Must Read NUTRITION
Everything you need to know about nutrition

By Andrew McInroy

(Editors Note: Yes this article contains a great deal of basic knowledge about nutrition. Do not discard this info just because you might already know about it. You can never know about or focus too much attention on the basics. Also, it always helps to review the basics anytime you get off course or need a little motivation. Enjoy!)

In this article, I will share knowledge that I have gained from many experts and professionals in helping you build a better body. I will give you the basics; however, I can guarantee that with this knowledge, you will be able to significantly get closer to your goals with nutrition: the most important aspect of human performance.

INTRODUCTION

Nutrition is the most important aspect of achieving a higher level in any physical activity, especially bodybuilding. If you do not have proper nutrition, you will not have adequate energy nor will you be able to feed your body with the nutrients necessary for many processes such as protein synthesis (muscle building), biosynthesis of hormones, ossification (bone formation), and the list goes on and on. Too often, people invest large amounts of money into supplements and do not take nutrition into account. Even though you may be working hard in the gym and have the “cutting edge supplements”, you will see a major lack of results (or no results) if your nutrition is not in check.

CALORIES AND BASAL METABOLIC RATE

You know when you look on the back of a nutrition label and s

However, these rules, as stated above, are general and simple; perhaps a bit too general and simple. For instance, let's say that you are burning 2000 calories a day and you want to lose weight. Does this mean that if you eat 1500 calories of sugar that you will ultimately lose fat because you are eating less than you burn? NO! Any sensible person with the slightest knowledge of nutrition would tell you that this method to losing weight is absurd, but 'why' will be discussed further on.

THE NUTRIENTS

Nutrients are the substances that we consume through diet that are found to be necessary for survival. For instance, water is a nutrient and if you go too long without it, you will end up dehydrated and eventually die.

There are six classes of nutrients:
-Proteins
-Carbohydrates
-Fats
-Vitamins
-Minerals
-Water

Proteins, Carbohydrates and Fats are called the macronutrients.
Vitamins and minerals are called the micronutrients.

THE MACRONUTRIENTS: Proteins, Carbohydrates and Fats

Proteins

Proteins are found in pretty much everything you eat and vary in amount. Protein is very important for many processes in the body. We get protein from sources like steak, milk, eggs, and fish. Within the body protein makes up many structures such as muscle, skin, and organs.

Protein is composed of subcomponents called amino acids. Most proteins are made up of 20 common amino acids; 9 of which are essential and 11 being nonessential. Essential amino acids are amino acids that we must obtain from our diet as opposed to nonessential amino acids which we do not require from our diet as we can biosynthesize (create) them within our body.

The basic and main processes that amino acids do within the body are:

1) The building up of protein containing tissue like muscle and skin and production of other nitrogen containing compounds in our body such as amine hormones like adrenaline. Only a limiting amount of amino acids can be used for this process and therefore any remaining amino acids goes to the remaining 3 processes.
2) Gluconeogenesis: The production of glucose from carbon skeletons of amino acids by the liver.

3) Production of Energy
4) Storage as fat

NUTRITIONAL VALUE OF PROTEINS = 4 calories per 1 g of protein

Example: Dex consumes 1 scoop of whey protein which consists of 24 g of protein. Therefore:

24 g of protein x 4 calories = 96 calories from protein.

Protein digestion will not be discussed in this article; carbohydrate digestion is of the most significance.

Carbohydrates

A common target in fad diets; carbohydrates are not our enemy. Rather, they are our best friends when it comes to raw, efficient and powerful energy. Carbohydrates are more than likely the most important macronutrient that is regarded when designing a nutrition plan as it is manipulated in many ways in order to meet the specific performance needs of an athlete. We get carbohydrates from many sources but first we must talk about the main three types of carbohydrates:

Simple Carbohydrates are basically sugars and fall into the category of monosaccharides and disaccharides. Monosaccharides are the simplest forms of carbohydrates in chemical structure and often resemble the formula C6H12O6 (Voila! The sugar from photosynthesis!). There are three (3) monosaccharides:
1) Glucose (EXTREMELY IMPORTANT; READ ON)
2) Fructose
3) Galactose

Simply enough, there are 3 disaccharides and are composed of two monosaccharides joined together:
1) Maltose (Glucose + Glucose)
2) Sucrose (Glucose + Fructose)
3) Lactose (Glucose + Galactose)

Examples of sources of simple sugars:
-candy bars
-maple syrup
-pop
-fruits (fructose, get it?)
-table sugar

Complex Carbohydrates are simply extremely large chains of monosaccharides joined together to form one huge molecule.

