

FITNESS NUTRITION 101 SERIES:

DIETARY FAT

Nate Miyaki

In the 1970's, research was released that linked excessive saturated fat intake with heart disease. In a response, medical professionals and nutritionists advised people to follow a low fat, high carbohydrate diet for optimum health. They recommended people restrict their fat intake, and did not distinguish between the different types of fats. Cut fat across the board was the motto -- as long as it was low fat it was thought to be good for you.

Nowadays, there has been a shift in the nutritional paradigm. We now know that there are good fats and bad fats, and a moderate intake of the right types of dietary fat can actually improve our overall health profile. We also know about the dangers of eating too many refined and processed carbohydrates. Over consumption of the wrong types of carbohydrates is the number one reason why so many Americans are overweight and unhealthy. As a result, low carbohydrate diets have become popular in the mainstream health & fitness circles.

Overall health should always be the primary focus of any nutrition plan, but fitness athletes also care about body composition transformation. We have higher aspirations than just being fit and healthy, we want to maximize lean muscle and minimize body fat. The real question is how do we divide up our macronutrient intake to achieve these lofty goals? Should we go the old school route of a low fat intake or the more current, popular trend of going low carb?

In the carbohydrate article in this Nutrition 101 series, I'll explain to you why a moderate amount of carbohydrates are necessary to build muscle and attain a lean, fit physique. But in this article, we'll focus on dietary fat. If carbohydrates are going to be moderate, then we need to keep a close eye on our fat intake to make sure our bodies are not receiving too much fuel at once. Too much fuel equals too much body fat, plain and simple.

There are several key points fitness athletes must understand about dietary fat if they are going to reach their body composition goals. So let's get to it.

1. Fat is the most calorie dense macronutrient

Despite what some fad diet guru may tell you, total calories are still the most important factor in the fat loss equation. If you eat more calories than you burn in a day, you're going to add body fat. If you eat fewer calories than you burn in a day, you're going to lose body fat -- period for now, but not quite the end of the story. There are no miracle diets that can recreate scientific principles and circumvent the law of thermodynamics.

Fat contains 9 calories per gram, more than double that of protein and carbohydrate at 4 calories per gram. If you reduce your fat intake you are automatically going to be reducing your total calories. This makes it much more likely you will reach the calorie deficit necessary to drop body fat.

2. In caloric excess (eating above your maintenance calorie level -- both per day and per meal), dietary fat is the macronutrient that is most easily stored as body fat.

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Once you get beyond the golden rule of total calories, however, the types and ratios of macronutrients you eat DOES play a factor in dropping body fat. Unlike what a traditional nutritionist may preach, a calorie is not just a calorie. Each macronutrient impacts hormones and other chemical processes involved in body composition transformation in different ways.

Extremes usually help people understand basic nutritional concepts that sometimes are hard to grasp. Here is an extreme example. A 1600-calorie diet consisting exclusively of butter will have a much different impact on body composition than a 1600-calorie diet consisting exclusively of chicken breast. Obviously its not just about total calories, its also about the type of calories you eat.

Dietary fat is the macronutrient most likely to be stored as body fat when you eat above your calorie needs, both per meal and per day. Why? The chemical composition of dietary fat is similar to that of body fat. It is a relatively easy, efficient process for your body to pack away dietary fat into body fat stores when there is a surplus of energy in the body. Fat cells simply grab on to circulating fatty acids, pull them in, and add them to that roll of blubber beneath the skin.

Carbohydrates and proteins are less likely to be stored as body fat. Carbohydrates and proteins must be digested, broken down, transformed, and reassembled in order to be stored as body fat. This costs energy and effort. While it can and does happen in this manner, as long as there are fatty acids available from dietary fat intake, the body prefers the most efficient route. And that is to store excess dietary fat as body fat.

3. In the presence of high insulin levels (as the result of too large a meal or too much sugar and/or refined carbohydrates), dietary fat is the macronutrient most likely to be stored as body fat.

