolyte Drinks

Important to consume during and after training and fights. You can make your own using maltodextrin powder and adding a pinch of salt. Research suggests that consuming some carbohydrate during training is important to prevent a dip in immune-system-functioning.

A ripe banana and coconut water is a nutritious alternative to a carbohydrate drink.

Fish Oil

Look for fish oil with a high EPA content. This is the element of omega 3 that has anti-inflammatory properties. Supplement with 1 to 15g per day depending on the EPA content and your own muscle and joint soreness.

Ginkgo Biloba

A great anti-inflammatory supplement that also enhances mental performance. If you are looking to increase energy levels, mental focus and/or enhance recovery rate, consider supplementing with Ginkgo Biloba.

Greens Powders

If you struggle eating enough organic fruit & vegetables, consider supplementing with 'greens' powders such as wheatgrass and spirulina.

Leucine

There is some research to suggest that Leucine greatly enhances protein synthesis via the mTor pathway – however there is also research to state the it increases the growth & division of cancer cells. So use with caution.

Magnesium

Magnesium is required for muscle relaxation. If you suffer from sore muscles and a stiff back and neck, try supplementing with magnesium. Check your tolerance though, as it can cause loose bowels if you take too much.

Beetroot Juice

Research suggests drinking around 140ml (2 shots of 'Beet-it' shots of beetroot juice, 2-3 hours before an endurance 'event' can significantly decrease blood pressure, and increase endurance, thanks to the nitrites. Again, use with caution, as unfortunately a high consumption of nitrites, is linked to an [increased prevalence of some cancers](#).

Taurine

If you 'suffer' from pumped up muscles, stiff shoulders when striking and/or pumped forearms when grappling, that weaken your grip, then taurine may very well help. Consume 3g about 30 mins before training. Do not take at the same time as beta alanine, as they will

compete for absorption

Medicinal Mushrooms

No, not magic ones, no for sports nutrition anyway. However mushrooms including chaga and Lions Mane, may help recovery and also improve alertness.

Lions Mane mushrooms for example can be purchased in powder form. They have been shown to increase nerve growth factor and increase alertness. As a result I believe they could increase performance and cognitive abilities.

Why it's so hard to evaluate the effectiveness of supplements

I used to check the effectiveness of supplements, by going to Google Scholar online and checking out the studies that relate to the supplement. However, having looked into it a bit further, many studies are potentially misleading and sponsored by companies that have a financial interest in them. For example the dairy industry is said to have sponsored a number of whey protein and leucine studies.

Who knows what goes on really though, studies tend to give you a good idea if something is effective or not, just don't treat them as gospel.



Adaptogens

Adaptogens are a group of herbs and foods that are able to offset some of the effects of physical and mental stress on the body.

If you are struggling to recover in between training sessions, then they are worth considering as part of your nutritional regime.

Korean Ginseng

The most famous adaptogen there is. Stacks of research to show that this herb increases immune functioning and reduces fatigue. [Study](#)

Rhodiola Rosea

Rhodiola rosea is a flowering plant, which resides in all the ridiculously cold regions of the world. Including Iceland, North America, the Arctic and the UK. It has been showed to reduce fatigue and enhance mental clarity. [Study](#)

Ashwagandha

Also known as 'Indian Ginseng', this herb is a powerful antioxidant. Studies suggest that this herb not only reduced stress and cortisol levels, it also 'fights' cancer. It is also a strong anti-inflammatory, suggesting that it will help enhance recovery. [Study](#)



Natural Testosterone Boosters

These supplements have limited impact (don't expect miracles or steroid like muscle-gain) but as a man in my mid-30s, I have personally found them useful for recovery.

Fenugreek

It won't make a huge difference to testosterone levels but can make you feel more vitality and perhaps help with recovery. Buy the powder from an Asian food store, not an overpriced supplement version. More info [here](#).

Mucuna pruriens AKA Velvet Bean

Limited evidence for its effectiveness but I personally find it helpful. Use sparingly, as these herb also affects [dopamine](#) levels. Taken at night time, it also results in crazy dreams! More info [here](#).

Tongkat Ali

There is a notorious amount of fake tongkat ali on the internet, but if you can get the genuine stuff then it's been proven to reduce estrogen and libido. Limited research on its ability to directly increase testosterone.

Zinc

Ideally add zinc to your diet by consuming zinc-rich foods such as spinach.

For a full list of testosterone boosters, see the [Examine.com webpage](#)



The Glycemic Index



The Glycemic Index (GI) is basically an update to the concept of simple and complex carbohydrates. It is a measure of how quickly carbohydrates raise blood sugar level following consumption. It is relative to pure glucose. For example, if a piece of white bread has a GI of 70 – it would indicate that white bread raises blood sugar at a rate 70% as much as pure glucose; over a 2 hour period.

Generally an athlete should look to consume foods with a GI of 60 or below. It is important to note however, that as low GI foods take longer to digest, than can cause GI distress in some individuals. It is also less practical to get all of an athletes carbohydrate requirements purely from low GI carbohydrates. A mixture of GI types/scores is therefore often recommended. GI has little impact on carbohydrate loading.

The Glycemic Load (GL) is a number that estimates how much a food will raise a person's blood sugar level by. High GL foods, like high GI foods cause blood sugar to rise rapidly. Very high GL foods should ideally only be consumed within 2 hours after a training session or fight.