To put these two types of carbohydrates in perspective of one another: imagine that you

have a long metal chain; each little component of that chain would be a monosaccharide while the chain as a whole would be the complex carbohydrate.

Examples of complex carbohydrates:
-whole wheat bread
-whole wheat pasta
-oats (a powerful component to any serious athlete's nutrition)
-yams (Kind of potato)

Fiber is basically a carbohydrate that our body does not have the enzymes, which are components needed to digest food into smaller particles, it needs to digest the fiber. Therefore, fiber passes through our digestive system, mainly undigested (mainly undigested, but in the large intestine, bacteria act on fiber). **Fiber does not contribute to calories**. If you were to consume 10 g of fiber, that would be equal to zero calories. The benefits of fiber are that it contributes to fullness, helps to protect against bacterial infection like appendicitis, reduces risk of colon cancer and coronary heart disease, helps to stop hemorrhoids and constipation, and the digestion and absorption of carbohydrates is slowed down (Therefore, the body can deal with glucose better).

Examples of sources of fiber:
-vegetables
-whole wheat bread
-whole wheat pasta
-oats

As a general rule of thumb, if your carbohydrates are complex carbohydrates, they more than likely will contain a good amount of fiber.

Carbohydrate Digestion:
-You chew it and salivary amylase (a digestive enzyme) works on it in the mouth.
-You swallow it and it travels down the esophagus.
-Your stomach churns it up. (Little to no digestion here)
-Your small intestine receives the carbohydrates and this is where the majority of the digestion takes place; the pancreatic amylase (released from the pancreas into the small intestine) acts on breaking the carbohydrates into the simple sugars (If they are not already in the form of simple sugars).
-Once in the form of simple sugars, these simple sugars are absorbed from the intestine, passed the intestinal absorptive wall, into capillaries which then send the simple sugars to the hepatic portal vein. The hepatic portal vein is basically the nutrient highway to the liver.
-The hepatic portal vein carries simple sugars to the liver.
-IMPORTANT – in the liver, the simple sugars that are not glucose (fructose and galactose), are transformed into glucose.
-Glucose can be stored in the liver as glycogen (long chains of glucose stored in cells as one big energy reserve).
-Glucose leaves the liver and enters the blood stream. IMPORTANT: THE ONLY

SIMPLE SUGAR THAT ENTERS THE BLOOD STREAM IS GLUCOSE (Hence, blood glucose!).
-Once glucose is in the blood, this is detected as an increase in blood glucose and therefore, your body reacts by signaling the pancreas to release INSULIN (Considered to be of the most anabolic hormones, including testosterone).
-Insulin acts on muscle and fat cell receptors to basically "open up the gates" and allow glucose to flow inside. **Most carbohydrates go to muscle cells.**
-Once inside the **muscle cell**, glucose becomes glycogen (mentioned above).

IMPORTANT: Insulin will be discussed with high regard throughout this piece (eventually in higher detail) and it is, in my opinion and many others, the most important factor in maintaining a good diet. KEEP THIS IN MIND AT ALL TIMES.

Interestingly enough, another hormone called glucagon, acts on cells and makes them breakdown the glycogen and release it back into the blood stream as glucose.

INSULIN
Insulin is a hormone that is produced in the pancreas and is secreted in response to increased blood glucose levels. The body likes to be in internal balance and this internal balance is called homeostasis. When blood glucose levels get too high, they are not in homeostasis and this is why insulin is secreted. Too much glucose in your blood can be dangerous.

