

Protein and its Importance

The three macronutrients, protein, carbs and fats are important parts of life and nutrition. Next to water, protein is the most abundant substance in the human body. Protein is a series of amino acids linked together like a chain. Amino acids are the primary source for nitrogen in the body. Maintaining a positive nitrogen balance is necessary for the growth, maintenance and repair of muscles. Protein is a major component of all muscles, tissues and organs and is vital for practically every process that occurs within the body such as metabolism, digestion and the transportation of nutrients and oxygen in the blood. Protein is essential for proper regulation of the body's fluid balance, to keep a balanced PH level in the blood, for muscle tissue preservation during dieting or cuts, to build and maintain proper hormone levels, for necessary chemical reactions to take place and to keep the body's immune system functioning properly. It can be taken as an energy source when there are no carbohydrates available.

Protein and Muscle Growth While your body needs protein to maintain and increase muscle mass, the amount needed to promote muscle growth depends on your weight, activity level, body composition and fitness goals. In order to maximize the muscle growth and repair, you must maintain a protein positive nitrogen balance. If you are involved in powerful weight training regimen and you under eat protein, your body will not be able to repair everything. As a result, muscle can be lost and other vital bodily functions are compromised, such as hormone regulation and blood PH balance. This is the reason why weightlifters and bodybuilders need more protein.

Protein and Fat Loss A rich protein diet boosts your metabolism and aids in fat loss. The human body requires more energy to digest protein. It is important to work 30% harder to digest protein foods than it does to digest and process carbs and fats. Proteins help the body to mobilize stored fat for energy. If you under eat protein, your body will have a harder time drawing on fat stores, and may cannibalize muscle tissue for energy. In addition, a low protein diet can make you feel weak and tired.

Protein and Recovery Protein is vital for muscle recovery for people of all athletic levels, whether you are a body-builder, a professional athlete, or a recreational exerciser. A rich protein diet insures a proper nitrogen balance, which allows your body to be in muscle repair mode. The faster your muscles repair, the faster you recover. Extra protein is essential, especially for athletes who have frequent workouts, or for athletes who are cutting fat.

Protein Food Sources Some foods like eggs, meat, fish, milk, soy contain complete protein. They provide all the essential amino acids necessary to build muscle. Fatty and starchy foods contain small amounts of protein. Basically, protein food sources are divided into two categories: complete and incomplete protein foods. A complete protein food contains all essential amino acids required to build muscle and gain lean body mass. Animal proteins (meat) are complete protein sources. An incomplete protein food lacks several essential amino acids. Vegetables, grains, peas, nuts, corn are some examples. These can also be referred to as partial proteins.

How Much Protein do I Need? Protein needs largely depends on the factors like age, size, and activity level. The standard method used by nutritionists to estimate the minimum daily protein requirement is to multiply the body weight in kilograms by 0.8 or weight in pounds by 0.36. For instance, for a 200 pound individual, the minimum protein requirement is 72 grams (200×0.36) of protein per day. For a 70 kg individual, the minimum protein requirement is 56 grams (70×0.8) of protein per day. The protein requirement is almost double to the normal standards for the individuals engaged in intense workout sessions or those looking forward to gain muscle mass. It is generally advised that athletes and bodybuilders must take 1 to 1.5 grams of protein per pound of their bodyweight. For instance, for a 150 pound individual looking to add muscle mass; the minimum protein requirement is 150 to 225 grams of protein per day. Another good recommendation is to make sure that 20–40% of your daily calories come from protein sources. For instance, the minimum protein requirement for an individual consuming 2500 calories in a day is 150 to 250 grams of protein.

Protein Supplements

We have taken a look at the role of proper protein intake with regards to good health. Athletes and bodybuilders need more protein for quick muscle recovery and new muscle mass growth. Protein supplements are usually a more complete and balanced protein source. They are often fortified with vitamins and minerals, making them a multi-dimensional protein food. Protein supplements assist bodybuilders and athletes to achieve their desired daily protein intake requirements. They normally contain more than 20 to 30 grams of protein per serving. Types of protein supplements include protein powders, protein bars, weight gainers and meal replacements. They are available in numerous flavors and are also cost effective, as they can provide an average serving cost far below that of beef, seafood and even chicken.