GI and GL for Common Foods

Food	GI	Serving Size	Net Carbs	GL
Peanuts	14	4 oz (113g)	15	2
Bean sprouts	25	1 cup (104g)	4	1
Grapefruit	25	1/2 large (166g)	11	3
Pizza	30	2 slices (260g)	42	13
Lowfat yogurt	33	1 cup (245g)	47	16
Apples	38	1 medium (138g)	16	6
Spaghetti	42	1 cup (140g)	38	16
Carrots	47	1 large (72g)	5	2
Oranges	48	1 medium (131g)	12	6
Bananas	52	1 large (136g)	27	14
Potato chips	54	4 oz (114g)	55	30
Snickers Bar	55	1 bar (113g)	64	35
Brown rice	55	1 cup (195g)	42	23
Honey	55	1 tbsp (21g)	17	9
Oatmeal	58	1 cup (234g)	21	12
Ice cream	61	1 cup (72g)	16	10
Macaroni and cheese	64	1 serving (166g)	47	30
Raisins	64	1 small box (43g)	32	20
White rice	64	1 cup (186g)	52	33
Sugar (sucrose)	68	1 tbsp (12g)	12	8
White bread	70	1 slice (30g)	14	10
Watermelon	72	1 cup (154g)	11	8
Popcorn	72	2 cups (16g)	10	7
Baked potato	85	1 medium (173g)	33	28
Glucose	100	(50g)	50	50

GI aside, appropriate timing of carbohydrate intake is also vital. [Research](#) has shown that carbohydrate supplementation during soccer matches has been found to result in muscle glycogen sparing (39%), greater second-half running distances, and more goals being scored with less conceded, when compared to consumption of water. Carbohydrate supplementation has been recommended prior to, during, and after matches.

In a separate study, movement analysis of a 4-a-side indoor soccer game lasting 90 min

was undertaken following 48 h of high (approx. 8 g/kg/day) or moderate (approx. 3 g/kg/day) carbohydrate intake. The high-carbohydrate diet increased muscle glycogen by 38% and allowed soccer players to complete approximately 33% more high-intensity work during the game.

If you weigh 80kg, 8g per kg per day is 640g of carbohydrate and 2560 calories just from carbohydrate. This is a lot of carbohydrate to eat daily! This is especially true if you rely on whole foods, with low GI properties to be the primary source of carbohydrate in your diet. Smoothies and drinks are a great way to get more carbohydrate in an athlete's diet, whilst minimizing GI discomfort and bloating.

To ensure that the ideal amount of calories are being consumed, a coach should monitor the team's body fat percentage, and waist circumference. An athlete can work out their approximate calorie requirements by doing the following:

– First start by working out Basal Metabolic Rate (BMR) using the below equation (or just use an online 'BMR calculator'):

For men: $BMR = 10 \times \text{weight (kg)} + 6.25 \times \text{height (cm)} - 5 \times \text{age (years)} + 5$

For women: $BMR = 10 \times \text{weight (kg)} + 6.25 \times \text{height (cm)} - 5 \times \text{age (years)} - 161$

– Then use the Harris Benedict Formula, to work out your calorie requirements, based on your physical activity levels:

– If you exercise 1-3 days a week, x your BMR by 1.375

– 3-5 days a week BMR x 1.55

– 6-7 days a week BMR x 1.725

– if you have a physical job and train most days, BMR x 1.9

Author's note – Although research suggests a high carbohydrate diet is the mainstay of any athlete's diet and results in an enhanced athletic performance in most sports lasting longer than 60 seconds; consuming a vast amount of carbohydrate every day, may cause inflammation and not be the best for long term health. To offset any negative health effects of 'sugary' carbohydrates; consume high GI carbohydrates within 2 hours of training and the day before a fight.

Some nutritionists and recent research suggests that eating fats from nuts, fish and hemp for example, may be a more healthy way to reach calorific needs day to day. Then 2 days before a fight or competition increase carbohydrate intake and decrease fat intake to load the muscles and liver with glycogen (carbohydrate). See the next section on Ketogenic

diets.

Example High Carb Meal Plan

8am

High protein porridge (oats, ground almonds, banana, coconut milk, raw honey) - 350 calories

10am-12pm Training

Consume maltodextrin/carbohydrate drink during training (150 calories)**

12pm

Protein & carbohydrate drink (30g whey/hemp protein, 10g flaxseed, 10g coconut oil, 10g oats) + banana – 350 calories

1pm

Jacket potato / sweet potato, tuna, salad with olive oil or hemp oil & handful of almonds.
Raw Cacao chocolate bar. – 750 calories

3pm

Super Lazy Smoothie*

Handful of mixed nuts – 500 calories

6pm

Main meal – Noodle stir fry* - 500 calories

8pm

Handful of mixed nuts & glass of coconut milk (unsweetened & no additives) – 250 calories

9pm

Rice cake with peanut butter – 200 calories

Consume at least 2 litres of water (preferably filtered and with a pinch of Himalayan salt OR coconut water)

Snack on fruit such as organic goji berries, nuts, mulberries & pumpkin seeds

*See recipes

**Alternatively drink coconut water during training

Experiment with meals and carbohydrate content of day to day meals during the off season, and monitor the effect on performance and energy levels.

The quality of the meal plan and the nutritional content depends largely on how the food is sourced. For example, if the 1pm salad contains homegrown organic watercress, spinach, carrots and tomatoes, it will have many more micronutrients than a pre-packaged salad bought from a high street store.

This applies to all the food in the meal plan. Peanut butter for example should be organic, and contain no added sugar or preservatives, just peanuts and a small amount of added oil. Honey should be raw and not a 'blend' of filtered honey. Manuka honey is regarded as the most nutritious, but is also very expensive.

I would recommend high carbohydrate meal-plans on training days and the day before a game or competition. Recent research suggests that once your body's carbohydrate/glycogen stores are full in the liver and muscles, you will produce palmitic acid; which in turn can lead to insulin resistance. See study [here](#).

Supplements such as whey protein can be replaced with whole foods such as hemp seeds (blended) to make a more nutritious post workout/training shake.

A Quick Note on Ketogenic Diets

This is where it gets somewhat confusing. A growing number of nutritionists and athletes are now recommending ketogenic diets over high carbohydrate diets – not only for weight loss, but for athletes. This goes against ‘traditional’ thoughts in sports nutrition, as to enter ketosis, an average person would have to eat less than 40g of carbohydrate per day.

There is some research to suggest that high carbohydrate diets (especially high GI) and grains can cause systemic inflammation which is a primary marker for many diseases and also has major implications for recovery and performance.

