Everything You Should Know About Protein

By Todd Lowder

What is Protein? Most people either don't know or think it is only something that only athletes or bodybuilders should eat. Chemically, proteins are compounds that contain the same atoms as carbohydrates and lipids - carbon, hydrogen, and oxygen - but with an important difference: protein also contains nitrogen atoms. These atoms bond with each other to form amino acids. Amino acids, in turn, are the building blocks of protein, and proteins are the building blocks of most tissues in the body.

Proteins play a number of roles in a persons diet from cell repair and new cell formation to being essential for certain enzymatic reactions and proper hormonal function. With all the important roles that protein plays in the body its hard to understand why people have been lead to believe protein is so evil. There are approximately 20 different amino acids. Of those 20 there are nine essential amino acids. These essential amino acids must be supplied by the diet as the body either cannot produce them at all or not in a sufficient quantity to supply the bodies needs. This simple fact illustrates one of the many reasons that adequate protein intake is essential.

Most people believe that by meeting the RDA for protein they will be O.K. regardless of what their daily activities may demand. The Food and Nutrition Board of the National academy of Sciences who sets these RDAs would never lead you astray, right? The RDA is set so that theoretically it is high enough to cover the protein needs of 97.5% of the US population. Based on this percentage, and the estimated US population of 250,000,000 over six million people are not getting enough protein if they take in an amount equal to or a little less than the RDA. Further consider that this RDA does not take into account that strength and endurance athletes may require additional amounts of protein over the average sedentary individual.

We have illustrated that the RDA of protein is a guideline at best. The inquisitive reader will next ask why should I eat more protein? Lets discuss the basics of protein metabolism. First the body is constantly losing nitrogenous compounds (protein/ amino acids) in the form of dead skin cells, dead intestinal tract cells, urine, feces, menstrual blood, and of course damaged muscle tissue. Additionally a large portion is also degraded and resynthesized in the body. We run into trouble when an amount greater than which is taken in is degraded. When this happens it what is known as a negative nitrogen balance. In this state growth, muscular or anything else for that matter is impossible. The converse situation can be true as well and is termed a positive nitrogen balance. This established the importance of protein and possible need for an additional amount in the

diet, but what does this have to do with losing body fat... Everything. As we have established lean body mass or muscle is your motor for burning calories and fat and the more you have the more calories you will be able to burn at rest. Since we are trying to maintain your existing muscle and build more protein is essential.

Throughout the day and night your body is in a constant state of protein turn over, repairs and building your body. The first place your body goes to look for the protein or amino acids is your blood stream for recently digested protein (amino acids) by eating frequent small amounts of protein you will have amino acids always available when your body needs them. If your body cannot find the necessary aminos in the blood stream the next place to get them is the only place they are stored that being muscle tissue. This is known as catabolism when your body begins to eat its own muscle tissue in order to fulfill its protein requirements, usually due to inadequate protein intake. Keeping in mind that muscle is essential for calorie burning one can see the above scenario is the worst situation possible for weight management and especially anyone who desires a tone lean body. This situation is fairly common in most commercial weight loss programs as they recommend ridiculously low calorie and protein levels. These programs usually result in large sums of weight loss mostly from muscle which in the long run results in eventual larger weight gains. This scenario is so common that most of these large diet programs have a return plan designed for those who end up in worse shape than they started- go figure.

This program should not be confused with the high protein diets of years gone by as it is not you will see that this meal patterning is still made up of meals which have there highest percentage coming from carbohydrates. This program is what would be termed a protein adequate program that is its provides the necessary to maintain lean body mass, build new lean muscle mass, and maintain normal body functions while avoiding a state of catabolism

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Part II - Fact and Fiction

This is the second in a series of articles on the importance of Protein and current trends and misconceptions. The main concepts to be discussed in this article will be myths and misconceptions about protein. How many times have you heard that protein will harm your kidneys or athletes including those who recreationally lift weights don’t need more

protein, or all proteins are the same no matter where they come from. The following article will attempt to address these myths.

People who workout don't need any extra protein. This one was addressed somewhat in Part I of this series. This is one that I don't think will ever go away! In fact a lot of the time when I show some one a sample diet they say boy isn't that a lot of protein. Well the nature of weight training would logically tell you would need more protein than your average Joe or Jane couch potato. Weight training is designed to damage muscle tissue so that your body will try to adapt to the stress and damage by rebuilding the muscle a little stronger and bigger. In order to rebuild the damaged tissue; which remember more muscle means higher metabolism your body needs protein.

The Current RDA for protein is approximately .86 grams of protein per Kilogram of body weight. In a study published in 1996 Dr. Peter Lemon, one of the foremost researchers on protein intake win athletes) stated that the his data suggested the RDA for those who engage in regular endurance exercise should be 1.2-1.5 grams per kg/body weight (150-170% of the current RDA), and that those who regularly engage in resistance training should consume 1.7-1.8 grams per kg/body weight (212%-225% of RDA). Then in 1992 a study published in the Journal of Applied Physiology found that strength trained athletes who consumed .86 grams/ kg of body weight (approximately the RDA) suffered a decrease in whole body protein synthesis. (Meaning they actually lost muscle). Remember, losing muscle means slower metabolism! This group of researchers recommended 1.76 grams / kg of body weight. Some studies have shown that even higher protein intakes may be necessary in hard training strength athletes. In one study of Polish weightlifters (Nutr. Metabolism 12:259-274), 5 of 10 athletes were still in negative nitrogen balance even while consuming 250% of the RDA. The above only represents two studies and my own logic, but it is just the tip of the iceberg when it when it come to the information available on the benefits of increasing protein intake when engaging in regular exercise.