If you forgot everything else about fitness nutrition, and only implemented one specific core principle, you would probably end up with a decent physique and be happy with the results. That one basic principle is this: Your consumption of carbohydrates (particularly sugars and starches) and dietary fat should be inversely related.

In other words, the more carbohydrates you eat, the less fats you should eat. The more fats you eat, the less carbohydrates you should eat. Like everything else with fitness nutrition, the theory is simple; it's the real life implementation of that theory that is difficult.

Why? The main problem with our fast food, American lifestyle is that our typical dietary staples are high in both of these nutrients. Mochas, burgers, pizza, fries, chips, doughnuts, pastries, and on and on, these are all foods high in both dietary fat and sugary or starchy carbohydrates. Carbohydrates and fats are our primary energy sources, and if you bombard the body with too much fuel at once, it has no choice but to store the excess as body fat. Its like trying to put two nozzles of gas into one tank, inevitably there will be some spillover. In the human body, excess fuel spills over into fat cells.

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Physiologically, here is what happens when you eat a meal high in both dietary fat and sugary/starchy carbohydrates. For some of you who have read diet books or articles, some of this may sound familiar. For others it will sound completely new. I'll do my best to simplify a complex process.

Dietary fat ultimately ends up as circulating fatty acids in the bloodstream. Carbohydrates, especially refined/processed carbohydrates, elevate blood sugar (blood glucose) levels. The body keeps a tight regulation on blood sugar levels; when blood sugar elevates above normal levels, the body responds by releasing the hormone insulin from the pancreas to clear nutrients from the blood and return blood sugar levels back to within its normal range.

Insulin is basically a "storage" hormone, it helps the body store glucose, amino acids, and fatty acids for use at a later date. Because the chemical structure of dietary fat is similar to that of body fat, when insulin is clearing fatty acids out of the bloodstream, they are readily deposited into fat cells and stored as body fat. In other words, its very easy for body fat cells to basically just "suck up" fatty acids when insulin makes them available.

So elevated insulin (from too many refined carbohydrates or too many calories in general) plus fatty acids in the bloodstream (from too much dietary fat intake) virtually guarantees body fat gain. You don't have to remember the science, but you should remember the take home message: SUGARY OR STARCHY CARBS + DIETARY FAT = BODY FAT.

In the real world, it is sort of true what they say. That pizza is going straight to your ass, or gut, or whatever your problem area may be.

4. Even if your body is in a fat burning mode, dietary fat will be used as a fuel first before stored body fat.

Lets say you are doing everything right to set up a fat burning environment in your body. You're spacing your meals out properly, eating the right portion sizes, choosing the right quality and quantity of carbohydrates, and exercising regularly. Theoretically, you've turned your body into a fat burning machine. But are you burning the right type of fat?

If you are eating a high fat diet, then the answer, most likely, is a disappointing no. Here's the problem. If there are fatty acids circulating in the bloodstream from recent food intake, your body will use those as energy first BEFORE tapping into body fat stores.

Body fat must be broken down into fatty acids to be used as energy. That's an extra step. If there are already fatty acids available from dietary fat intake, there is no reason for your body to break down body fat. Your body prefers the most efficient route to energy production.

If blood fatty acid levels are chronically elevated from a high fat diet, you're body is never really going to be forced to tap into fat stores and you're not going to lose much body fat. This is what happens with people who follow super low carbohydrate, unlimited fat diets (certain phases of the Atkins Diet).

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By getting blood sugar under control they initially lose weight, but eventually plateau. Since they lose out on some of the muscle building/preserving effects of carbohydrates, a lot of the weight they lose is lean muscle mass. And since they are eating unlimited amounts of dietary fat, they're burning mostly that as fuel, not stored body fat.

Muscle weighs more than fat, and you can shed muscle more quickly than fat. That, along with water loss, is why people can lose weight so quickly on those types of diets. But it is not the right type of weight. Preserving body fat and losing lean muscle mass is not the ideal scenario for a fitness athlete. Even though the bathroom scale may say you are winning, the mirror will SHOW you that you are losing.