This is not something that I can claim to be an expert on. However, having given up sugar and replaced it with coconut milk as my main source of ‘additional’ calories, I have noticed a marked decrease in inflammation and bloating.

If you are interested in a ketogenic diet, then have a read of [Rob Wolf’s](#) and Mark Sisson’s blogs. There is research suggesting that when an athlete’s body does become ‘fat-adapted’, it can enhance endurance performance. See a [study here](#).

Benefits of the keto-diet i(some proven, some not) include:

Improved [blood lipid profiles](#)

Lowered body fat

Increased energy – ketones are touted as a superior fuel for focus and physical energy

Stable blood sugar levels

Reduced Inflammation and [neuroprotection](#) (protects brain cells and/or brain function in some manner)

Research in regards to ketogenic diets is very promising, although I’m not 100% convinced on the suitability of the diet for power athletes. At this point in time, I’m personally sticking with a diet with moderate amounts of carbohydrates, and healthy fats. No sugar, no grains. I’m also slowly introducing MCTs into my diet.

Remember that it can take a month to become ‘fat-adapted’ and during that adaptation phase, you can feel pretty lousy.

Making Weight in Boxing or MMA

General tip – never trial something new the week before your fight. Be well prepared in all areas, this includes weigh cutting protocol



Always seek professional supervision. This can be highly dangerous

To 'comfortably' make weight for a fight, you need to get to be within 20lbs of your target weight, a week before.

If you're 30lbs or more over your fight weight, 6 weeks before you'll need to start dieting with 5 meals a day. High protein, moderate carb diet, with large amounts of fresh and organic vegetables and meats, large amounts of omega 3, and low amounts of sugar.

- You will need a diet that produces a calorie deficit.

First start by working out your Basal Metabolic Rate (BMR) here - <http://www.bmi-calculator.net/bmr-calculator/>

Then use the Harris Benedict Formula, to work out your calorie requirements, based on your physical activity levels: - If you exercise 1-3 days a week, x your BMR by 1.375 - 3-5 days a week BMR x 1.55 - 6-7 days a week BMR x 1.725 - if you have a physical job and train most days, BMR x 1.9

I'm 5ft 10, 200lbs and train about 4 times a week. So my calorie requirement would be 3060 calories.

If you want to lose 10lbs in 6 weeks, you'll need to produce a calorie deficit over those 6 weeks of between 20,000 and 35,000 calories; depending on how fat you are. To lose 1lb of fat, in theory you'd need a deficit of 3,500 calories. So to lose 10lbs, you're looking at 35,000. So you'll require a calorie deficit of between 500 and 800 calories per day.

[Here](#) is a possible 3,000 + calorie diet plan.

Basic Principles/Theory behind final weight Cut

1 gram of carbs, stores an additional 3 grams of water, so carbs need to be reduced - Sodium/salt makes the body retain water (so don't have any) - Drinking lots of water, according to [Martin Rooney](#), makes the body trigger hormones, which in turn, cause the body to excrete more water than normal. So by drinking 2 gallons, and tapering it down to no water at all, the body will lose more water weight.

Protocol to lose around 15lbs in a week

6 Days out from the weigh in:

Day 1: Increased water consumption effects the regulation of aldosterone, a hormone which influences water retention and sodium: Drink 9 litres of water (some people recommend distilled water) Eat around 50-60g of carbs Plenty of protein and fats, within 3 or 4 meals, no snacks Plenty of organic veg, omega 3 etc. You'll need nutrient dense food to stop you feeling too run down. This is the same for every day except the weigh in day. No Salt

Day 2: Drink 4 litres of water Eat around 50g of carbs Plenty of protein and fats, within 3 or 4 meals, no snacks No Salt

Day 3: Drink 4 litres of water Eat around 50g of carbs but no starches or sugar Plenty of protein and fats, within 3 or 4 meals, no snacks No Salt

Day 4: Drink 2.5 litres of water Eat around 50g of carbs but no starches or sugar Plenty of protein and fats, within 3 or 4 meals, no snacks No Salt

Day 5: Drink 2.5 litres of water Eat around 20-40g of carbs but no starches or sugar Plenty of protein and fats, within 3 or 4 meals, no snacks last meal by 6pm No Salt It is generally agreed that you should be about **3-6lbs over your weight-in weight, the time you go to bed** before the night before the weigh-in.

Weigh in Day: 2 very small meals less than 10g of carbs No water or salt until weigh in

Weight Loss through Sweating

– **VERY dangerous and potentially damaging to performance**

Be aware of physical effort and energy expenditure if making weight for a fight. You can do low intensity cardio wearing heavy or waterproof clothing the day of your weigh in. Weigh yourself at 5 minute intervals.

You can soak in a hot bath the night before the weigh in. Weigh yourself at 10 minute intervals. Put everything in the water, except for your mouth and nose. Towel off after each interval and weigh yourself, do not shower, as this can make you gain more weight. Take 5-10 minute intervals between 10 minute bouts in the bath.

Pooing out the Pounds Martin Rooney “By taking the gentle, natural laxative before you go to bed the night before the weigh in, you should wake and clear your bowels completely. Remember that you would only do this if you felt you were not going to make the weight with the methods listed above.”

Diuretics If completely necessary, then use the day before the fight. Dandelion root 250mg-500mg 3 times a day. If required you can also consume caffeine to increase dehydration and to help with pooing out some more pounds also. Consume 200mg with meals also.

Rehydration After Weigh In

– **Sip on 1L of distilled water as of 5 mins of weigh in** Distilled or purified water is absorbed more efficiently than tap water. Add sodium and 40g of maltodextrin to every 500ml of water. Gastric emptying is imperative for rehydration, and of all carbohydrates, maltodextrin has the least detrimental effect on the rate of gastric emptying. Consume 1 litre of water, every hour. – **Within an hour have a Cool Bath** – soak in a cool bath for 15 minute intervals. Consider adding Himalayan salt and epsom salts to the bath in quantities large enough to replenish electrolytes. Consider adding glycerol to the bath too.