THE GOAL IS TO CONSUME CARBOHYDRATES THAT WILL BE SLOWLY DIGESTED AND CAN BE DEALT WITH EASILY BY THE BODY, WHILE PROMOTING GOOD INSULIN SENSITIVITY.

What is insulin sensitivity? Insulin sensitivity relates to how sensitive the receptors are on your cells to insulin. If the receptors are sensitive (which is a good thing), the insulin attaches and has no problem with moving glucose from the blood into the cell. However, if you are insulin resistant (something you must avoid), the receptor cells are not responding to the insulin and therefore, will not let as much glucose in. Obviously this is scary because we want to keep blood glucose levels normal and if we can't do that, then we may face problems like hyperglycemia.

EXTREMELY IMPORTANT: THE CONCEPT OF COMPLEX CARBOHYDRATES AND SIMPLE SUGARS AND THEIR EFFECT ON BLOOD GLUCOSE LEVELS AND FURTHERMORE, INSULIN SENSITIVITY.

In the small intestine, carbohydrates are broken down by pancreatic amylase into simple sugars. **They must be simple sugars before they can be absorbed by the intestinal absorptive wall.**
Remember the above statement; I cannot stress how important it is. Now, let's look at complex carbohydrates vs. simple sugars and their digestion.

If a complex carbohydrate enters the small intestine, it is a much larger molecule and therefore requires more time to digest. Remember that all complex carbohydrates are just like big chains of simple sugars. So as pancreatic amylase acts on complex carbohydrates, there is a slow release of simple sugars from the larger carbohydrate molecule and these simple sugars are then absorbed into the intestinal absorptive wall. This allows for a nice steady release of glucose into the blood system (after it passes through the capillaries, hepatic portal vein, and liver). With a nice release of glucose into the blood stream, insulin can be released at a nice steady rate and therefore it can deal with the glucose at a calm and steady rate and is usually able to get the majority of glucose into muscle cells, as opposed to fat cells (this of course depends on current glycogen stores in the muscle cells). But it is a general rule that you consume complex carbohydrates in order to regulate the release of glucose into the blood stream and therefore allow your insulin to deal with lowering blood glucose levels in a calm and orderly fashion. Ultimately, this will lead to good insulin sensitivity and will help prevent fat gain and promote fat loss. Why? Check out what happens when simple carbohydrates are consumed:

So as opposed to the large molecule that needs to be worked on for a while to be digested and will digest gradually and calmly into the blood stream, the simple sugars are much faster. Why? **THEY ARE ALEADY IN THE SIMPLE SUGAR FORM AND REQUIRE LITTLE OR NO DIGESTION IN ORDER FOR THEM TO BE ABSORBED INTO THE INTESTINAL ABSORPTIVE WALL AND THEREFORE ENTER THE BLOODSTREAM FAST. THIS CAUSES AN INSULIN SPIKE.** An insulin spike is when blood glucose levels are increased rapidly and the homeostasis is thrown out of balance greatly and this causes a strong response from the pancreas and it releases a lot of insulin to deal with the dangerously high glucose, hence, an insulin spike. So basically, the insulin goes nuts on getting the dangerously high blood glucose back to normal and tries to shove it into any nearby cells. So here we have the muscle cells and the insulin is beating down on their insulin receptors and the muscle cells can only accept so much glucose. But, because there is such a large amount of insulin, due to the insulin spike, the insulin keeps beating on the insulin receptors, regardless of whether or not the cell can take more glucose. To get the blood glucose levels down, insulin works on insulin receptors of fat cells and therefore, glucose enters the fat cells too for three ‘main’ reasons: 1) Mainly because the blood glucose is high and it has to eliminate this threat fast and it cannot store all the glucose in muscle cells fast enough so glucose will go to fat cells too. 2) Muscle cells fill up with the glucose and therefore the glucose has to go somewhere else: fat cells. 3) Also, the muscle cells may be insulin resistant and the fat cells are still insulin sensitive: this leads to fat cells taking in glucose.

