



By: Hugo Rivera

When it comes to gaining muscle, most people think that supplements are the most important part of the equation. However, this could not be any further from the truth.

Supplements are just additions to an already good nutrition and training program. Nutrition and training are the most important components of a bodybuilding program, with rest and recovery next to them. Once all of those aspects of your program are maximized, then you can start thinking of adding supplements to your program.

Please understand that supplements do not make up for improper training, or lack thereof, or a low quality diet. Supplements only work when your diet and your training program are optimal.

Why Use Supplements?

Nutritional supplements are good because they prevent us from getting any nutritional deficiencies. The increased activity levels from your new exercise program will make your body have greater demands for vitamins and minerals, which will increase the probability of you suffering a deficiency without supplementation. Even a slight nutrient deficiency can sabotage muscle growth.

Can't we get all the nutrients we need from food alone? We cannot rely solely on food nowadays to provide us with all the vitamins and minerals that our body needs because the processing of foods before they get to the supermarket, cooking, air, and even light have already robbed your foods of most of the vitamins that they have to offer. If you are deficient in one or more nutrients your body may not be able to build muscle and burn fat properly.

Not all supplements are created equal though. Some your body always needs, others are more dependent upon what your goals are and what your budget looks like. Below you will learn what the different categories of supplements are and which ones you need to use at all times:

Basic Supplements



These are the supplements that you always need year round in order to gain muscle. If you have a limited budget, these are the only ones that you need to concern yourself with.

1 - Multiple Vitamin And Mineral Formula

Essential to insure that your body will operate at maximum efficiency. Why? Because on a very simplistic level, without vitamins and minerals it is impossible to convert the food that we eat into hormones, tissues and energy.

Vitamins

Vitamins are organic compounds (produced by both animals and vegetables) whose function is to enhance the actions of proteins that cause chemical reactions such as muscle building, fat burning and energy production. There are two types of vitamins:

1. **Fat soluble vitamins** - they get stored in fat and therefore if taken in excessive amounts will become toxic such as A, D, E, and K.
2. **Water soluble vitamins** - they are not stored in the body such as the B-Complex and Vitamin C.

Minerals

Minerals are inorganic compounds (not produced by either animals or vegetables). Their main function is to assure that your brain receives the correct signals from the body, balance of fluids, muscular contractions and energy production as well as for the building of muscle and bones. There are two types of minerals:

3. **Bulk minerals** - Which are called this way as the body needs them in great quantities in the order of grams such as Calcium, magnesium, potassium, sodium and phosphorus.
4. **Trace minerals** - Which are needed by the body in minute amounts, usually in the order of micrograms such as chromium, copper, cobalt, silicon, selenium, iron and zinc.

Where Can You Get Vitamins and Minerals From?

I like simplicity and because of that I tend to get most of my vitamins and minerals from multiple vitamin/mineral packs.

The ones I personally use are the Prolab's Training Paks, which are loaded with potent levels of essential nutrients and bioactive compounds.

You have to be very careful with what type of vitamin and mineral formulas you choose as some don't always contain what the labels claim (thanks to unscrupulous manufacturers) and some come from such poor sources that they are not absorbed very well by the body.

Other Reputable Companies On The Market That I Have Used Include:

- Twinlabs
- EAS
- Weider
- Labrada
- Shiff
- Optimum Nutrition
- Advanced Nutrition
- Higher Power Nutrition
- Champion Nutrition

2 - Protein Supplements

Because of hectic schedules it is impossible to eat the six perfectly balanced meals that are required to get in shape a day. Therefore, these supplements can be used as "fast food". They are easy to prepare (if it is a protein bar then no preparation is required) and most of the formulas that are available on the market today pay close attention to taste.

Having said that, there are many categories of protein supplements, so we will cover each category and discuss the correct way to use them. However, before we cover the different categories of protein supplements, let's talk about the different sources of protein found in these supplements.

