

Protein Supplements



Before we discuss and consider protein supplements, a discussion about protein and its role in the body is required

So what are proteins?

Definition

Protein is a macro nutrient needed to maintain and repair the body. Protein is important to muscle cells, improving the overall function of muscles. Improving muscle function can lead to increased power, strength and muscle size (hypertrophy). Protein is the building blocks of muscle and makes up approximately 75% of our dry muscle weight.

Protein is made up of chains of amino acids which are the building blocks of protein. There are twenty-two amino acids, eight are considered 'essential' and the rest are considered 'non essential'. The essential eight amino acids cannot be manufactured by the body and must be supplied in diet. No synthesis of body protein can take place unless all of the essential amino acids are present in diet.

A list of amino acids

	Essential	Non-essential
1	Isoleucine*	Alanine
2	Leucine*	Asparagine
3	Lysine	Aspartate
4	Methionine	Aspartic Acid
5	Phenylalanine	Cysteine
6	Threonine	Glutamine
7	Tryptophan	Glutamic Acid
8	Valine*	Glycine
9	Histidine	Proline
10		Serine
11		Tyrosine
12		Arginine

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- *BCAA, Branch-Chain Amino Acid
- *Histidine is considered semi-essential.

Protein is necessary to build muscle. Adequate protein (amongst other nutrients) must be consumed for protein synthesis to take place (building new muscle.)

For the same reasons, finding high protein foods is vital for our health in general and for an active athlete, a person who eagerly wants to lose weight or a body builder in particular.

Recommended Dietary Intakes/Allowances (RDI/A's) for protein

Recommended Dietary Intakes/Allowances (RDI or RDA, dependant upon country) were developed in the 1940's-1950 during the war with the purpose to identify what soldiers needed to survive and avoid malnourishment. RDI/A's are based on NEED, not improvement. It was never intended for optimum health, but rather the absence of deficiency and disease. Unfortunately, RDI/A's are now 'standard' in many western countries based on out dated research.

The problem with the majority of health organizations is that they promote one size fits all answers dogmatically. Everyone is different. Advice from such organisation is so general that often it must be disregarded, especially by people wanting to build muscle and strength. This is why you will see serious athletes show complete disregard for such recommendations.

The Joint FAO/WHO/UNU Expert Consultation of 1985 defined the protein requirement of an individual as "the lowest level of dietary protein intake that will balance the losses of nitrogen from the body in persons maintaining energy balance at modest levels of physical activity". This set the average protein requirement between 0.75g to 0.84 grams of protein per kg of body weight.

The two key points in this definition are the "the lowest level" and "modest levels of physical activity".

- Approaching nutrition with a mind set of "**The lowest levels** of dietary protein" is not recommended for individuals trying to building muscle and strength.
- "**Modest** levels of physical activity" does not apply to people training intensely at a minimum of 4 days a week. Therefore 0.84 grams of protein per kilo of body weight cannot be recommended to the weight training community.

Many of the world's governments including, Australia, American, Canada, and most of Europe recommend the following:

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(Figures are approximate and are presented as the mean of organizations studied)

- 0.75g/kg for adult women
- 0.84g/kg for adult men
- Around 1g/kg for pregnant and breastfeeding women, and for men and women over 70kg

RDI/A's are not clearly stated for training individuals. This is simply because there has never been a mass study conducted on a weight training community and protein.

For weight trainers, the above recommendations are too low. To confirm this point, these figures are based using BMI (Body Mass Index) as a recommendation of what people should weigh as a reference to protein intake.

BMI's do not take into account lean muscle tissue. Athletes, bodybuilders and anyone else who has built a lean, muscular physique should not consider using a BMI as a form of measurement. Therefore, these recommendations are not applicable to those wanting to excel at building their body.

The RDA handbook states; "No added allowance is made here for unusual stresses encountered in daily living which can give rise to transient increases in urinary nitrogen output. It is assumed that the subjects of experiments forming the basis for the requirement estimates are usually exposed to the same stresses as the population generally."

In other words, the intended use of RDI/A guidelines are for sedentary, non weight training individuals. Training is stress beyond usual stress in 'daily living.'