So the problem with simple carbohydrate consumption is two factors: 1) insulin resistance from the insulin constantly beating down on the insulin receptors of muscle cells and 2) fat storage due to the said reasons.

The conclusive message: You will want to consume complex carbohydrates for almost all meals with the exception of post workout meals, as you will see. This is to promote

healthy insulin sensitivity and to prevent dangerous blood glucose levels, prevent insulin resistance, and prevent fat storage.

NUTRITIONAL VALUE OF CARBOHYDRATES = 4 calories per 1 g of carbohydrate

Example: Dex eats 1 cup of oats which contains 60 g of carbohydrates. Therefore:

60 g of carbohydrates x 4 calories = 240 calories from carbohydrates

Fats

Fats, scientifically known as lipids, are a component in the body that are often said to be bad and told to be left out of the diet. If someone says this to you, they're an idiot. That is not to say that you should eat a ton of fats, as some fats are definitely bad for you, but there are also good fats that are essential (Essential Fatty Acids [EFA], we will learn more about this later on). Fats, when digested are broken down into fatty acids. Fatty acids play many key roles in our biology.

Fats serve many purposes such as:
-Some vitamins are fat soluble
-They provide a lot of dense energy
-They make you feel fuller
-Are a major component of cell membranes

There are three types of lipids in the body:

Three classes of fat/lipids are:
1) Triglycerides – 95% of lipids within foods and humans are triglycerides.
2) Phospholipids – These are a major component of cell membranes.
3) Sterols – Yes, cholesterol is a fat/lipid.

Triglycerides are the main type of fat found in humans and food. Adipocytes, or fat cells, are filled with triglycerides; the more triglycerides you have, the fatter your fat cell. It is also important to note here: 18-24 months after birth, our body stops making fat cells. Thus, fat cells only can get bigger as they gain more and more triglycerides (or smaller as they lose more and more triglycerides).

Triglycerides are basically structured like this:
-1 glycerol molecule
-3 fatty acids
(Hence tri(3 fatty acids) and glyceride(glycerol))

Fatty acids are composed of chains that are 8 – 22 carbons in length. At one end of the fatty acid there is a methyl group (CH3) and at the other end there is an acid group (COOH). The rest of the carbons form bonds with hydrogen and bonds with each other. **WHETHER A FATTY ACID IS SATURATED, MONOUNSATURATED, OR**

POLYUNSATURATED DEPENDS ON HOW MANY BONDS CARBON MAKES AVAILABLE FOR HYDROGEN ATOMS TO BOND TO (EXCLUDING THE METHYL AND ACID GROUPS). NOTE: If you don't know your chemistry, read this anyway, you can still grasp the concept.

Saturated Fatty Acids are fatty acids where the carbon atoms have made all their bonds (aside from the methyl and acid groups) available for hydrogen bonds, hence, it is completely saturated with hydrogen atoms where possible. Basically, the maximum amount of hydrogen is being attached to the fatty acid.

Saturated fats (fats that contain saturated fatty acids) are solid at room temperature and can be found in foods such as animal meat. Ex: fat on a steak.

SATURATED FATS are important in the production of testosterone.

Monounsaturated Fatty Acids are fatty acids where ONE double bond is formed between two carbons (called the point of unsaturation) and since the bond is being used between two carbon atoms, this makes it so the maximum amount of hydrogen cannot attach to the fatty acid. (C=C)

Polyunsaturated Fatty Acids are fatty acids where double bonds are formed between TWO OR MORE carbon pairs. This makes the fatty acid even less saturated than the monounsaturated fatty acid. Therefore, the amount of hydrogen atoms able to attach to the fatty acid is further reduced. (C=C-C=C)

Unsaturated fats (fats with unsaturated fatty acids) are liquid at room temperature and are often called oils. Example: Fish oils and vegetable oils.