Protein Sources

There are many sources of protein from which protein powders or bars are made of. Protein quality is measured by Biological Value (BV). BV is a value that measures how well the body can absorb and utilize a protein. The higher the Biological Value of the protein you use, the more nitrogen your body can absorb, use, and retain.

As a result, proteins with the highest BV promote the most lean muscle gains. Whey protein has the highest BV value, rating at 104. Egg protein is only second to whey rating as a 100 with milk proteins being a close third rating as 91. Beef rates as an 80 with soy proteins a distant 74. Bean proteins, due to the fact that are plant-based proteins, only rate a 49.

Now that we have discussed BV values, let's discuss each protein source in more detail.

Whey Proteins (Whey Concentrate/Whey Isolate)

I feel that whey protein is a great protein source for the following reasons shown in a growing number of studies:

- It improves sports performance because it reduces stress and lowers cortisol levels (hormone that destroys muscle).
- Improved immunity by increasing glutathione (GSH), which is a water soluble antioxidant found in the body.
- Improved liver function in some forms of hepatitis.
- Reduces blood pressure.
- Can help fight HIV.

- Helps reduce overtraining (which is linked also to low levels of GSH).

In addition to the above, we need to mention that whey proteins are highly digestible and have a better amino acid profile even than egg whites. So in other words, whey protein has the highest biological value (value that measures how well the body can absorb and utilize a protein) of any protein.

Having said this, whey is not the steroid-like substance that many advertisers would like you to believe, but based on the research I've looked at and on my own use of the product; I feel it is a valuable addition to one's diet for the reasons outlined above.

Also, you need to understand that all whey is not created equal. The whey that will give you the benefits described above has to be micro-filtered. Otherwise, it is just the garbage left after pasteurizing milk. Micro-filtration then has to be done at very low temperatures in order to allow for the production of high protein contents with no undenatured protein, minimum fat, minimum cholesterol and minimum lactose.

Isolates & Concentrates

In addition, there are whey isolates and whey concentrates. Whey isolates are sub-fractions of whey that are absorbed much more rapidly into the system. This is a good thing for post workout nutrition as at this time the body is in dire need of amino acids.

However, whey isolate makes a poor choice for during the day supplementation as if the body does not have a need for all of the amino acids that are released into the bloodstream, then it will use them for energy production as opposed to muscle building.

Also, it is important to mention that whey isolate does not have many of the health enhancing properties that are described above, as the expensive process required to produce whey isolate destroys many of the health/immune system enhancing sub-fractions such as the lactoferrins, beta-lactoglobulins, and immuno-globulins.

Therefore, for during the day use, a product consisting mainly of whey concentrate is your best bet while for after the workout, a whey isolate product would be a better choice.

Egg Protein

Egg protein is a super bio-available protein second only to whey, as previously discussed. It is a slower released protein than whey, which makes it perfect for throughout the day use.



One thing that I like to do is mix some egg and whey protein for the most bio-available protein shake in the planet!

Milk Proteins (Calcium Casseinate/Miscellar Casein)

Milk proteins, just like egg proteins, are a highly bio-available protein source (slightly less BV than egg) that is slowly released into the blood stream.

Calcium Casseinate & Miscellar Casein

Calcium Casseinate is the regular protein that is found in regular milk and other dairy products.

Miscellar casein is the natural, undenatured form of casein found in milk. It is separated from milk by means of ultrafiltration, without the use of chemicals, which increases the amount of bioactive milk peptides that support immune function as well as enhance muscle growth.

A property of micellar casein is that it may have the ability to provide a steady release of amino acids into the blood stream, which makes it an excellent choice for a long lasting anti-catabolic (muscle protecting) protein.

Beef Proteins

Beef proteins are slow released proteins that rate an 80 on the BV scale. While I don't know of any protein supplement in powder on the market that is made from beef proteins, there are beef liver tablets out there that do provide the benefits from beef proteins.