That's why extreme diets don't work in the long run. Even if you haven't touched a carb since 1999, you still have to keep dietary fat moderate enough to force your body to burn body fat

CUT THE FAT?

So why not limit fat intake all together like they recommended in the 70's? If it takes low levels of blood fatty acids to prevent your body from storing fat and to force it to burn body fat, why not just cut dietary fat out completely?

Not so fast, extreme diets don't work in the long run for super low carbs, but they don't work for super low fat either. Fats do some good things in our bodies, both for overall health and for body composition transformation. So you'll need some fat in your diet to achieve your fitness goals.

5. A moderate amount of fat is necessary for optimum hormone production; hormones which ultimately signal our bodies to build muscle and burn fat.

A certain amount of dietary fat is necessary to maintain optimum production and functioning of hormones. Fat and cholesterol are the building blocks necessary to produce certain hormones related to body composition transformation.

Optimum natural levels of hormones such as testosterone and growth hormone are necessary to build muscle, boost metabolism, and burn fat. Deficiencies in these hormones can make it virtually impossible to achieve these goals no matter how diligent you are with the rest of your diet and training programs. If your hormones are working against you, your body is not going to change no matter what you do.

Testosterone is the best example of the impact of dietary intake on hormone production. Research has shown that very low fat diets (less than 15% of total calories) suppress natural testosterone production. Conversely, moderate fat diets (25-40% of total calories) raise natural testosterone levels.

Its important to note that total calories impact testosterone levels as well, so we don't want to eat unlimited amounts of fat just to try and boost testosterone levels. This would end up having detrimental effects on our body composition goals. But this research clearly shows the

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relationship between dietary fat and hormone production. It also shows us why we need to keep some fat in our diets.

6. Certain fats can improve our overall health profile.

A certain amount of fat in the diet is necessary for optimum health and functioning. Fats are involved in the transport of fat-soluble vitamins. Essential fatty acids can't be made internally and must be obtained through food intake. These nutrients are involved in cellular repair, recovery, skin health, and proper immune system functioning.

The biggest advantage of dietary fat intake is their effects on certain disease risk factors. "Good fats" can have a dramatic impact on our overall health profile. Not only does this make us less prone to deadly diseases, it makes us feel better and more energetic. This translates into better gym performances, and better results.

Omega-3 fats can lower blood triglyceride and blood pressure levels. Monounsaturated fats have been researched and proven to lower bad cholesterol (LDL) levels and raise good cholesterol (LDL) levels.

FINDING THE BALANCE

We are left with a catch-22. We must eat enough of the right types of fat for optimum hormone production and to improve our overall health profile, but not so much that we store the excess as fat or prevent our body from using stored body fat as fuel. The answer, of course, lies in moderation.

A little bit of time in the sunshine can be a good thing. It helps our bodies naturally produce vitamin D, elevates our mood, and can even provide us with an attractive tan. Too much time in the sun, however, can be harmful. It can cause painful sunburns, wrinkles, and predispose us to skin cancer. While in moderation spending some time in the sun can be beneficial to our health, overexposure can be deadly.

Does this sound familiar? Probably, because that's how most things work in real life. Moderation is the key. Too much of anything can be detrimental to our well-being. This is the type of approach you need to take with dietary fat if you want to attain a lean, fit physique. A moderate amount of the right types of fat can do wonders for your overall health profile and body composition goals. Too much fat, even the "good" kind, will make it impossible for you to lose body fat and look good naked.

QUANTITY

So how much fat are we talking about? As with protein and carbohydrates I recommend you base your fat intake off of your lean body mass rather than percentages. Getting 20% of your calories from fat is considered a low fat diet if you eat 1800-2000 calories a day, but if you eat 5000-6000 calories a day, all of a sudden that 20% turns into a high fat diet.

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Making calculations based off of lean body mass is the best way to go because your metabolic rate, or how many calories you burn in a day, is closely linked to your lean body mass. This is the most accurate way to assess what your body truly needs, not some random height, weight, and age food charts.