Drink 2-3L of water with Glycerol, maltodextrin, whey protein, sodium & ALA – When the fighter is within 20% of his 'fighting weight' he can add glycerol to the water he/she is consuming. This is something that **MUST** be piloted months before a fight to make sure you can tolerate high amounts of glycerol. Consume around 50g of glycerol in 1 Litre of water. To pull even more water into the body and muscle cells, you can also consume 3-5g of creatine with every litre of water (don't consume more than 10g in a day). Again, consumption of creatine and tolerance to creatine needs to be understood well before the fight. Creatine should be consumed with caution, especially when dehydrated as it can be taxing on renal function. – To increase insulin secretion (and therefore glycogen loading) add 10g of protein for every 40g of maltodextrin. – Again to increase glycogen loading, consume 250g of Alpha Lipoic Acid before every litre.

– **Eat small meals every 30 minutes**, high in carbohydrates with a pinch of salt. – Keep an eye on the colour of your urine. If it's clear, this should mean you're rehydrated (as long as you've been sipping water and not downed 2 gallons in one go).

– It is possible to 'hyperhydrate' whereby the fighter puts on more water-weight than before the start of the weight-cut. This can actually improve strength and endurance but depends on the individual. Again, this something that needs to be trailed and tested. Hyperhydration would entail consuming more glycerol, creatine, alpha lipoic acid and maltodextrin. This needs to be done with caution; the glycerol can cause stomach cramps if the fighter is not used to large amounts.

Day of the Fight

– Either way, consume distilled water, with sodium and maltodextrin, 1L per hour, until 3 hours before the fight.

What to consume the 3 hours before the fight is again tailored to the individual. I would

normally recommend consuming the water, sodium and maltodextrin drink solution, but at lower amounts, up until 45 minutes before the fight. – Consume a high carbohydrate breakfast, with protein. E.g. oats/porridge, banana and ground almonds. – Eat another meal of similar macronutrient content, every 3 hours.

Personally I struggle to eat anything on the day of a fight, so normally blend a smoothie of hemp protein, oats and a banana. – Eat a meal with protein, medium/low GI carbs and water 3 hours before the fight. E.g. Sweet potato chips Broccoli Haddock or chicken breast 300ml water with 15g maltodextrin and a pinch of salt – Eat a carbohydrate snack such as a banana 90 minutes before the fight.

Do not consume solid food after this point. – Continue to sip on a carbohydrate sports drink if required. Take any pre-fight supplements 30 minutes before the fight. [Avoid stimulants if it's your first fight](#). I would recommend taurine or beta alanine, but that's another article...

Tip – you should have at least 1 'trial run' of a diet and final weight cut protocol, before you have to do it for a fight

Additional Thought about the 6 week weight cut

After writing this part of the book, I've thought of a slightly more accurate way of using the Harris Benedict Formula to calculate calorie needs. You just need to accurately work out the calories you expere during a week's training. I work out my calorie needs this way: According to <http://www.bmi-calculator.net/bmr-calculator/> my BMR is about 2000 calories. Multiplied by 1.2 this gives 2400 calories just to maintain my weight if I DON'T train (according to the Harris Benedict Formula).

Multiplied by 7 that's 16,800 per week I would require to maintain my weight during a sedentary lifestyle.

Next work out how many calories you expere during your training sessions. I do weights 3 times a week, and jiu jitsu once a week for about 2 hours. Weight training probably burns about 600 calories per session, jiu jitsu probably about 800 (only about 30 mins of the session is actual rolling). I'm not sure if there's a really accurate way to calculate the calories, but it's more specific than the "3-5 days a week" of the Harris Benedict formula

The amount of calories you burn will depend on your exercise intensity, gender and body-weight. So this is an extra 2600 calories I need per week. I have a sedentary job, so don't need to take that into account.

If I add in my exercise calories to the 16800 I need for a sedentary lifestyle, that gives 19400 calories per week that I require to train and maintain my bodyweight.

Divided by 7; that's around 2800 calories per day I need

The best thing to do is monitor your weight and body fat very closely during a weight cut and adjust calories accordingly.

A Pro MMA Fighter's Thoughts on Weight Cutting

Just to emphasize the importance of trialing things yourself, and using what works for yourself, here's my coach's thoughts:

"I never do the distilled water thing. It makes me feel like complete **** lol. After weigh in I immediately have:

500 ml water

Pinch of pinch salt

1 tablespoon Honey

2 tablespoon of chia Seeds

Then next hour I consume 1 litre of water slowly with some fruit

Hour after that I have fats, usually Nuts and avocado

Then I have a carb meal...

Every individual is different though...

Another thing is if I weigh in on Friday I cut the salt out on Tuesday. Any earlier and it really effects how you feel and digest food up to the weigh in which I have found to make the weight cut harder..."

Fight Day or Sparring Day Nutrition



Any change in diet should be piloted during a training session as changes in food types etc. can cause stomach upset; which could obviously cause problems on the day of a fight.

Goals of Fight Day Nutrition for MMA: - Provide carbohydrate for energy during a fight or sparring session & to Provide electrolytes to prevent cramps and fatigue. Recovery also needs to be optimised

If a fight starts at **8pm** in the evening:

A fighter should eat a high carbohydrate, moderate protein meal in the morning. The meal should mainly contain low GI carbohydrates that provide a slow release of energy. Porridge with ground almonds and a banana would be ideal. For those people who are fine to eat gluten, whole-wheat bread with jam or even peanut butter would be a good choice also.

Research suggests that some 'sugary' carbs such as maltodextrin are okay (but not ideal), as long as the main source of carbohydrate is low GI and therefore slower releasing. In order to maximise hydration, a drink of between 300 and 600ml of water can be consumed with every meal on fight day.

Sugary carbs may be best for recovery and short term for performance but I would definitely stick to whole foods or healthy fats for additional calories on non-training days and for a long term, sustainable healthy diet.