Understanding Common Terminology (Isolate, Blends, Amino Acids, etc.) The following is a list of common terms associated with protein supplements:

Isolate. An isolated protein source is one that has been chemically purified to remove the base component (water). Generally isolates are considered almost lactose and cholesterol free and are at least 90% pure protein.

Concentrate. A concentrated protein source is less filtered and processed than isolate and generally contains 70 to 85% of the protein source. They contain more fats & carbohydrates and help to increase the strength of your immune system.

Blends. A protein blend is a mixture of various protein sources and purity levels. They are typically more well-rounded sources of protein as it offers the benefits of both digesting and slow digesting protein sources. A blend can be more cost effective than a pure isolate.

Amino Acids. Amino acids are the building blocks of protein. The 20 standard amino acids that are found within proteins convey a vast array of chemical versatility. These standard amino acids are separated into two categories: essential and non-essential amino acids. Essential amino acids cannot be created in the human body, and must be acquired from food. Non-essential amino acids can be synthesized on its own in the human body.

BCAA. Branched chain amino acids, also called BCAA, are essential nutrients that the body obtains from proteins found in food. It refers to a chain of the three essential amino acids – leucine, isoleucine and valine. The combination of these 3 essential amino acids plays a vital role in protein synthesis.

Weight Gainer. Weight gainers are high calorie protein powders specially developed for individuals who are in need of quick weight gain. They can be used as meals or can be taken in between meals for adding extra daily calories.

Meal Replacements. A meal replacement protein product is substitute for a solid food meal, usually for the purpose of weight loss. It contains a formulated nutritional and macronutrient blend that provides not only enough protein, but also a proper amount of carbs, healthy fats and vitamins and minerals.

Recovery. A recovery blend comprises of additional, non-protein supplement products required for post-workout recovery. They range from creatine to multivitamin and minerals, and larger doses of glutamine and taurine.

Slow Digesting. A slow digesting protein source is useful when not eating for prolonged periods. This results into fixed release of amino acids in your body. They also decrease protein breakdown, resulting in sufficient muscle growth through protein synthesis.

Fast Digesting. A fast digesting protein source is considered as a post-workout protein source. These protein supplements act quickly to help control the nitrogen levels in your body, especially after periods of fasting.

Energy Bar. Energy bars are supplement bars that supply the body with quick physical energy. While an energy bar does contain some protein, in general, it does not contain as much protein as a protein bar.

Who Uses Protein Supplements?

Bodybuilders. Body builders often take protein supplements in the form of whey protein to help them build muscles.

Athletes. Hard training athletes need extra protein for energy, to repair muscle, and to insure proper body functioning.

Dieters. Individuals looking forward to lose weight take protein supplements in order to speed up the metabolism, fend off hunger and to support the fat burning process.

Hard gainers. Individuals that are underweight take protein supplements to add vital calories during times of the day.

Protein Supplements versus Real Food

Advantages of protein supplements.

- Protein supplements are cost effective; Protein foods, such as beef and fish, can be quite costly per 30 gram serving.
- They require very little preparation time
- They are more complete and balanced protein source.
- They are multi-dimensional protein food, fortified with vitamins and minerals.
- Weight gainers offer high calorie foods that are easily broken down, and less filling.
- They come with a wide variety of flavors, and can take away some of the "blandness" that comes with a high protein diet.
- Many protein foods can serve as a low-calorie means to satisfy your sweet tooth.
- More convenient, and require little to no cleanup.
- They are much less temperature sensitive, and generally require no refrigeration or heating.
- Certain protein supplements have a higher biological value than real foods.
- They can be easier on the stomach before bed.

Advantages of real food.

- You know exactly what you're eating and where it came from.
- Certain protein foods such as eggs, string cheese, milk and tuna can be more cost effective than certain protein supplements.
- Real food can be used in conjunction with other foods for just about any craving or occasion.
- Certain protein supplements can have a greater discrepancy of actual listed ingredients.
- Shakes can cause stomach and digestive bloating for some individuals.
- A variety of real foods can provide a nutritional depth that is hard to achieve with protein supplements.
- Milk and eggs are nutritional grand slams.
- Beef in comparison to other forms of protein, has shown to pack on more muscle mass.

Protein Sources Used in Protein Supplements

Whey Protein. Whey protein is considered as one of the most popular protein supplementation protein source as is a fast digesting protein source, and isn't filling. It is a by-product in the production of cheese and account for 20% of the protein in cow's milk. It has a very high BV rating, and is rich in the muscle-building amino acids leucine, isoleucine, and valine. It is also low in glutamine and arginine.