Beef proteins are abundant in blood building iron and also on B-vitamins, all factors that contribute to better nutrient utilization and energy production.

Soy Proteins

Soy has been shown to exhibit positive health benefits for both men and women. Studies have shown they may reduce the risk of hormone-dependent cancers (breast, prostate, etc), and other cancers as well. Soy's primary health benefits include reducing high cholesterol and easing the symptoms of menopause (due to the fact that it contains estrogen like substances called phyto-estrogens).

Soy has also been shown to help with osteoporosis by building up bone mass. Because of this, I like to recommend 1 serving of soy protein per day for women but only for its health benefits.

However, in the muscle building department, I don't feel that soy is very useful, especially for men. First of all, its BV value is a distant 49, and second of all, since it has estrogen like substances, it could potentially

reduce the utilization of testosterone through the binding of phyto-estrogens to the testosterone receptors.

Protein Supplements

Now that we have covered the main proteins present in protein supplements, lets discuss the different types of protein supplements on the market.

Weight Gainers

Weight gainers are protein shakes whose protein source consists mainly of whey proteins (mostly concentrate with some isolate as well). Some also include other proteins such as milk proteins and/or egg. These products are characterized by their extremely high carbohydrate content; typically in the form of maltodextrin (a high glycemic complex carb) and fructose (simple sugar originating from fruits).

Weight gainers were very popular back in the 90s but their popularity has died mainly because most people do not have the fast metabolism of a hardgainer; so as a result, a high carbohydrate diet applied on a person with over 10% body fat typically leads mostly to fat gains instead of muscle mass gains. For hardgainers however, and bodybuilders who are below 10% body fat, these products be very useful for getting in the amount of quality calories required to gain quality muscle.

They are best when used for the mid-morning, mid-afternoon and post workout meals as the carbohydrate content is of a fast released nature. They can be mixed with fruit juice or skim milk, and in order to increase the calorie content the use of flaxseed oil and fruits is invaluable.

My favorite weight gainers on the market are:

- Prolab's N-Large II (the most popular one on the market)
- Beverly International's Mass Maker
- Twinlab's Gainers Fuel 2500
- Champion Nutrition's Heavyweight Gainer 900
- Weider's Mega Mass 4000
- Clark Bartram's X-Treme Size
- EAS Mass Factor

This is not a comprehensive list by any means, but rather a list of the products that I know are good. The fact that a product is not on this list does not mean that it is not a good one.

Meal Replacement Powders (MRPs)

These powders are lower in calories due to the fact that they have way less carbohydrates than weight gainers. They were created after the realization that most of the population does not have a weight gain problem and therefore the weight gainers on the market were of little use to them.





Protein-wise, most are composed of whey proteins but there are many new formulas now on the market that consist of a protein blend of whey and milk proteins. Typically, the carbohydrate component used to be maltodextrin, yielding around 25-27 grams of carbohydrate per serving, but the newer generation formulas consist of slower released carbohydrates like brown rice and oats in order to make the product lower glycemic in nature.

Also, essential fatty acids have been added as well as a vitamin and mineral profile. While these products are too low in calories for most Hardgainers, they can use these as long as they add other ingredients such as fruit, skim milk and essential fats in order to increase the caloric base.

My favorite MRP on the market, by far, is Prolab's Lean Mass Complex, as it is instantized (you can mix with liquid and a spoon), and has a unique cinnamon oatmeal flavor.

In addition it contains essential fats, a slow released carbohydrate matrix and a protein blend of whey proteins and miscellar casein. Other good products I like are are:

- Beverly International's Ultra Size
- Champion Nutrition's Ultramet (the vanilla flavor is excellent)
- EAS' Myoplex (though it is very hard to mix)
- Labrada's Lean Body

Any of these products can be used throughout the day in between meals or after the workout.