If competing in a hot or humid environment, a fighter can super-hydrate by consuming fluid with meals, and an extra 200ml every 15 minutes; until 60 minutes before the fight. The fluid should contain electrolytes and should be 5-8% carbohydrate. Maltodextrin is the best form

7-8am

Large bowl of porridge oats, with coconut milk, ground almonds and a banana
Separate drink - 300ml water with 20g maltodextrin and a pinch of Himalayan salt / **or** – a smoothie made with pure coconut milk and a small amount of berries and flax powder

9-10am

2 poached eggs on rye bread
300ml water with 20g maltodextrin and a pinch of Himalayan salt / or coconut water

12pm

Sweet potato chips
Broccoli
Haddock or chicken breast
300ml water with 15g maltodextrin and a pinch of pink salt / or coconut water

3pm

White fish
50g rice (white or wholegrain, depending on individual preference)
sweetcorn & peas & carrots
300ml water with 15g maltodextrin and a pinch of pink salt / or coconut water

6pm

Whey protein in water
2 oatcakes
or
Hemp seeds, fruit, cashews – blended in water

Continue to sip on an isotonic drink up until 30 mins pre-training and some protein. Avoid high fat foods as these take longer to digest. Carbohydrate consumed within 4 hours of a session, may decrease lipolysis. The carbohydrate amount consumed should therefore be large enough to offset any negative effects caused by this reduction in fat oxidation.

Ideally - avoid eating solid food 90 minutes before competing

Between 2 hours & 90 minutes before the fight or session is a great time to eat a banana. Some studies have proven that consuming foods with a high GI within an hour of exercise can actually lower blood glucose, thus damaging performance levels. Consuming low GI foods an hour before training however, can affect blood flow to working muscles, as food is still being digested in the gut.

The only recommended carbohydrate to consume an hour before a fight/session, would be to sip on a sports drink. The sports drink should only contain maltodextrin as this has minimal effect on gastric emptying which in turn influences hydration. 2 hours before the fight/session, a fighter should sip on a carbohydrate and electrolyte drink. Ideally the carbohydrate should be maltodextrin to ensure gastric emptying is optimised.

30 minutes before the fight /training

Consume any pre-training supplements such as BCAAs, baking soda and/or beta alanine.

Please note that fight day nutrition has to be tailored to meet an individual's needs

I personally struggle to each much on a fight day, so will sip on a carbohydrate drink throughout the day and may have to resort to eating some sugary snacks to get some carbohydrates in addition to a couple of bananas & electrolyte drinks to prevent cramping.

Nutrition During a Match or Fight

Many fighters choose only to take a small sip of water. In theory a sports drink containing maltodextrin and electrolytes would be consumed in small amounts, but in practical terms, it is difficult to tolerate much fluid intake in between rounds. If possible look to consume around 150ml of coconut water or a sports drink every 15 minutes. Add a mouthful of a ripe banana if possible.

Post-Fight / Training Nutrition

Rather ironically, chocolate milk has been proven in one study to enhance recovery from exercise more effectively than a commercial sports drink.

Immediately following training, a fighter should consume a drink containing high GI carbohydrate, some electrolytes, and some protein. For optimal recovery, creatine and alpha lipoic acid can be taken to with the drink. Insulin levels are highest immediately after the session, and remain elevated for approximately 2 hours.

Chocolate milk contains protein, some sodium and some high GI carbohydrates and therefore is a good option for a 'recovery drink'. Ideally however, a whey protein, maltodextrin and electrolyte drink should be consumed.

The drink could contain:

25-30g whey protein

50-100g maltodextrin

2 pinches of salt (ideally Himalayan salt, or use coconut water)

5-10g creatine

1000mg alpha lipoic acid (antioxidant that enhances creatine uptake)

Optional:

consider adding an anti-inflammatory food source such as turmeric or ginger to enhance recovery.

Consume the drink then eat a banana.

Current research suggests that whey protein is the superior protein source to enhance recovery and adaptation to training. However more and more athletes are going down the route of a vegetable based, supplement free diet for optimised health in the medium and long term. A recovery drink based around this mindset could include:

30g hemp seeds

2 bananas

2 pinches of Himalayan salt

15ml olive oil

5g Turmeric & 1g ground black pepper

-blend all the ingredients-

Some people who are looking for an alkaline-based diet may also add lots of wheatgrass, or spirulina

General Recovery Tips after a Match or Training Session

For optimum health, and recovery, an athlete may wish to consume a smoothie or shake made from whole foods, like blended fruit and hemp or quinoa for protein. Interestingly, high carbohydrate intake will spike insulin levels – which may help in terms of 'glyco-gen-recovery' but may actually decrease testosterone and growth hormone release.

I would therefore recommend a high intake of carbohydrate post fight or post training, if physical exercise is planned again the next day, otherwise opt for a moderate carbohydrate meal or drink, of 30-40g of carbohydrates.

Consume the drink within 30 minutes of the end of a fight or training session. Eat a high carbohydrate meal within 2 hours of the session ending. Ideally within 1 hour, as insulin l

levels will be higher, meaning that more carbohydrate will be utilised to replenish muscle glycogen.

If you are training or competing the next day - Ideally, 1-1.2 g per kg Body Mass of carbohydrate should be consumed every hour for first 4 hrs in order to optimise glycogen refueling. If physical exercise is not planned for the following day, then this amount of carbohydrate would not be necessary. Do NOT drink alcohol after a sparring session or a fight. Turmeric, consumed with black pepper, should ideally be part of a meal or even a drink, consumed with an **hour of a fight or any striking-session**. The spice turmeric has been shown to minimise, in mice at least, damage caused to the brain by pressure or impact. Alcohol does the opposite.



Bonus Material

Recovery & Recipes



General Recovery and Injury Prevention Tips

It is highly recommended that any change in routine is piloted in training, before a competitive fight, as individual preferences and tolerances impact the effectiveness of each strategy **Extensive warm up**

In cold environments, muscle temperature should be increased as much as practically possible. [This reduces the chance of injury and increases maximum power-output.](#)

The increased power output of course, consumes more calories (as more physical work is done). The extent of the warm up may need to be tailored to offset any risk of dehydration and fatigue; in warm and human environments for example.