An interesting example of protein requirements

An interesting fact and a good example of how some requirements become "requirements" is German physiologist, Dr. Carl Voit's (1831-1908) research. He recommended 118grams of protein per day. He based some of his finding on what people could afford as well as what soldiers were eating at the time and not on how to build a super lean muscular, tone physique.

Dr. Peter Lemon is one of the world's foremost researchers on protein needs and exercise. He is well respected by elite sports figures and elite coaches, when Dr. Lemon publishes something we take notice. Here is an extract from his findings:

"Exercise causes substantial changes in protein metabolism. In fact, recent data suggests that the protein recommended dietary allowance may actually be 100% higher for individuals who exercise on a regular basis. Optimal intakes, although unknown, may be even higher,

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especially for individuals attempting to increase muscle mass and strength."

-Dr. Peter Lemon, world's foremost researcher on protein needs and exercise.

Peter Lemon's research published in "Nutrition Reviews," (54:S169-175, 1996) indicates that strength athletes need up to 1.8g of protein per kilo of bodyweight to maintain positive nitrogen balance. Some studies showed that even higher protein intakes may be necessary in hard training strength athletes. In a study done on Polish weightlifters (Nutr. Metabolism 12:259-274), 5 of 10 athletes were still having negative nitrogen balance even while consuming 250% of the RDA!

PROTEIN PUSHER!

Of course, with anything, there is the opposite extreme end of RDI/A's and there recommendations are no better. Who am I talking about? Supplement companies and Bodybuilding Magazines.

Supplement companies and Muscle Magazines are on the extreme end of protein pushing. (Keeping in mind, supplement companies own a large majority of Bodybuilding Mags.) They will find every piece of evidence and study to support consuming protein. They want you to believe that if you don't eat enough protein you will soon catabolise and loose all your hard earned muscle.

Some bodybuilders and (particular the ones from supplement companies) encourage as much protein as four to five times your body weigh per day. Four to five times your weight in protein is a ridiculous recommendation unless large amounts of anabolic steroids are being used.

These companies are in the business of selling supplements/protein powders, so the more you consume, the more you buy, the more you buy, the more money they make. Supplement companies endorse athletes and as a result they also promote high protein diets.

The problem is that they recommend high amounts to everyone, but not everyone needs a high protein diet. Not everyone trains hard. High protein diets are not recommended or useful if someone isn't training hard.

So who do we believe? The RDI/A's and health organizations, or the supplement companies and muscle magazines? The answer is neither (as it often is in situations like these) and the solution is found somewhere in the middle ground.

There is no absolute answer to give you. It would be pure ignorance to state a recommendation amount every one should follow. Some people have more body fat, faster metabolism, train harder, naturally stronger, etc. There are

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way too many factors to have a dogmatic approach. However, you must feed your body, otherwise you won't recover. A good start for someone wanting to build lean muscle is 1.7 grams per kilo of lean body weight. The rest is trial and error...

How much protein you need?

Intelligent factors that trainers, bodybuilders and athletes need to take into consideration for protein requirements are:

- Body weight
- Individual goals
- Training regime
- Training intensity
- Training duration

Having trained numerous bodybuilders and athletes, I have never recommended following RDI/A's for building muscle and performance. It is only natural for people who want to build their bodies to increase protein consumption to assist in achievement of your goals. How much will be dependant on the factors outlined above. The only way to know if you are getting it right is to monitor your progress and how you feel.

For someone wanting to look like Mr. or Ms. Australia, a high protein diet is recommended.



Personal clients, Mr Junior Australia, Tristan Boyce, (Left) and Ms Australia, Janet Kane, (Right) both understand the importance of protein!

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Protein optimizes muscles and muscle equals strength, speed and a faster metabolism. There is not one sport or activity that does not benefit from being stronger. The old adage is true; *a stronger athlete is a better one.*

As a result of intense and frequent workouts' more protein is required. This is due to the demand placed on the body. If you do not place a demand on the

body, you simply will not need as much protein compared to some one who does.