ESSENTIAL FATTY ACIDS are fatty acids which we must get from our diet or cannot make in sufficient quantities (similar to essential amino acids). They serve mainly to:

-help with the body's immune system
-play a role in the regulation of blood pressure
-oversee blood clot formation
-plays a role in handling infections
-help with the regulation of blood lipids

Two essential fatty acids are:
Linoleic acid (omega-6 fatty acid) (polyunsaturated fatty acid)
Linolenic acid (omega-3 fatty acid) (polyunsaturated fatty acid)

Note: "omega-x" just describes the chemical structure of the fatty acid but is negligible in importance for this article.

Sources of essential fatty acids:
-fish and fish oil

-I do not recommend using flax seed oil because a conversion must take place to achieve the essential fatty acids. However, fish oil already has its essential fatty acids and does not require conversion.

TRANS-FATTY ACIDS are fatty acids that are chemically produced and rarely found in nature. What is the difference between these and other fatty acids? They are usually chemically produced in a process called hydrogenation where carbon bonds are freed up and hydrogen atoms join. This causes the fatty acid to become saturated. So is this just a saturated fat? NO! Saturated fats have a 'cis' structure (bent structure) while the trans-fats have a 'trans' structure (straight structure). So is straightening out the fatty acid a big deal? YES!

Trans-fatty acids are something you always want to look out for on nutrition labels and are often used in deep frying. You will definitely want to avoid trans-fatty acids as they have been shown to:
-cause coronary heart disease
-increase LDL ("bad cholesterol") and decrease HDL ("good cholesterol")
-increased C-Reactive protein
-lead to diabetes and obesity

Examples of sources of trans-fats:
-Chips
-French Fries
-Pretty much anything that is deep fried

Phospholipids help in the formation of cell membranes and are materials for special functions such as the eye and nerve sheath. The phospholipids will not be focused on for this article.

Cholesterol is a sterol and it helps in the production of steroid hormones (like testosterone!), and also is used in the synthesis of bile and vitamin D.

Examples of sources of sterols, mainly cholesterol:
-Whole eggs
-Bacon

Fat Digestion will not be addressed in this article; Carbohydrate digestion is of the most significance for this article.

NUTRITIONAL VALUE OF FAT = 9 calories per 1 g of fat

Example: Dex consumes a whole egg that contains 5.3 g of fat. Therefore:

5.3 g of fat x 9 calories = 47.7 calories

THE MICRONUTRIENTS: Vitamins and Minerals

This article will hardly focus on vitamins and minerals and will be very basic.

Vitamins – Vitamins are organic compounds and there are various types that can be found in various foods. They are needed in minute amounts and do not provide energy/calories. They help with chemical reactions and other processes for growth. For instance, vitamins are used in the Krebs Cycle. They also help with reproduction and general health.

Water soluble vitamins are not stored in large amounts within the body and consist of the C and B vitamins. These vitamins are easily lost in urination and it is hard to consume enough water soluble vitamins to have a toxic effect.

The Fat-soluble vitamins are A, D, E, and K. They are absorbed along with fat in the small intestine. Fat-soluble vitamins can be stored and Vitamin A and D in excess can be toxic.

General Vitamin Notes:
-Almost all foods contain some vitamins.
-Vitamins are not that stable; they can be destroyed by chemical processes such as heating, and change in pH.

Minerals - Minerals are elements of the periodic table that are needed by the body in tiny amounts. They help in the construction of our body and also are utilized in chemical reactions within the body.

Major Minerals

-Calcium
-Phosphorus
-Potassium
-Sulfur
-Sodium
-Chloride
-Magnesium

Trace Minerals

-Iron
-Manganese
-Iodide

WATER
Water is so important and yet so many people avoid it. Why? Probably because they don't like having to use the washroom all the time, but believe the bodybuilding community: it is highly anabolic. Water has many benefits and this article will not address each and everyone but some important ones as they pertain to athletic

performance.

Water:
-clears out toxins
-Makes supplements like creatine more effective because creatine pulls water into muscle cells and for this you need a lot of water.
-A lot of vitamins are water soluble so you need water to make the vitamins function properly.
-for every gram of glycogen stored in cells, 3-4 grams of water will be stored. This can cause some serious cell volumization.
-helps to regulate body temperature.