Sip on a carbohydrate/electrolyte drink during the warm up to offset any dehydration. Dynamic stretching is recommended as part of a warm up as opposed to static stretching - the warm up should built up in intensity and replicate as closely as possible, the actual movements and actions of the game to come.

Cool down Light dynamic stretching, 20 min cycle/low impact low intensity exercise. Foam roller. [Will enhance recovery.](#) Consume foods with anti-inflammatory properties within 5 hours of a fight; including turmeric, ginger, pineapple and/or oily fish.



Easy Recipes

Ideally we would all be living in caves, drinking milk from our goat and foraging for berries, then cooking meals from scratch. In practical terms however, when faced with the goal of eating 3,500 calories a day, one typically, will need to fall back on a few 'lazy' tactics to get enough consumed per day.

Eat fresh, organic foods whenever possible, and cook from scratch whenever possible. If it's not possible, try blending stuff. I personally don't eat or recommend dairy; so where milk is used I would substitute with coconut milk or coconut oil instead of butter.



Healthy Fish & Chips

Defrost some frozen fish of your choice (preferably wild, dolphin friendly fish (farmed fish is full of carcinogens and synthetic chemicals)

Preheat oven to 200°C

Slice sweet potato into wedges, cover in black pepper, Himalayan salt and olive oil

Cook for 35 to 40 minutes

Fry fish in frying pan with olive oil or coconut oil

or poach salmon in a pan full of hot water and butter for 15-20 minutes

Serve fish with sweet potato chips and a large handful of spinach



Super-Lazy Smoothie

Ingredients

40g hemp seeds or whey protein (unflavoured ideally)
1 banana
1 handful of raspberries
30g porridge oats
5ml hemp oil/olive oil
1 pinch of Himalayan salt
10g Flax-seed powder
5 Spinach leaves
50-100ml of coconut milk
200-300ml water

Instructions

Blend all the ingredients for 30-60 seconds



Super Lazy High Protein Porridge

Ingredients

20-30g ground almonds
50-100g of porridge oats
1 banana
Handful of raisins
100-200ml of coconut milk
Optional – 20g whey protein

Instructions

Mix all ingredients except banana in a bowl and place in microwave for 2 minutes / mix in a pan on the hob for 2/3 minutes.

Serve with sliced banana



Super-Lazy Pasta

Ingredients

Ideally you would make your own pasta sauce using fresh tomatoes, onions, garlic, black pepper and vinegar. Freeze the sauce and reuse with each pasta meal.

Alternatively (and less healthily) use a commercial sauce

100g of pasta

Tin of tuna or salmon

Instructions

Bring a pan of water to the boil

Add pasta

Stir pasta and leave to simmer in the water for 5-10 minutes

Drain pasta in a sieve and then place back in the pan.

Mix in commercial or home-made tomato sauce and then the tin of tuna or salmon.

Serve with a handful of spinach.



Chicken Stir Fry

Ingredients

2 tbsp soy sauce

1 tbsp olive oil

1 tsp sesame oil

Thumb-sized piece of fresh root ginger , peeled and grated

Pack stir-fry vegetables

Pack straight-to-wok noodles

Meat: beef/chicken etc, roughly cubed.

Instructions

Place noodles in a bowl

Add boiling water

Stir gently to separate

Drain

Put oil in pan

Stir fry meat until cooked. Set aside

Stir fry ginger and harder pieces of veg for 2 mins

Add noodles and rest of veg, stir fry over high heat until just cooked

Add back the meat with soy and sesame oil.

Fry for 5 minutes.

Serve



Protein Balls – very easy snack!

Ingredients

30g of pure peanut butter and/or almond butter

Handful of raisins

Handful of oats

15g of raw honey (has to be raw!)

Mix together and form the balls with your hands.

Always use 100% pure peanut butter. Definitely without palm oil!



Healthy Shopping List

Fruit & Veg – Organic if possible

Bananas	Carrots
Tomatoes	Kale
Broccoli	Mushrooms
Spinach	Watercress
Red grapes	Sprouts
Pineapple	Onions
Lettuce	Garlic
Peppers	Berries

Grains/Carbohydrates

Oats	Pasta*
Buckwheat	Wholegrain bread*
Couscous	Noodles*
Quinoa	*Contain gluten
Sweet potato	Potatoes

Nuts

Peanut butter	Ground almonds
Almonds	Mixed nut bars
Mixed nuts and seeds	

Oils

Olive oil	Coconut oil
Hemp oil	

Meat & Fish

Wild Salmon	Grass fed Beef
Organic Chicken	

Spices

Tumeric
Ginger

Other

Fish oil	Coconut milk – 100% check ingredients
Wheatgrass	Raw honey (not a mix of filtered honey)
Himalayan salt	
Flax seed powder	

Supplements

I would recommend if buying from in the UK – a website such as bulkpowders.com or the proteinworks.com and if possible, buying unflavoured versions of supplements.

Protein Powder such as - Hemp Protein, egg protein, whey protein. Protein powder is more convenient, but I would emphasise including whole foods such as hemp seeds whenever possible

Creatine – Creapure creatine

Alpha Lipoic Acid – To take with creatine

Maltodextrin Powder – To make own sports drinks. As a natural alternative use fruit juice. The only issue with juice is that it contains more fructose which may not aid rehydration the same as maltodextrin.

Optional:

Baking soda

Beta alanine

Caffeine

Acetyl L Carnitine

Greens powders

Final Thoughts

For increased energy levels, health and vitality – consume as many organic foods in their original form as possible and minimise grains and cut out sugar.

I have recommended maltodextrin drinks in this book as research suggests it is ideal for rehydration when combined with electrolytes. However those looking to improve health and reduce inflammation, or to enter ketosis, could switch to coconut water instead.