Conclusive, absolute scientific data of what "optimal" protein intake is for gaining muscle and losing fat is not a one-size-fits-all answer. Following charts or "recommended amount" of protein need to be compared with the lifestyle of the individual. For example a bodybuilder would never follow a chart that said one kilo of protein per one kilo of body weight. Likewise, it would not be healthy for a sedentary individual to follow a bodybuilder's protein intake. Protein needs to be tailored to meet the needs of the individual.

Protein & weight loss

Protein has a thermal (heat producing) effect on the body as it accelerates the body's metabolic rate. Approximately 25-30% of the energy provided by protein is used for digestion. For example, if you ate 50g of protein, approximately 30% of the foods energy would go towards digestion. Compare this to Carbohydrates, 6% to 8% and fats use only 2% to 3% (of food energy for digestion).

Protein accelerates your metabolism to a far greater degree than fats or carbohydrates. In a nutshell, protein foods take more energy to digest which increases metabolism.

Unfortunately the metabolic benefits are not in reference to protein powders. They are in reference to protein found in food. Protein powders have been processed/pre-digested/hydrolyzed for the intent to be faster absorbed. Powders will not have the same effect on the metabolism as wholesome food.

With that said numerous dieters have been buying and using high-protein diets all across Australia, Candia, America and Europe, over the past several years in a hope to lose weight. If you are after weight loss, protein powders are not necessarily required as it is far better to get your energy from real food that has to be digested.

Why use a protein supplement?

Because of the demand training places on the body, extra protein is required. Often diet does not supply all the needed quantities of protein, especially in people in whom proteins demands are higher. Many athletes and

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bodybuilders choose to enhance their protein intake by using high quality different protein supplements.

Other reasons to use a protein supplement include:

- Convenient and easy to carry and consume
- Relatively cheaper than other lean protein sources (compared to fish, red meat, etc)
- Brings a variety to ones diet (taste)

- Easily digestible and after a intense workout preferable

- If on a restricted eating plan (vegetarian or vegan) its great way to consume complete proteins.

A word to the wise

Don't be a fool and ever consider going on a protein powder or shake diet plan. A protein powder diet plan is where you mainly consume protein shakes and if you're lucky, you may have one real meal a day. Don't be fooled, these diets are always given as a marketing vehicle by companies to sell more supplements.

The two biggest problems with these plans are:

Problem 1- They are not a sustainable way to live, and they never will be.

Problem 2- If we were meant to live off liquids we wouldn't have teeth (or a sophisticated digestive system). Our digestive system must have real food to digest for our bodies to function correctly.

I have worked with a number of people who have tried to follow a shake diet and every single one of them gained body fat and weight after concluding a shake diet. Not giving your body real food will put the body into starvation mode, which basically means when you do eat real food again, it will surely be stored. This is because the body thinks it has to store the energy from the food as it doesn't know the next time it will be fed. This function prehistorically is what kept the human race alive thousands of years ago as hunter gathers. As hunter gathers, we were never certain of the next time the tribe would be back from a successful hunt.

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Protein Powders – An ideal example of protein supplements



The two most common questions asked about protein powders actually only varies from gender to gender.

For example, if you are a male, you'll probably want to build more muscle mass as soon as possible. So, your question will be:

“Does protein powder work?”

Females, on the other hand, would ask/state;

“I don't want this protein powder to make me big, is it ok for me?”

Well, first of all, for all concerned males and females out there, asking questions like ‘would this protein powder work’ is just like asking if a chicken breast works, or saying that, I don't want grilled chicken to make me big. Funny, isn't it?

The above may sound like the obvious; however as a health and fitness professional I hear comments like this all the time. Quite often people pick up a product in a store and say ‘I hope this product doesn't make me look like this.’ It's very comical and almost arrogant to think that a product alone can transform your body.

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As stated in the above section, the body needs protein. We need protein for our skin, eyes, hair, nails and of course muscle! Protein is definitely a good thing because our body is literally made up of it.

The value of a protein powder (what you pay for it) depends on the speed of protein absorption in your system and powders can either be fast or slow absorbing. The higher the absorption rate, the more expensive the protein will be.