Whey Isolate. Whey isolate is a high quality and more expensive variety of whey protein. It generally contains 90 to 98% protein and has a higher biological value (BV). It contains less fat and lactose per serving than whey concentrate.

Whey Concentrate. Whey concentrate contains 70 to 85% protein and is considered to be a more cost-effective member of the whey family. It requires less processing time, but also contains more fat and lactose.

Whey Protein Blends. Whey protein blends are specialized protein formulas that contain both whey Isolates and whey concentrates. They are generally more cost effective than whey isolate, and have a higher protein percentage ratio than whey concentrates.

Casein Protein. Casein protein is a slow digesting protein that is isolated from milk and account for 80% of the protein in milk. It is a very popular protein in weight gainers. It has a lower BV value than whey, is more efficiently used to build muscle.

Egg Albumin. Egg albumin is the egg white. It has higher essential to non-essential amino acid ratio, and is quite popular in bodybuilding circles. Eggs are often considered the king of natural food proteins because of their high essential amino acids levels. Egg protein is the best alternative for those that are lactose intolerant.

Soy Protein. Soy protein is high quality protein source, but not as effective as milk or casein protein. It is a fast digesting protein source that has an average amino acid profile. It is not the most desirable protein source for those looking to build muscle.

Soy Protein Isolate. Soy protein isolate is of lower quality than soy protein but has a greater BV than regular soy protein.

Goat Milk Protein. Goat milk protein has the highest bioavailability than all the protein sources available. It is extremely high in BCAA and is 100% lactose free. Its BV rating of 104 is superior to most foods, including eggs, which have a 100 BV.

Wheat Protein. Wheat protein is a healthy and natural alternative to dairy and egg-based proteins. It is lactose and cholesterol free, and is perfect for vegetarian bodybuilders and athletes. Wheat protein is also very high in glutamic acid.

Pea Protein. Pea protein is a 100% gluten free protein source. It is lactose free and does not contain any cholesterol. It is very easy to digest and is rich in amino acids. In addition, pea protein is a great alternative for vegetarian bodybuilders and athletes.

Complete Milk Protein. Complete milk protein is the dried protein from milk, with the carbs and fat removed that contains both whey and casein proteins. It is nutritious, and contains calcium and high levels of other vitamins and minerals.

How to Use Protein Supplements for Maximum Results

When to Take Your Protein Powder There are many important factors that should be considered before consuming supplements. It isn't as simple as just selecting a great tasting protein flavor, mixing and enjoying. When and how to consume protein powder supplements for the best results is an art.

First Thing in the Morning. In the morning, your body is in a fasting condition. It is a good idea to take both a fast and slow digesting protein powder after waking up. A fast digesting protein, like whey protein drink, will rapidly place the body into a positive nitrogen balance, and get the day off to a good, muscle building start. A slow digesting protein source, like casein protein, will continue to feed amino acids into the blood stream, and hold you off until your next protein meal.

Pre Workout. It is important to take a slow digesting protein powder before starting your workout as this will keep your body in a positive nitrogen balance during your workout.

Post Workout. It is important to take a mixture of fast and slow digesting protein sources after your workout as this will help you recover from the workout, and propel you in a positive nitrogen balance to your next meal.

Between Meals. During the day, you must consume slow digesting proteins as your regular protein supplement meals and snacks. Slow digesting protein in between major meals assures that you will maintain a positive nitrogen balance throughout the day.

Night Time. Before sleeping, you must consume slow digesting protein supplements as this will help you to maximize your nitrogen balance while sleeping.

Meal Replacements Meal replacements are complete and nutritious meals that can be taken at various time of the day. They are available in a wide range of products and choices from breakfast cereals to shakes designed for women and powders aimed at adding lean mass. A meal replacement bar or shake can contain fast or slow digesting proteins, or protein blends. Some meal replacements help you during diets, and some help you gain weight. Before purchasing meal replacements, make sure you are familiar with its protein source. Meal replacements with fast digesting whey protein (or whey blends) are eaten as a replacement for breakfast. Whereas meal replacements specifically designed for weight loss, are best eaten as a replacement for a main meal such as breakfast or lunch.