WATER NUTRITIONAL VALUE = Does not contribute calories.

DEXTERIUM NUTRITIONAL RECOMMENDATIONS

Calories
This all depends on your goals, your height, your weight, your sex, your age and most importantly, your metabolism. As bodybuilders, we usually want to eat a diet either higher or lower than our Basal Metabolic Rate in order to either gain or lose weight.

Metabolism plays a huge role in how many calories you are going to be consuming. You can either be an ectomorph, mesomorph or endomorph.

-Ectomorphs tend to have high metabolisms and therefore burn a lot of energy.
-Mesomorphs tend to have a "good metabolism" in which a lot of nutrients go to muscles.
-Endomorphs tend to have a slower metabolism and a lot of nutrients go to fat.

NOTE: The following recommendations are general and quick formulas that work great. If a calculated calories is not working for you and you are not seeing results, there is a number of variables to take into account. The first step for bulking is to add or subtract 500 calories based on fat/muscle gain; if you are gaining too much fat, lower by 500 calories, if you are not gaining enough mass, increase by 500 calories. The same goes with cutting, but with different numbers, if you are not losing any weight, decrease by 250 calories. If you are losing too much weight, add 250 calories.

BULKING CALORIES: To gain weight and lean muscle mass
This is the process where we eat over the Basal Metabolic Rate in order to put on weight. In order to calculate the amount of calories that a bodybuilder should consume to bulk we use the formula:

Bulking Calories = (18 or 19 calories) x lbs of bodyweight.

Example: Dex weighs 160 lbs. Calculate his bulking calories.

Bulking Calories = 19 calories x 160

= 3040 calories

Bulking Rules
-let the mirror be the judge of whether or not you are making progress
-even though the mirror is the judge, still use the weight scale as a general judgment; if you are gaining more than 0.5 – 1 lbs a week, then you should probably decrease your calories

CUTTING CALORIES: To lose weight

Cutting Calories = (12-13-14 calories) x lbs of bodyweight

Example: Dex weighs 160 lbs. Calculate his cutting calories.

13 x 160 lbs = 2240 calories

Cutting Rules
-the mirror is the judge.
-if you are losing more than 1-2 lbs per week, you may want to increase calories slightly in order to make sure that you are not losing muscle mass too.

Note: I actually cut on 3000 – 4000 calories because I have an extremely fast metabolism.

MACRONUTRIENT AMOUNTS
Calories and macronutrients are pretty much equally important when designing a good diet.

Note: This article will not include cutting macronutrients as I think it would be better for users to look into Carbohydrate Cycling (I will be doing an article on this eventually). I used this method and it is complex. Therefore, the following will be for BULKING and adding lots of muscle mass.

PROTEIN INTAKE
This is such a grandiose topic of argument and debate. It never stops. Too much protein can lead to loss of bone calcium which makes weaker bones. Too little protein and well, you're not going anywhere. So the goal is to get a muscle building and safe amount of protein:

I generally recommend: 1 – 1.5 g of protein per lb of body weight.

I prefer 1.5 g of protein per lb of body weight.

Example: Dex weighs 160 lbs. How much protein should he consume if wants to add bulk and add mass?

1.5 x 160 lbs = 240 g of protein

Therefore, Dex will be getting 240 g of protein and 960 calories from protein.

Good protein sources/foods are located at the end of this article.

FAT INTAKE

I generally recommend taking in 20% of your total bulking calories as your fat calories. What do I mean? Observe the equation:

Fat calories = 20% of total bulking calories

Therefore for the equation, we write:

Fat calories = 0.20 x Total Bulking Calories.

Example: Dex weighs 160 lbs. How much fat does he take in?

Total Bulking Calories = 19 calories x 160 lbs = 3040 calories

Fat calories = 0.20 x 3040 calories
= 608 calories

Therefore, Dex will be getting 608 calories from fat and 67.55 g of fat (608 / 9).