Major types of powders

Depending on their form / composition, proteins powders can be of the following types:

- Whey Protein Concentrate (WPC)
- Whey Protein Isolate (WPI)
- Hydrolysed Protein
- Blends

Whey Protein Concentrate (WPC)



Whey is a liquid by-product of cheese production (contains 75 – 80% protein). Removing the water afterwards results in the formation of Whey Protein Concentrate Powder. Research shows that WPC is, perhaps, one of the most efficient proteins for the human body as, of all protein sources, WPC is digested and absorbed better than any other protein (contrary to what most supplement companies market). Whey protein is thought to have a variety of benefits such as weight management, bone health, sports nutrition and immune system support.

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Better yet, whey protein is low in fat, lactose and cholesterol, making it perfect for virtually anyone. For the same reason, it is widely used by athletes and bodybuilders. It is a great source of quality protein that is easy to digest and is

very low in fat. It helps repair the body and is not turned to fat like carbohydrates. More importantly, it makes you feel full and satisfied, so you eat less.

WPC is a slow digesting protein and is, therefore, very economical in price. WPC is ideal before bed because of its longer absorption time.

A little note: It's important to remember that cheese is made from the milk and whey is a by-product of cheese production. Therefore, indirectly, whey comes from the milk itself (through cheese though). In others word, you could say whey is a by-product of milk or cheese and be right depending on what perspective you take.

Whey Protein Isolate (WPI)



This is a very popular protein, because of its faster absorption time (any where from 30 minutes to 4 hours, depending on product claim or study you read). Because of its higher biological value and purity (contains 90-98% protein), some people may argue that this is a superior protein as hydrolyzed proteins are too broken down for the body to be used but this argument has not been proved yet.

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A WPI protein can be very advantageous taken in the morning if the goal is maximum muscle. Sleep has the body in a fast for 6 to 8 hours on average, so it's a good idea to get easily absorbed protein into the body first thing in the morning.

Whey Protein versus Whey Isolate

Most whey protein powders that stock the supplement shelves are made up of whey concentrate and mixed in with a small portion of whey isolate. Comparing the two, whey protein isolate is more expensive than whey protein concentrate because it has a higher quality (more pure) and a higher BV (biological value). Whey protein isolate contains more protein and less fat and lactose per serving. Most whey protein isolates contain 90-98% protein while whey concentrates contain 70-85% protein.

Whey protein isolate is the highest yield of protein currently available that comes from milk. Because of its chemical properties it is the easiest to absorb into your system. Obviously with its high concentration, it appears that an isolate protein would be the obvious choice instead of a concentrate. However, this is an individual decision because the isolate is more expensive, and just because it is purer does not guarantee that it will help build bigger muscles. Its extra concentration may not justify its extra cost.

Hydrolyzed Protein



Hydrolyzed protein is protein that has been hydrolyzed or broken down into its simpler components to make the powder better digestible. Many will argue that this is the highest quality protein type on the market today because of its faster absorption rate. This powder is specifically designed for pre and post training sessions; these shakes are not to be taken with milk because it will slow down the digestion of the protein. Some claim that hydrolyzed protein is

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too broken down, which could lead to diarrhoea (rarely). If this happens, you can consider switching powders to a blend. (Diarrhoea is a very rare occurrence for most people when using a Hydrolyzed powder.)

Another point to remember is that hydrolyzed protein is really referring to the way whey (say that ten times fast) protein is processed, not the actual product itself.

Blends (Protein blends)



Some protein powders come in the form of blends, which are just that, a blend of all the types of powders, (e.g. WPC, WPI, Egg proteins, etc.) Blends usually offer the best value for money and are a great choice for an all rounder, good value product. Blends are usually cheaper and if you're new to protein powders this would be a great place to start.

Like WPC, it is also a great protein to have before bed (because much of a blend will be made up of WPC). With that in mind, a blend will also contain some WPI so it can also be a great powder immediately after training.

The Wasteful protein - Soy Protein Powder

While I didn't want to even mention this, I have to help you save your precious money and health. If you ask me to describe "Soy protein supplements" and their significance in one sentence, I would say....