Protein and Carbohydrates for Weight Gain Carbohydrate is as important as frequent protein feedings for individuals looking forward to gain weight or get bulky. To maximize weight gain, it is best to use a weight gainer protein supplement at least 2 to 3 times per day. A solid approach is to drink a weight gainer shake in between meals, and then have a third before bed.

Enhancing Protein Uptake with Fast Digesting Carbs Several fast digesting carbohydrate products have been designed to complement protein supplementation. It is very important to take carbohydrates along with protein meals. Quality carbs improve protein transport and utilization. Carb powders, such as Carbo Gain or Carbo Plus, provide quality complex carbohydrates. They mix easily with protein powders, and can be utilized throughout the day to maximize your gains. Waxy maize, the king of all carb supplements, is a fast digesting complex carb source that is able to replenish glycogen stores faster than the whole food complex carb sources.

Example Protein Supplementation Plan

Protein Supplementation Plan for Gaining Muscle.

- Morning: Protein shake, whey/casein protein powder blend.
- Mid-Morning: Protein Bar
- Lunch: Protein shake, slow digesting protein source such as casein or egg protein.
- Mid-Afternoon: Protein Bar
- Pre-Workout: Whey protein shake, fast digesting protein source. Waxy maize.
- Workout: Whey protein and waxy maize.
- Post-workout: Protein shake, whey/casein protein powder blend. Waxy maize.
- Before Bed: Protein shake, slow digesting protein source such as casein or egg protein.

Protein Supplementation Plan for Adding Weight.

- Morning: Calorie dense meal replacement bar/ whey protein based weight gainer shake.
- Mid-Morning: Weight gainer shake, slow digesting protein source such as casein or egg protein.
- Lunch: Calorie dense meal replacement bar.
- Mid-Afternoon: Weight gainer shake, slow digesting protein source such as casein or egg protein.
- Pre-Workout: Whey protein shake, fast digesting protein source. Waxy maize.
- Workout: Whey protein and waxy maize.
- Post-workout: Protein shake, whey/casein protein powder blend. Waxy maize.
- Before Bed: Weight gainer shake, slow digesting protein source such as casein or egg protein.

Choosing the Right Protein Powder

Thousands of protein powder brands, variations, and flavors are available in the market today. Choosing the right protein powder can be confusing. There are many important factors that should be considered before choosing a protein powder. There are many factors that go into the creation of a protein powder. Some of the factors are mentioned below:

Price vs. Quality Selecting a protein powder based on cost alone is a mistake. Not all protein powders are produced equal. Generally, inferior cost equals a low quality of raw ingredients, and a lower quality control process. As with most products, price equals quality. A poor manufacturing process means reduction in the quality of the end product, making less of the protein bioavailable.

Whey Protein, Isolate vs Blend vs Concentrate Whey isolates are the purest form of whey protein as they are enriched with 90–98% pure protein, and contains very little fat and lactose. Whey isolate is a low calorie protein source, ideal for bodybuilders who are watching their weight or trying to cut. In comparison to whey isolates, whey concentrate contains more fat and lactose and contains approximately 70–85% pure protein. They are higher in calories but less expensive than isolates. It is an ideal choice for individuals who are bulking or trying to gain weight. As the name suggests, whey protein blends combine whey protein isolate and whey protein concentrate. Whey protein blends are the most popular protein powders because they provide excellent quality products, at an affordable price. It is ideal for individual who are not cutting or bulking and want high quality protein.

Looking for a Good Amino Acid Profile An amino acid profile is simply the amount of amino acids, BCAA, and essential amino acids contained in a protein powder. When looking at an amino acid profile, you look primarily at the amount of essential amino acids and BCAAs per serving.

Weight Gainers Following factors should be considered, when choosing a weight gainer:

- **Price vs. Quality.** Look for a weight gainer manufactured by a reputable supplement company. A weight gainer is no different than a protein powder. Low cost means inferior quality product.
- **Taste.** What good is a quality weight gainer if it tastes horrible? If possible, check product reviews before purchasing. The last thing you want to do is spend money on a weight gainer that is chalky, lumpy, grainy and ill-tasting.
- **Protein.** A weight gainer with 50 to 60 grams of protein per serving is perfect if you want to increase weight. Look for a good protein range per serving.
- **Protein and Carb Ratio.** A weight gainer with a carb to protein ration of 2 to 1 per serving is ideal for hard gainers.
- **Sugar.** A weight gainer that has less than 30 grams of sugars per serving is apt for individuals looking forward to gain weight. Look for the sugar content per serving. Many quality weight gainers have fewer than 10 grams of sugars per serving.
- **Cholesterol.** Look for a weight gainer that has fewer than 100 mgs of cholesterol per serving.

