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# AN IN-DEPTH OUTLOOK OF RIGHT MACRONUTRIENTS

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## ABSTRACT

The concepts of macro and micronutrients have become old, but people still fail to opt for the right macronutrients, especially considering their lifestyle. Nutritionists divided the nutrients into macro and micro on the basis amount of the requirements of the body and consumption. An athlete will have a different quantum of macronutrients than a non-athlete. A female will have a different size of macronutrients than their male counterpart. The macronutrients are further divided into carbohydrates, fats, protein, and water.

**Keywords**: Macronutrients, Nutritionist, Carbohydrates, Fats, Protein.

## INTRODUCTION

Every individual who survives on this planet need food and water to survive as well as for the better functions of the different organs of the body. All the nutrients have equal importance but not equal in quantity required per day per body. Nutrients are intake in order to get energy, to build the muscles and repair the tearing of muscles, to fight against the foreign bodies and protection from different diseases.

## NOT ALL PROTEINS ARE CREATED EQUAL

Protein is the most talked-about nutrient in sports nutrition. What type of protein is best? How much protein do we need? These issues are hashed and rehashed in the popular media. Protein deserves such attention because of its many essential roles within the body. In fact, the word protein is derived from the Greek word meaning “of prime importance”.

The protein content of skeletal muscles represents about 65 percent of the body’s total protein, and it can be increased dramatically by resistance training. But protein is the basic structural material of all tissue cells, not just muscle cells. In addition, proteins-in the form of enzymes, antibodies, hormones, neurotransmitters, nutrient transporters, and cell membrane receptors-control every biochemical reaction that occurs within the body.

Proteins are generally long molecules composed of amino acid units. Of the twenty amino acids, nine are considered essential because your body cannot synthesize them; they must be consumed in your diet. The nonessential amino acids can be synthesized from one another.

**The Essential Amino Acids**

| | | |
|---|---|---|
| **1.** Histidine | 2. Lysine | 3. Threonine |
| **4.** Isoleucine | 5. Cysteine | 6. Tryptophan |
| **7.** Leucine | 8. Tyrosine | 9. Valine |

Proteins range in size from two or three amino acids (called peptides) to thousands. Body does not use protein intact, instead, this is broken down into amino acids, which are absorbed into the blood and transported to specific cells. The average sedentary adult needs to consume 0.4 to 0.5 grams of protein per pound of body weight per day to maintain existing muscle mass.

**Protein requirements for three different levels of activity**

| Description | daily protein consumption (gram of body weight per day) |
|---|---|
| Sedentary | 0.4-0.5 |
| Active | 0.6-0.7 |
| Strength athletes | 0.9-1.2 |

**Table-1**

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There are four commonly used scientific measurements of protein quality:

1. **Protein efficiency ratio (PER)** is a measurement of the growth of animals consuming a fixed amount of dietary protein of a single type.
2. **The biological value** of a protein is a measurement of the amount of that protein that is retained from the total absorbed quantity for maintenance and growth.
3. **Net protein utilization** measures the amount of amino acids supplied by a given protein source that are used to synthesize new proteins in the body.
4. **Chemical store** is a measurement of the concentration of the nine essential amino acids in a protein source.

| Protein | PER | Biological value | Net protein utilization | Chemical store |
|---|---|---|---|---|
| Whey | 3.0 | 104 | 92 | >100 |
| Casein | 2.5 | 71 | 76 | 82 |
| Soy | 3.9 | 100 | 94 | >100 |
| Egg | 2.2 | 74 | 61 | 69 |

Table -2

**Carbohydrates**

The primary function of carbohydrates is to serve as an energy fuel for boyd. As their name suggests, carbohydrates are carbon-and water-based molecules ranging in size from the very small to the very large and are abundant in most plant foods, especially fruits and grains. Regardless of the size of the carbohydrate found in food, once it has been consumed it is broken down in the stomach and intestines to the smallest unit, which is usually glucose.

**Functions and concept of carbohydrates**

Glucose is transported into the muscles and other tissues, where it is broken down further to generate energy. When glucose is not needed immediately for energy, it is stored in the muscles and liver in long chains called glycogen. The body's capacity for storing glycogen is limited. Once glycogen stores in the muscle and liver are replenished, excess glucose can be converted into fat. It is the conversion of glucose into fat that has given rise to belief that carbohydrate is bad. Even many strength athletes strive to reduce their carbohydrates intake levels as much as possible. Extreme carbohydrate restriction is counterproductive and potentially even dangerous for athletes. In addition, since carbohydrate (as well as glutamine) provides the essential fuel for the immune system, a low carbohydrate diet may make you more susceptible to cold and infection.