"High Protein diets are bad for your kidneys" where in the heck did this one start and why do so many intelligent people keep repeating this one! The kidney issue is sort of like what came first the chicken or the egg except the conclusion in this one should be clear. You see the fact is that when you eat protein the one of the digestive by products is ammonia, which is converted to urea and excreted by the kidneys. People who have **pre-existing** kidney conditions have a problem with excreting urea, and high protein diets will increase that stress. Now, remember one of the jobs of a **normal healthy kidney is to excrete urea.** Some how do we get from that to the notion that the protein in your diet is what causes damage to the kidneys? My next challenge is for any one to find a study in a reputable peer reviewed journal, which **states that protein causes kidney**

dysfunction from high protein intake in healthy adults with no pre existing kidney disorder. I took this challenge and found a study published in Animals Internal Medicine March 18 2003. The 11-year study followed 1624 women aged 42 to 64. The women filled out questionnaires about their eating habits and researchers took blood samples to evaluate kidney function. 489 of the women had mild pre-existing kidney problems. **In the women with normal kidney function, no link was found between high protein diets and worsening of kidney function**. However, among women **who already had a mild kidney** problem, a high protein diet, especially those high in meat, showed some deterioration in kidney function.

Lastly, the myth that all proteins are created equal. This issue has become a supplement marketer's dream and is clouded by several different scales used to rate a proteins digestibility, quality, and biological value. Our main goal here is to discern the difference between these difference terms and give a few examples of the best choices.

First, proteins can be rated by their digestibility. This is measured by seeing how much nitrogen is excreted in the feces compared to the amount of nitrogen ingested. Another words how much of the protein you eat is really being used. For example Eggs, milk, and cheese have a 97% rating, meat and fish follow at 94%. Protein quality is a very clouded issue and one, which would take two newsletters to explain in detail. The short explanation is protein quality refers to how well or poorly the body will use a given protein. The last scale we will discuss is the biological value. BV is probably the most commonly used measures of a protein quality. The BV of a protein is simply the amount of nitrogen retained by the body divided by the amount of nitrogen absorbed from at hat protein. In English How much of a given protein is actually being absorbed. The top three in this category are Whey at 100, Egg at 100, and milk at 93.

So there you have it Protein has been vindicated!!! Just kidding, but maybe it isn't the nutrient villain it is made out to be. The next and last part of this series will so you how to calculate your protein needs and how you might fit them in to your current diet.

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Calculating your Requirements

Part III

This will be the last in a series of articles, which attempted to shed some light on the facts about this nutrient. In part one we took a look at the facts about protein, what it is, how it functions in the body, and some scientific research on individual needs. Part two attempted to debunk some common myths associated with protein. In part three we will look at the research and the RDA numbers to attempt to calculate your individual needs.

In part one we established that the RDA for protein (approximately .86 grams of protein per kilogram of body weight) or any nutrient for that matter could be either too much or little for approximately 6 million people in the United States. This fact is based on the method used to figure the RDA, which does not take into consideration an individuals activity levels and is set to meet the needs of 97.5% of the population once again leaving approximately 6 million people needing more protein.

Part two cited two studies one published by Dr. Peter Lemon in the blank and one published in the Journal of Applied Physiology found that the current RDA was too low for resistance trained individuals. Most subjects lost lean body mass rather than gaining it when consuming the RDA for protein. The researchers went on to recommend between 1.5- 1.8 grams per kilogram of body weight. Further the National Strength and Conditioning Association (NSCA) recommends resistance trained athletes consume 1 gram per lb. of body weight still above the current RDA.

Based on the researchers recommendations and the NSCA we will use the low end of the range at 1.5 grams per kilogram of body weight. Your first step is to figure out how many kilograms you weight (1 Kilogram = 2.2 pounds). The next step is to multiply your kilograms by the desired number of grams. The next step would be to divide your answer by the number of meals per day you are planning to eat.

EXAMPLE:

154 lbs / 2.2 kilograms = 70

70 kilograms * 1.5 grams =105 grams

105 /5 meals = 21 grams per meal

There is yet another way to approach this process. If you plan to use a dietary approach, which calls for 40% carbohydrate 30% protein and 30% fat, you can use the following steps, which should yield similar results. If you have a slow metabolism multiply your body weight by 12, a medium metabolism multiply by 15, and a fast by 18. Next you will multiply the total number of calories by .3 to get the number of calories from protein and finally divide that number by 4 to get he number or grams of protein. Lastly you divide the total number of grams by the number of meals you plan to eat that day.

EXAMPLE:

Slow metabolism
Step 1. 154 lbs * 12 = 1848 calories

Step 2. 1848 calories *.3 = 554 calories

Step 3. 554 calories from protein / 4 = 138grams

Step 4. 138 / 5 = 27 grams per meal

As Clubber Lang from Rocky 3 would say See Protein “aint soo Bad!” Seriously I hope you gained an appreciation for the importance of protein in your diet at regular intervals from high quality sources!