- **Saturated Fats.** Look for a weight gainer that contains fewer amounts of saturated fats. Most quality weight gainers keep the saturated fat content per serving at 5–10 grams.

Recovery Powders Muscle is built after your workout is over, that is during the recovery process. Therefore, recovery powders are taken post-workout. When comparing recovery powders, look for:

- **Waxy Maize.** Waxy maize is a fast digesting complex carb that can quickly restore glycogen to your exhausted muscles.
- **Amino Acids.** Recovery powder must be rich in essential aminos and BCAAs.
- **Creatine.** Some recovery powders contain creatine. Creatine is beneficial as it help gain strength and add muscle mass.
- **Protein.** Some recovery powders contain quite a bit more protein than others.
- **Sugars.** Some recovery powders are very high in sugar. Look for the sugar content per serving when comparing products.
- **Misc.** Many recovery powders have added plant extracts and added supplements, like beta-alanine and glutamine. Keep a close eye on miscellaneous content when comparing products.

The ingredients contained in recovery powders are extremely diverse. It is very important to do your homework before buying a recovery powder.

Meal Replacements Here are some factors to consider when purchasing a meal replacement product:

- **Protein.** Keep a close eye on the protein content per serving. Meal replacement shakes or bars for breakfast should contain some form of fast digesting whey protein. Lunch or dinner meal replacement products should contain a slow digesting protein source, such as casein protein.
- **Value.** Don't just look at the overall cost of the product. Consider the overall cost per serving.
- **Calories.** Though meal replacement products are nutritionally balanced, they don't have many calories. In fact, most meal replacement products hover around the 200 calorie mark.
- **Vitamins and Minerals.** Meal replacement products need to be rich in vitamins and minerals. Look for the vitamins and minerals content when comparing products.
- **Added Value.** Some meal replacement products contain extra supplements, or are rich in aminos and BCAAs. Keep a close eye on extra contents when comparing products as this hidden value can save you money.

Taste, Mixability and Aftertaste Good ingredients don't always make for the best tasting meal. A quality protein supplement made with quality ingredients, and manufactured by a reputable company can sometimes be less than desirable. Solid intangibles such as great taste, quick mixability, and no aftertaste are also important factors when choosing a protein supplement. One of the best ways of finding out about these protein supplement intangibles is via product reviews and the Muscle and Strength forum. Do your research, and don't hesitate to ask others.

Stacking Other Supplements with Protein

Creatine Creatine supplements are used to increase high-intensity athletic performance. They can add 10 pounds of muscle mass, and up to a 10% strength gain. For best results, you must consume creatine with a 1:1 ratio of protein to carbs.

Pre-Workout Protein consumption before workout can be more important than post-workout protein. One of the best pre-workout approaches you can take is to stack protein, waxy maize and a NO (or pre-workout) drink. This insures that you have the energy and positive nitrogen balance to power through your workout, and the NO and creatine to maximize your efforts.

Intra-Workout Taking whey protein and waxy maize intra-workout helps you to sustain energy and retain a positive nitrogen balance. But taking intra-workout supplements can maximize your workout sessions even more. Intra-workout supplements contain a blend of supplements including vitamins C and E, a quality blend of aminos and BCAAs, beta alanine, B vitamins, creatine, glutamine, arginine and more.

Carbohydrates The whey protein, waxy maize combination is an essential workout stack. It assist the body in delivering and absorbing protein and heightening the potency of whey protein. It is a fast digesting complex carbohydrate source that fuels your muscles with much needed glycogen.

Multivitamin Athletes, and those looking to add muscle mass, generally need more vitamin and mineral building blocks than the average man or woman. The body needs proper amount of vitamins and minerals to function.

Fat Burners A protein supplement and fat burner stack is ideal for individuals looking to cut fat or lose weight. Protein is a natural fat burner, requiring more energy to digest and process than carbs and fats. Adding a fat burner to the protein supplement maximizes the effects of losing weight.