Protein Powders

Protein powders are just powders that consist mainly of protein (typically whey protein is what is sold these days but you can also find blends). Typically, they contain no more than 5 grams of carbohydrates per scoop and 20-25 grams of protein (per scoop). Calorie wise they consist of anywhere from 100-125 calories.

Good sources of these powders are:

- Prolab's Pure Whey (available now also in Cinnamon Oatmeal flavor)
- EAS MyoPro (chocolate being my favorite flavor)
- Next Nutrition Designer Protein
- IronTek's Essential Protein

The powders just mentioned are mainly whey protein concentrate. The best isolates in the market are:

- Natures Best Zero Carb Isopure
- Prolab's Isolate



My favorite blends in the market of whey proteins with slower released proteins are:

- Beverly International's Muscle Provider (whey and egg blend)
- Prolab's Protein Component (also available in my favorite Cinnamon Oatmeal flavor)

I love protein supplements because of the many uses that they have. For instance in the morning I like to have oatmeal with Cinnamon flavored protein powder. One can also use them to add more protein to either a meal replacement powder or a weight gainer. Alternatively, one can also use them for creating a home-made weight gain formula.

So now, which protein product should you choose? If trying to gain weight then a weight gainer for sure. If you are looking to have a full meal consisting of carbs, proteins and some fats then an MRP is your best bet. If on a budget then the best way to go is to buy a 5-lb tub of protein powder.



Protein Bars

These are bars made out of any of the protein sources listed above. The carbohydrate mix is usually a combination of glycerin (which is not really a carbohydrate but a sugar alcohol) and sugars.

They are low in calories compared to a weight gain shake and typically contain less than desirable fats. If trying to lose fat, then limit their use to once per day at the most.

If doing a competition then I would not touch them. The ones I like most in the market today are:

- Premiere 1 Odyssey Bars
- Labrada's Lean Body Bars
- Met Rx Protein Plus Food Bars
- Worldwide Pure Protein Bars
- EAS' Myoplex Deluxe Bars

Beef Liver Tablets

These tablets are a great source of beef liver and bodybuilders have been using them for decades in order to obtain the values offered by beef proteins. The key thing for liver tablets to be useful is that they need to be manufactured with the highest grade of beef liver and they also need to be purified from the fat, cholesterol and other impurities that are contained in the liver.



When it comes to beef liver tablets the best ones in the market, in my opinion, are Beverly International's Ultra 40 because they contain the highest grade of beef liver and have been purified and processed to contain forty-five times the nutritional amount of whole beef liver.

The way to use them is to add 3-4 tablets per meal. Each tablet adds an additional 2 grams of protein from beef liver to your meals.

3- Essential Fatty Acids



Essential fatty acids, Alpha Linoleic Acid (Omega-3s) and Linoleic Acid (Omega-6s), are fats that need to be consumed through one's diet as the body cannot manufacture them. They are most important as they are involved in several key body functions such as energy production, fat burning, brain and nerve tissue development, mood regulation, insulin metabolism, hemoglobin production, etc.

In addition, these fats have some interesting properties such as anti-inflammatory properties, anti-lipolitic properties (prevention of extra calories being stored as fat), reduction in allergies, and immune system strengthening.

Where Can You Get EFA's From?

So having said that, where can one find EFA's? Salmon and flax seeds are high on the Omega-3s. If you do not consume any of these items, then either flax seed oil, flax seed oil capsules or fish oil capsules would be a good idea to add to your supplements program. Omega-6 fats typically do not need to be supplemented as they are easily found in poultry, eggs and whole-grain breads. Typically, one's diet is abundant on the Omega-6 but lacking on the Omega-3's.

My favorite EFA product is manufactured by a company called Pride Nutrition which has a blend called Premium EFA. In addition to Essential Fats, this blend also has CLA (conjugated linoleic acid) and GLA (gamma linolenic acid). These two fatty acids are showing very promising studies for weight loss and joint lubrication.