Do what works for you! I personally try and avoid unnecessary supplements as health is my main goal, but if performance is priority you may need to supplement with whey protein etc.

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About the Author



I have 1st Class Degree in Sport Science from Loughborough University; an MSc in Exercise & Nutrition from the University of Liverpool (studied in Chester, awarded by Liverpool) and quite randomly, a Chartered Institute of Marketing (CIM/CAM) Diploma in Digital Marketing from the Oxford College of Marketing.

I used to be personal trainer, I've had 8 amateur MMA fights and 1 full contact kickboxing fight.

I write for the GoodMenProject, Business2Community , CureJoy.com, CareerFuel.net and have contributed to several martial arts publications

Follow me on Twitter – @MMATRaining1980

Please visit my website – www.BlackBeltWhiteHat.com

Appendix 1

Whey Protein Overview

Whey is a byproduct of cheese production. It is the liquid remaining after the milk has been curdled and strained.

Is Whey Protein the Best Protein?

Whey protein is the 'best', according to research.

Whey is the superior protein in terms of increasing protein synthesis.

This is thanks to its leucine content, which increases protein synthesis via the [mTOR pathway](#).

Leucine is linked to increased protein synthesis, also prostate cancer.

Prostate cancer cells need leucine to grow, multiply and spread, determined a "Journal of the National Cancer Institute" study published in 2013.

I wouldn't supplement with leucine for this reason, however, supplementing with whey protein doesn't appear to carry any risks in terms of prostate cancer thanks to some of the other beneficial components of whey. In fact, thanks to its ability to increase [glutathione](#) levels, it reduces the risks.

Research for whey protein is very robust and extensive.

Some people however criticise much of the research, as it is suggested by some that the American Dairy Association funded many of the studies.

If you're interested in the politics of research, there is a bit of information regarding on similar goings on [here](#)

I WOULD recommend whey protein, post workout for bodybuilders and strength athletes.

Perhaps with creatine and alpha lipoic acid + a source of high glyceamic carbs like maltodextrin if you're a bodybuilder.

If you're training for health / long term fitness, I would probably recommend consuming whole foods before, during and after training instead.

What are the side effects of whey Protein?

Main thing – if you have whey protein concentrate, it will still contain some carbs, and you will probably fart a lot, thanks to the lactose.

Any dairy based food will increase mucous production, in theory. So avoid if you have asthma etc.

As stated above, whey protein contains high levels of leucine, which has been linked to prostate cancer.

How much Whey Protein do I need to Take?

Honestly – I don't know.

The majority of evidence, seems to suggest that around 1.7g per KG of bodyweight is required.

However, there was a study in 2014 – [Evidence-based recommendations for natural bodybuilding contest preparation: nutrition and supplementation](#) which concluded:

“...most but not all bodybuilders will respond best to consuming **2.3-3.1 g/kg of lean body mass per day of protein...**”

So if you weight 100kg, you'll need over 200g of protein per day, at least.

This may have been due to the fact that the subjects were all in calorie deficit, and cutting weight for a competition. The majority of other studies suggest that a lot less protein is required.

For example –

Protein requirements and supplementation in strength sports

“Strength-trained athletes should consume protein consistent with general population guidelines, or 12% to 15% of energy from protein”

This would mean that the average male strength athlete requires under 100g a day in total.

I’ve no idea which is correct, and how much strength athletes and bodybuilders need exactly...

I would personally aim for somewhere in between.
I am just under 90kg, and aim for about 150kg

Which Whey Protein is Best?

Whey protein concentrate is the best value, but whey protein isolate is much ‘lighter’ and doesn’t give you wind

I would use whey protein concentrate, as long as you’re not lactose intolerant and don’t have IBS.

I would recommend starting with something like [Pure Whey Protein](#) from BulkPowders.

Where can I get more information about Whey Protein?

Ask questions on forums like <http://muscletalk.co.uk> before investing in a protein powder or supplement.

Appendix 2

Creatine FAQs

What is Creatine?

Creatine (Cr) is a compound made naturally in the body. It is manufactured in the liver, kidneys and pancreas and secreted into blood for transport to muscle (amongst other) tissues. Its chemical name is Methylguanido-Acetic Acid, formed from the amino acids Arginine, Methionine and Glycine (Collier, J. 2004). Creatine has a number of major functions as a sports supplement.

What does Creatine do?

Basically, it increases strength and power, especially 'power endurance' that is required for high intensity intermittent exercise; such as weight training and sprint-training.

Results regarding the ergogenic effect of Creatine (Cr) on anaerobic performance in sedentary and active subjects are equivocal.

As for the anabolic role of various Cr regimens, an increase in body mass (1.5 kg only, on average) is often reported (e.g. Greenhaff et al, 1995) while unobserved in many other studies (e.g. Juhn, 2003).

Due to the small number of studies and the variety in methods used to monitor body composition, it is difficult to identify the components that are affected by these changes. In fact, some have observed significant gains in lean body mass in subjects ingesting Cr, while others have not.

Body weight gain might be due to an increase in intracellular or total body water, but this hypothesis has been challenged (e.g. Saint-Pierre et al, 2002).

What is the research on Creatine?

Of the approximately 300 studies that have evaluated the potential ergogenic value of Creatine supplementation, about 70% of these studies report statistically significant results while remaining studies generally report non-significant gains in performance (e.g. Balsom et al, 1993). No study reports a statistically significant ergolytic, negative effect.

For example, short-term creatine supplementation has been reported to improve maximal power/strength 5–15% (e.g. Koak & Karli, 2003);

work performed during sets of maximal effort muscle contractions 5–15% (e.g. Burke et al, 2003),

single-effort sprint performance 1–5% (Skare et al, 2001),

and work performed during repetitive sprint performance 5–15% (e.g. Greenhaff et al 1997).

How does Creatine Work?

There are three main energy systems that the body calls upon to produce energy.

The 'best' energy system for power and strength output is the "ATP-PC" system.

Supplementing with creatine, provides more fuel for the ATP-PC system, allowing maximal power output, for longer.