**Simple and complex carbohydrates**

Carbohydrates are divided into two basic categories: simple and complex. Simple carbohydrates contain just one or two molecules of sugars and have a sweet taste. Examples of simple carbohydrates are fructose and sucrose. Complex carbohydrates may contain hundreds or even thousands of sugars linked to form a single molecule and have a milder taste.

**Type of complex carbohydrates**

There are two major forms of complex carbohydrates: starches and fibers. Starches digested more slowly than simple sugars and therefore provide less energy in the short term, but more in the long term. Some foods that contain significant amounts of starch include potatoes, wheat, rice, and other grains.

**Role of dietary fibers**

There are two types of dietary fiber: soluble and insoluble. Neither is digestible, but both are essential to good health. Soluble fibers have the form and gums or pastes and dissolve in water. Soluble fibers bind bile acids and remove them from the body. Bile acids are needed to make cholesterol. In the absence of bile acids, therefore, cholesterol levels are lowered.

Insoluble fiber or cellulose is the constituent that gives structure to plants. Cellulose provides a number of important benefits, including absorbing and removing toxins and contributing to healthy functioning of the digestive tract. Examples of fiber-rich foods are whole grains, green leafy vegetables, and beans.

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**Glycemic index**

The Glycemic index is a method of categorizing foods by their effect on blood glucose levels. A food with a low-glycemic index produces a mild, sustained increase in glucose. A food with a high-glycemic index, on the other hand, produces a larger, more transient glucose spike. Generally whole grains have a lower Glycemic index than refined grains, high-fiber foods have a lower Glycemic index than low-fiber foods, and foods containing high amounts of protein and or fat have a lower Glycemic index than foods with small amount of protein and fat.

**FATS**

It is ironic that sugar is considered the "bad" macronutrient and fat is considered the "unhealthy" one. In fact, both nutrients are essential for a healthy diet. Problems arise when excesses are consumed. Fats serve many functions in the body. They are the most energy-dense macronutrient, and they provide many of the body's tissues and organs (including the heart) with most of their energy. Cell membranes are partly composed of a specific type of fat called phospholipids. Fats are critical for the transmission of nerve signals that generate muscle contractions.

They serve as a transporter for vitamins A, D, E, and K, and they provide cushioning for the protection of vital organs and insulation from the thermal stress of cold environments. Finally, because fat empties more slowly from the stomach, it helps delay the onset of hunger pangs.

**Types and functions**

All fats are composed of fatty acids, which are usually linked in three-unit molecules called triglycerides. There are three major types of fatty acids- saturated, polyunsaturated, and monounsaturated-distinguished by their molecular bonds and the number of hydrogen atoms they contain.

**Saturated fat**

They are typically solid at room temperature and found in the greatest abundance in meats and dairy foods.

**Monounsaturated fats**

Fats are liquid at room temperature and are most concentrated in oils such as olive, peanut oils-particularly corn and soybean oils-as well as in seeds, whole grains, and fatty types of fish (such as salmon and tuna)

**Polyunsaturated fats**

Known as essential fatty acids because our bodies need them but cannot make them from other nutrients. Omega-3 fatty acid is an essential fatty acid that is rare in the typical American diet; in fact, most people don't get enough of it. It is believed that adequate intake of omega-3 fatty acids is needed to reduce post workout muscle inflammation and accelerate repair.

**Trans fats**

Trans fatty acids are a form of saturated fat that is unhealthy in any amount. Trans fat are a product of hydrogenation, a chemical process by which hydrogen is added to unsaturated fatty acids in order to create a solid, spreadable fat with increased shelf life.

**WATER**

Water is not technically a macronutrient, but it is much like the macronutrients protein, carbohydrate, and fat in that it is an essential nutrient that we need in large amounts. In fact, we require much more water on a volume basis than we do protein, carbohydrate, and fat combined. The average human body is more than 60 percent water. Adequate water intake is necessary for proper digestion, elimination of wastes, joint lubrication, and other essential functions. Poor hydration also compromises an athlete's performance by keeping blood volume below its optimal level.

Daily water intake needs are highly individual. They depend on factors that include body weight, the weather, other dietary considerations such as intake of alcohol (which increases water needs), and activity level (training volume). The average person requires roughly 1 ounce of water per kilogram of body weight on a daily basis.

**SUMMARY**

You cannot build a great physique with poor nutrition. Your health and performance will pay a price for every "empty calorie" you consume, and will benefit from every improvement you make in the quality of the nutrition you take in each day.

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The cornerstone of good nutrition is an appropriate balance of 19 to 26 percent proteins, 41 to 48 percent carbohydrates, and 33 percent fats, from quality resources. If you get the right proportions and the right total amount of macronutrient calories from mainly natural whole-food sources, supplementing with proven-effective supplements such as the protein powders discussed in this paper earlier, you are halfway to achieving an optimal nutrition regimen for muscle growth. The rest is timing.

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