Remember, saturated fats are important for testosterone production! Therefore, I recommend that 25% of your fat calories come from saturated fats. Therefore we use the formula:

Saturated fat calories = Total fat calories x 0.25

Using the example above:

Saturated Fat Calories = 608 x 0.25
= 152 calories

Therefore, Dex should be getting 152 calories from saturated fat which is 16.88 g of saturated fat.

What about Cholesterol? Negligible. Just make sure that you are not consuming too many whole eggs as these are high in cholesterol.

What about essential fatty acids? I recommend fish oil pills, especially NOW Salmon Oil. I suggest using 4-6 capsules a day of fish oil or equivalent to max 720 mg EPA and 480 mg DHA.

Keeping in mind that you want 25% of your fat calories from saturated fats, you can easily pick out some fat sources from my suggestions at the end of this document.

Good fat sources are located at the end of this document

CARBOHYDRATE INTAKE

This is the easiest to calculate and it is done last as you will see why according to the equation:

Carbohydrate calories = Total calories - protein calories - fat calories

Example: Dex is 160 lbs. Calculate his carbohydrate calories.

Solution: Using the information above, we just plug in the numbers:

Carbohydrate calories = 3040 calories – 960 calories – 608 calories
= 1472 calories

Therefore, Dex should be consuming 1472 calories from carbohydrates (386 g from carbohydrates)

There will be carbohydrate selections at the end of this document.

What about macronutrient ratios? These are so general and with a few minutes of mathematics, you will realize that they are frustrating and perhaps even useless. I suggest using the method that I have proposed above. The main reason I disagree with them is that people are highly individualized and require different amounts of macronutrients.

WATER INTAKE

Every bodybuilder knows that you should take in at least 1-2 gallons of water (4-8 L) per day. I even went as high as 9 – 11 L of water per day. Have a problem with this? Man up and get a Nalgene bottle and drink it through out the day.

MEALS

You will want to have 6-8 meals per day. This will help to keep your metabolism up. Think about it this way, you will turn your body into a energy burning factory because it is always “expecting” more energy in the form of food so it always has to be ready and at high burning capability as opposed to three meals a day where it only has to be geared for three meals. Therefore, have 6-8 meals to keep your metabolism up.

Furthermore, this is why we suggest the protein intake rule of 1 – 1.5 g of protein / lb of body weight because you want to stay in positive nitrogen balance or more simply, make

sure that your body has a steady source of protein throughout the day. I recommend that each meal contain ~30 g of protein. Any more than this may be wasted, except for post workout. So when designing your meal plan, which is to be customized by you, you will want to spread them out by 2-3 hours of each other to stay in positive nitrogen balance.

PRE WORKOUT NUTRITION

This is approximately 1-2 hours before you workout. You will want to consume complex carbohydrates, some fat sources and approximately 30 g of protein along with adequate water.

Work out should be approximately 45 minutes to 1 hour to avoid overtraining. With this being said, you are staying within the 2-3 hour range limit that allows you to stay in positive nitrogen balance.

DURING WORKOUT NUTRITION

Most advanced bodybuilders use something during this time. A popular choice is BCAA (Branched Chain Amino Acids) and/or EAA (Essential Amino Acids) supplements. However, one thing is ultimately necessary: water. Do not mess around, take your water.

POST WORKOUT NUTRITION

This is the most important time for nutrition: You are done your workout, your muscles are starving, your muscles are pumped up, you are insulin sensitive, and you are ready to uptake nutrients and undergo anabolism. This is also known as the window of opportunity.