What I like the most about this product is the fact that they added the Lipase enzyme, which helps with the absorption and digestion of the fats. This product is the only one I have ever tried where you do not end up burping the oil a few minutes after you take the capsules.

Other products I like are Serrano Labs Alpha Omega-3s, which is also an excellent product. For CLA only capsules I like Prolab's Enhanced CLA which also has some flaxseed oil in order to provide some Omega 3's.

4- Vitamin C

Vitamin C is a water-soluble vitamin that improves your immune system and helps you recover faster from your workouts by suppressing the amount of cortisol (hormone that kills muscle and aids in the accumulation of fat) that is released by your body during a workout.



This is the only Vitamin that I recommend to be taken in mega doses quantities. Remember that since it is a water-soluble vitamin, it will not get stored by the body. Research shows that if taken an hour before a workout (1000mg dose) it significantly reduces muscle soreness and speeds recovery after a workout.

I recommend a total of 3000 mg per day of Vitamin C. If your multiple vitamin pack already has 1000 mg, and you take this in the morning, then all you need is an extra 1000 mg at lunch and 1000 mg at dinner.

A good Vitamin C that comes in 1000 mg capsules at a super awesome price (250 caps at \$10.49) are produced by Higher Power Nutrition.



5- Chromium Picolinate

Chromium Picolinate is a mineral that may enhance the effects of insulin, the hormone that pushes amino acids (protein) and carbohydrates into the muscle cell. As we have previously discussed, insulin is one of the most anabolic hormones in the body; it determines if the food that you eat is going to be used for muscle production, energy production or fat production. When insulin is secreted in moderate levels, it aids in muscle and energy production.

In excessive levels it only promotes fat storage. Chromium Picolinate may upgrade insulin's capability to produce muscle and energy by making the cells in the body more prone towards accepting this hormone (in other words, enhancing insulin sensitivity). In doing so, it may help you to gain muscle and lose fat faster as insulin will now be able to deliver the desired nutrients to the muscle cell.

Chromium may also keep blood sugar levels stable, thereby preventing insulin levels from going high enough to begin promoting fat storage. Again, chromium only works if we follow a proper diet. Also, while it is not the magic bullet that it was claimed to be for building muscle back in the early 90's I still feel that it is useful for ensuring that our insulin sensitivity is at its peak.

Sources

Again, I like Higher Power's Chromium Picolinate due to the quality and awesome price.

Quantity:

200 mcg with the post workout meal and with breakfast on days off.

Supplement Recommendations Summary

Essential To Take

- MultiVitamin/Mineral Complex taken with breakfast.
- Essential Oils, at least 14 grams per every 100lbs of bodyweight.
- 1 gram Vitamin C taken with breakfast, lunch and dinner.

- Weight Gain, Whey Protein Powder or Meal Replacement Powder for mixing with skim milk or water in order to make protein shakes. (Needs vary depending on diet).

Until next time, take care and train hard!

About The Author

Hugo Rivera is an ISSA Certified Personal Trainer, Sports Nutrition Specialist and Computer Engineer graduate from the University of South Florida. Hugo is owner of www.hrfit.net, an informational, free fitness and nutrition website.

Hugo is author of a self published bodybuilding e-book called Body Re-Engineering geared towards the natural bodybuilder and co-author of one of the most popular Men's Health book in the country (according to Barnes and Noble) called The BodySculpting Bible for Men and the very popular BodySculpting Bible for Women.

Hugo also just released his new book called The Hardgainer's Handbook of Bodybuilding in March 2005 and also serves as a nutrition consultant to several professional football players and other elite athletes. Hugo serves as business consultant to many personal training studios as well and offers personalized diet and training programs through his website.

Hugo continues to publish several articles on the subject of health and nutrition in several magazines and websites and has been with Prolab Nutrition for over three years. Hugo competes as drug free NPC athlete at the National Level and his core supplementation has always consisted of Prolab products.

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