About $\frac{1}{4}$ to $\frac{1}{3}$ g of dietary fat per 1lb of lean body mass is a good place to start.

DIETARY FAT INTAKE CHART

LEAN BODY MASS	$\frac{1}{4}$ g per 1lb	$\frac{1}{3}$ g per 1lb
100lbs	25g	33g
125lbs	31g	41g
150lbs	38g	50g
175lbs	44g	58g
200lbs	50g	67g
225lbs	56g	75g
250lbs	63g	83g
275lbs	69g	92g

FAT QUALITY

Back in the No Fat Era of the 70's, nutritionists and medical professionals failed to distinguish between the various types of dietary fats, hence the recommendations to restrict all fat intact regardless of the source. We now know that different fats have different impacts on our health profile.

In terms of general health, some fats can be beneficial and some can be severely detrimental. In fact there is a commercial diet book called, "Fats that Heal, Fats that Kill." No other title could be more accurate.

In terms of body composition transformation, there are "good" fats that help us produce beneficial hormones and burn fat. There are also "bad" fats that contribute to insulin resistance and make us more prone to storing body fat.

TRANS FATS, HYDROGENATED OILS

Hydrogenated fats/transfats are not natural fats. They have been chemically altered by man to extend shelf life and are incorporated into many snack foods. The majority of the time man has altered foods for taste or mass consumption, it ends up having devastating effects on our health.

Foods that contain trans fats/hydrogenated oils are among the worst foods you could ever ingest. This type of fat is, to put it bluntly, a cold-blooded killer. Trans fats raise total cholesterol, bad cholesterol (LDL), blood triglycerides, and lower good cholesterol (HDL). They are linked to all

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of our most common health problems: obesity, diabetes and a host of other risk factors for common killers such as heart disease, stroke, and cancer.

As a fitness athlete looking to maximize body composition, the recommended intake of trans fats per day is zero. And for those just pursuing general health, the safe upper limit of trans fat intake per day is zero. Get the point?

SATURATED FATS

Saturated fats are a tricky one. There are some naturally occurring saturated fats in all animal proteins; some are much higher than others. Moderate amounts of saturated fat can actually be beneficial, and aids in the production of some of our natural hormones like testosterone. It can also raise good cholesterol levels.

There is a misconception that all of the fat found in protein foods, particularly beef, is saturated fat. Nothing could be further from the truth. Only about 50% of the fat found in natural beef is saturated fat. The remaining 50% or so is made up of healthy monounsaturated fat. Surprising isn't it?

Another consideration is that not all saturated fats are created equal. There are different types of fatty acids that fall under the saturated fat category. Some have the capability of raising cholesterol levels, including the bad LDL type. Others, particularly stearic acid (the primary saturated fatty acid found in natural meats), have been researched and proven to have no impact on LDL levels. It turns out the bum rap on animal proteins is not warranted.

That being said, however, excessive amounts of saturated fats have also been linked to some of our most common killers and should be eaten in moderation. I'm certainly not Mr. Atkins, Jr. and recommending you go out and eat a bunch of bacon, butter, and burgers. That's not going to make you any healthier, or leaner for that matter.

You should choose leaner protein sources over their higher fat and processed counterparts to control both fat quantity and quality, but don't worry about the natural saturated fats found in leaner meats, poultry, and a couple of eggs. Our bodies can process these foods efficiently. They come from nature and we evolved on diets that contained a fair amount of these foods.

You should make an attempt, however, to eliminate other unnecessary sources of saturated fat, especially when it is combined with trans fats and/or sugar (processed meats, junk food, fried foods, cream, high fat dairy, etc.).

MONOUNSATURATED FATS

Monounsaturated fats are probably the best type of fat you can include in your diet. They are the "anti-trans fats", having positive effects on both our overall health profile and body composition. Monounsaturated fats have been researched and proven to raise good cholesterol and lower total cholesterol, bad cholesterol, and blood triglycerides.