AT THIS TIME TAKE ADVANTAGE OF YOUR ANABOLIC ENVIRONMENT. Remember how bad I said simple carbohydrates are? Well your muscle cells are depleted of glycogen and now is the time that they are more insulin sensitive and they can handle the blood glucose spike as uptake of nutrients is highly increased. Basically the idea at post workout nutrition is to get nutrients to the muscle as fast as possible. So, we consume simple sugars that will digest quickly but we will also consume some complex carbohydrates to avoid beating down on the insulin receptors too much. We also consume whey protein as it has a high bioavailability and a superb protein score; it is highly anabolic and digests fast. You can usually take in more protein at this time. My

NIGHT TIME NUTRITION

This is the meal that you eat right before you go to bed. People sit there and are wondering about this one, asking, "Doesn't it make you fat?" No, not if you eat the right foods. At night you release a large amount of growth hormone and therefore grow a lot. It is also the time where you are repairing yourself, so you want to provide the necessary nutrients to your body to do this. The goal here is **PROVIDE THE BODY WITH SLOW DIGESTING NUTRIENTS TO LAST OVER THE NIGHT.** We use foods like cottage cheese which contains casein protein and this digests slowly over 7 hours. Further, we use fat sources as they slow down digestion. We can use all natural peanut butter or raw almonds. A whole egg can also be good. Furthermore, we can use spinach which contains fiber (slows down digestion) and is overall good for you with its phytochemicals and antioxidants. So what I suggest:

-1 cup of spinach
-1 cup of cottage cheese
-1 -2 TBS of all natural peanut butter
-1 whole egg

SUPPLEMENTS
I highly suggest usage of the basics:

-Whey protein (Optimum Nutrition or Dymatize Elite)
-Creatine Monohydrate (Creapure)
-Fish Oil (NOW Salmon Oil)
-Multivitamin (AST Multipro 32x)

If you want to go advanced, hit up the forums for more information! This article is made to address nutrition basics.

VEGETABLES AND FRUITS – You definitely want to implement these into your diet as they have many antioxidant properties and are fibrous. The phytochemicals present have numerous benefits. Reducing free radicals with consumption of antioxidants helps you build muscle; the free radicals won't be running around destroying your gains.

VITAMINS AND MINERALS – Trust me, you will not have a problem with your vitamins and minerals if you are eating healthy and are taking a multivitamin (which contains minerals too).
AST Multipro 32x is a great choice.

THE SUMMARY

To calculate Bulking calories:

19 x body weight (lbs)

Calculate Protein Intake (g):

1.5 x lbs in body weight

Calculate Fat intake (calories):

Total calories x 0.20

Calculate Carbohydrate intake (calories):

Total calories – fat calories – protein calories

-Drink lots of water
-Eat vegetables and fruits.
-1.5 g of protein per lb of body weight.
-20% of calories are fat calories. 25% of fat calories are saturated fats.
-Creatine, Whey, Multivitamin, Fish oil
-Include night time nutrition
-6-8 meals
-mainly complex carbohydrates to the exception of post workout where you can have some simple carbohydrates
-30 g of protein per meal except for post workout where you can consume more.
-Pick foods from my suggestions
-TRAIN HARD AND HAVE FUN!

PROTEIN SOURCES
-Egg whites
-Steak
-Lean Beef
-Turkey
-Chicken
-Lamb
-Whole Eggs
-Whey Protein
-Casein Protein
-Cottage Cheese
-Milk
-Low fat cheese
-Salmon
-Tuna
-Haddock
-Lean Beef
-Lean Hamburger
-Crab meat
-Lobster

-Shrimp
-Cod
-All other types of fish, pretty much
-Buffalo
-Deer
-Moose

FAT SOURCES
Note: A large portion of your fats will come from your other foods selected
-Raw Unblanched Almonds
-Almond Butter
-All Natural Peanut Butter
-Whole Eggs
-Fish Oil (Not flaxseed)
-Various other nuts
-Extra Virgin Olive Oil
-Salmon
-Avocados

CARBOHYDRATE SOURCES
-OATS
-Whole Wheat Pasta
-Whole Wheat Spaghetti
-Whole wheat breads
-Whole Wheat Macaroni
-Yams
There are so many possibilities that you can use here to make great meals!

VEGETABLES
-Spinach
-Broccoli
-Carrots
-Onions
-Asparagus
So many good ones to choose from, but these are some of the best. General rule; the darker the green, the better.

FRUITS
-bananas
-oranges
-blue berries
-black berries
-all types of berries
-apples
-mango