Does Creatine Increase Muscle Strength?

Yes. Several recent studies have been done to determine if creatine supplementation causes an increase in muscle strength

Greenhaff (1993) conducted a study, showing the influence of oral creatine supplementation on muscle torque, comparing a placebo group to subjects who had ingested creatine. The subjects did 5 sets of knee extensions, 30 repetitions each, and results were taken before and after ingestion of either placebo or creatine.

A double-blind study conducted by Rossouw et al (2000) examined the effect of creatine monohydrate loading (9g/day) on maximal intermittent isokinetic exercise and sport-specific strength in 13 well-trained power-lifters.

Both before and after supplementation the creatine (n=8) and placebo (n=5) groups performed three sets of maximal unilateral knee extensions on an isokinetic dynamometer interspaced with 60s rest periods. This was followed up the next day by a maximal dead lift. Values for peak torque, average power, total work and work output during the first five sample repetitions in the

Values for peak torque, average power, total work and work output during the first five sample repetitions in the **creatine group increased significantly and in a relatively constant fashion in all subjects after five supplementation days. There was also a significant ($p = 0.010$) increase in the dead lift lifting volume after six days of creatine supplementation. These results suggest that creatine is a beneficial ergogenic aid to highly trained power athletes**

Does Creatine Increase Endurance?

No. The influence of creatine ingestion on endurance exercise performance was also investigated by Balsom et al (1994) and showed that creatine supplementation does not enhance performance or increase peak oxygen uptake during prolonged continuous exercise.

Do I need to Load Creatine?

Most sports nutritionist will say "No" – take 5g per day for 2 weeks for the same level of creatine stores in the muscles.

However a meta-analysis carried out by Branch in 2003, **showed a greater change in body composition, for those athletes who loaded with creatine.**

The meta analysis also concluded that creatine was more effective for:
Repetitive bouts of exercise, compared to single bouts/sets
For upper body exercises, compared to lower body

Studies have repeatedly upheld the notion that creatine is an effective supplement; but whether or not 'loading' creatine is necessary has remained a controversial issue

What should I Take Creatine with?

NOT caffeine

Athletes should be made aware of the detrimental effect that caffeine ingested may have upon creatine's ergogenic functioning (Hespel et al, 2002)

High glycaemic index carbohydrates and alpha lipoic acid, are currently advocated as the best foods and supplements to accompany creatine ingestion.

Study [here](#) on alpha lipoic acid, sucrose and creatine ingestion.

Which Creatine is Best?

Creapure creatine from somewhere like theproteinworks or bulkpowders.

Avoid liquid creatine.

I've yet to find any research that supports the use of creatine ethyl ester over creatine monohydrate.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2649889/>

“In conclusion, when compared to creatine monohydrate, creatine ethyl ester was not as effective at increasing serum and muscle creatine levels or in improving body composition, muscle mass, strength, and power.”

Diet Plans

4,000 calorie Diet Plan			
Time	Meal	Ingredients	Prep
7am	Smoothie	Pure coconut milk or coconut milk powder 2 bananas Half an avocado 30g protein powder or hemp seeds	Throw in a blender
10am	Phat Fudge	1/2 cup of cacao 1 tbsp tumeric 3g cinamon 3g ginger 1 tbsp vanilla	Melt ingredients & mix in a saucepan Pour sauce into an ice tray Store in the freezer or fridge
1pm	Salad	Feta cheese Avocado Salad Olives	
3pm	Smoothie	Hemp seeds or protein powder Olive oil Oats	
6pm	Main Meal	Steak Sweet potatoes Vegetables	
7.30pm	Protein Balls	Peanut Butter - 10g Honey - 15g tbsp Ginger Oats Raisons	Mix together and form balls or just eat like (dry) porridge.

Snack on goji berries, pumpkin seeds, mulberries

The FODMAP Diet for IBS or Bloating

The FODMAP Diet

Avoid onions and garlic entirely. Other items should be reduced or avoided. I personally would recommend trying 3 days with no dairy to evaluate if this causes bloating or IBS. FODMAP stands for fermentable oligosaccharides, disaccharides, monosaccharides and polyols. These are a type of carbohydrate that tend to ferment in the gut and cause wind and bloating. They often cause or aggravate IBS and similar symptoms.

Foods to remove or reduce:

Fruits

Apple
 Apricot
 Avocado
 Banana (Ripe)
 Blackberry
 Boysenberry
 Cherry
 Dates
 Longon
 Lychee
 Mango
 Nashi
 Nectarine
 Peach
 Pear
 Persimmon
 Plum
 Prune
 Tamarillo
 Watermelon
 Concentrated Fruit Sources

Vegetables

Artichoke
 Asparagus
 Broccoli
 Brussels Sprouts
 Cabbage
 Cauliflower
 Celery

 Fennel
 Garlic
 Leek
 Mushrooms

Onion (All)
 Peas
 Pumpkin
 Shallots
 Spring Onion (White Part)
 Snow Peas
 Sugar Snap Peas
 Sweet Corn

Nuts & Seeds

Almonds
 Cashews
 Pistachios...

Dairy

Buttermilk
 Cottage Cheese
 Cow Milk
 Cream
 Cream Cheese
 Custard
 Evaporated Milk
 Frozen Yogurt
 Goat Milk
 Ice Cream
 Lactose
 Margarine
 Ricotta Cheese
 Sheep Milk
 Sherbet
 Soft Unripe Cheese
 Sour Cream
 Sweetened Condensed Milk
 Yogurt

Legumes

Baked Beans
Chickpeas
Kidney Beans
Lentils
Soy Beans
Grains
Rye
Spelt
Wheat

Sweet Food

Fructose
High Fructose Corn Syrup
Fruisana
Honey
Isomalt
Maltitol
Mannitol
Molasses
Sorbitol
Xylitol

Other

Camomile Tea
Chicory
Cocoa Powder
Dandelion
Fennel Tea
Instant Coffee
Inulin
Alcohol