"It's a complete waste of money!"

Why?

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Well, the most questionable of all the protein types is soy protein. Although fans of soy have touted it as an ingredient with miraculous properties, ample studies have indicated that many people should not take soy protein.

The soy industry is a powerful multi-billion dollar industry and all the marketing money for its advertising is promoting soy protein as a as a "health food". In reality, it's really causing a "health crisis."

Risks associated with soy protein

Soy has been found to exert estrogenic effects on many males. Eating soy can increase your oestrogen and lower your testosterone. The amount is not large but it does happen. Research has also shown that a soy-based diet at any age can lead to a weakened thyroid, which commonly produces heart problems and excess fat.

Modern soy products are health imposters. Main-stream headlines always read in favor of soy. We are told they are great for a host of illnesses and disease prevention. But the bottom line is that we are really endangering our health and our bodies by consuming it. Therefore, don't get sucked into the marketing and sales gimmicks.

And if you still don't believe me read this letter to US president Barack Obama by Sally Fallon Morell, President, the Weston A. Price Foundation by visiting this website:

<http://www.westonaprice.org/soy/obama-letter.pdf>

Here's a taster of the letter just incase you were thinking about skimming over it:

"Soy protein and soy flour are toxic, especially in large amounts. The US food and Drug Administration lists 288 studies on its database showing the toxicity of soy. Numerous studies show that soy consumption leads to nutrient deficiencies, digestive disorders, endocrine disruption and thyroid problems"

When & how to take Protein Powder?

Dosage is (as with everything) goal dependant. The average scoop of protein powder is 20 to 30 grams which is an average amount to consume in one shake. The fluid used to mixed protein powder should ideally be water. The best time to protein powder is immediately after your training and before going to bed.

If you're new to protein powder, mix it with water as protein with milk in the beginning can result in Diarrhoea. After two to three weeks you can switch to milk if it's consistent with your goals (e.g. weight gain). Powders may taste better with milk, however the reality is, your better off with water.

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Guideline for scoop servings for goals:

- One scoop (20g) daily for healthy people, preferable after training
- Two to four scoops daily for bodybuilders and athletes
- Two scoops daily for treating a disorder related to nutritional deficiency

Key times to have Powders:

- Immediately after weight training
- Before going to bed (sleep)

Taking protein powder before you sleep (especially a slow release protein) feeds the body with protein when the body needs it the most. There are two forms of sleep; Rapid Eye Movement (REM) sleep or Non Rapid Eye Movement (NREM) sleep. It is during the REM sleep that the body heals and repairs itself and having protein during this time is beneficial so the body can speed up the repair process.

What do I mix it with?

For best result always use water. However there are some things worth noting:

If you want to lose weight: Protein should only be taken with water. Why? Because mixing it with dairy products or juice will definitely increase your calorie consumption. Remember, to lose weight, you need to reduce your calorie consumption.

If you want to gain weight / build mass: Adding milk to shakes before bed or as a snack during the day will provide some extra calories. In either case when adding milk to shakes it's best to start by using 50% water and 50% milk. Example, if the powder calls for 200mls of liquid you would use 100mls milk and 100mls water. This is recommended as using 100% milk can often lead to diarrhoea. After a week or so, you can try whole milk, always confirming the change with how the body reacts.

If you *really* want to gain weight try making a super shake including some natural ingredients such as fruit, natural yogurt, oats and nut spreads (e.g. peanut butter, almond spread etc). Just note, don't expect to be lean if you include these shakes as a part of your weekly plan.

The more water you use to mix shakes the better whilst on the flip side, the less water, the nicer it will taste (generally). Fill up shakes with water, particularly after workouts as virtually every chemical function in the body occurs with water and having the shake with extra water will allow the body to easily and more rapidly transport protein to muscles.

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So which brand to use?

There are some brands that you just can't go wrong with, these include:

- Max's (WPC and WPI)
- AST (Hydrolyzed)
- Optimum Nutrition (ON) (Blend)
- Evolve (WPI and WPC)
- Dymatize (Hydrolyzed)
- Met-Rx (Blend)

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