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Most people associate monounsaturated fat with olive oil and nuts. These, indeed, are good source of monounsaturated fats. But as I mentioned above, animal proteins also contain a good amount of monounsaturated fat. Diets consisting of lean cuts of meat, poultry, and fish along with moderate amounts of added monounsaturated fats are the best way to go for fitness athletes.

ESSENTIAL FATTY ACIDS

EFA's, as they are called, are a special subset of polyunsaturated fats. EFA's are fats that the body cannot produce itself and must be obtained through your diet. They are essential for natural body functioning, and deficiencies can lead to a host of problems. There are two – alpha-linolenic acid (Omega 3) and linoleic acid (Omega 6).

Books have been written about EFA's. Obviously, there is too much to cover in this article. In future Nutrition 202 articles, we can go into great depth about the proper uses, ratios, and benefits of these compounds. It is sufficient for this article's sake just to summarize a few main points.

Omega 6's can have a positive impact on our blood lipid profiles. And Omega 3's, what don't they do? The derivatives of Omega 3's, EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), have been researched and proven to have cardio-protective effects. They contribute to neurological development, brain function, cognitive function, and positive moods. They are responsible for the formation of prostaglandins and other hormone-like substances that regulate blood pressure, the immune system, growth mechanisms, and inflammation/anti-inflammation processes. It's safe to say Omega 3's and their derivatives play a vital role in our health and well-being.

There's no doubt EFA's can support your muscle building/fat burning hormones, help you burn body fat, and improve your overall health profile. They're not called ESSENTIAL fatty acids for nothing.

REAL WORLD APPLICATION

Right now you might be saying to yourself, "Thanks Nate for the s*0%& load of information, but how does that all translate into the real world of fitness athletes?"

Well, as a fitness athlete you know you are going to be eating a higher protein diet, right around 1g of protein per 1lb of lean body mass. You now know that all lean sources of animal protein contain some fat, usually with a decent amount of healthy monounsaturated fat.

You have to keep your fat intake moderate, so I recommend keeping most of your fat intake as by-product of your lean protein sources -- lean meats, lean poultry, fatty fish (i.e., salmon), and whole egg/egg white mixtures (one egg per 4-5 whites). Eliminate fatty cuts of meat and added fats like cream, butter, dairy, and snack/junk foods. If you find that your fat intake is low, you can then add some healthy monounsaturated fats like nuts, nut butters, olive oil, and olive oil-

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based salad dressings. Be careful though, it is easy for you to overeat these added fats and shoot past your daily totals. Portion control is key.

FAT FOOD CHARTS

GOOD FAT CHOICES

Meat/Fish/Eggs	Nuts/Seeds	Oils and Spreads
Fatty fish (salmon, mackerel, sardines)	Almonds	Almond Oil, Natural Almond Butter
Lean poultry (chicken breast, turkey breast)	Macadamia Nuts	Macadamia Nut Oil
Lean meats (top round, eye of round, sirloin, etc.)	Peanuts	Natural Peanut Butter
Eggs (in moderation)	Olives	Cold-pressed Olive Oil, Olive Oil-Based Salad Dressing
	Avocados	Guacamole
	Pecans	Fish oil supplements (cod liver oil, salmon oil, sardine oil, EPA/DHA capsules)
	Walnuts	GLA oil supplements (evening primrose, borage oil)
	Cashews	
	Pine Nuts	
	Brazil Nuts	

BAD FAT CHOICES

Dairy	Oils	Spreads and Salad Dressings
Full-fat Dairy Products	Canola Oil	Caesar Salad Dressing
Cream	Corn Oil	Ranch Dressing
Full-fat cheeses	Soybean Oil	Thousand Island Dressing
Cream Cheese	Sesame Oil	Mayonnaise
Sour Cream	Partially/Hydrogenated Oil	Butter and Margarine
	Vegetable Shortening	
	Lard	
	Anything Fried in Oil	