Master YOUR MACROS

Your Complete Guide to Macronutrients

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MACROS GUIDE

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> *We eat foods, but we do not eat nutrition or nutrients. The food we eat is part of our nutrition and contains nutrients*
>
> Asker Jeukendrup

MACROS GUIDE

UNDERSTANDING MACRONUTRIENTS

Think of macronutrients as the big building blocks of food. Just like houses are made of bricks, wood, and glass, our food is made of three main parts: **carbohydrates**, **proteins**, and **fats**. These are the big nutrients that give us most of our energy and help our bodies grow and stay healthy. **Water** is also a major macronutrient that is essential to life.

MACRONUTRIENTS

PROTEIN

Imagine tiny workers in your body fixing and building things. That's what proteins do & more. They're found in foods like meat, eggs, chicken, beans, nuts, & they help repair your muscles and make new cells.

CARBS

These are your body's favorite fuel for exercise. When you eat foods like bread, pasta, or fruits, your body quickly breaks them down into energy that keeps you running, playing, and thinking.

FATS

Fats are like a reserve energy source and also help keep your body warm. They're in foods like oil and avocados. They contain more energy but our body is slower to use them during exercise.

UNDERSTANDING MACRONUTRIENTS

Carbohydrates, fats, and proteins are the big players in our diet, and that's why we call them **MACRO**nutrients.

They're like the main ingredients in a recipe – we need them in larger amounts!

But here's a fun fact: foods aren't just made up of one macronutrient. It's more like a mix, with foods bringing a blend of carbs, fats, and proteins to the table. Plus, we get a bonus of vitamins, minerals, and other superhero-like compounds that keep us healthy and strong.

Each macronutrient in our diet has its own special job to do. Think of them as members of a team, each with a unique role.

💪 GROWTH & DEVELOPMENT

This is where **proteins** shine. They're the building blocks, helping our bodies grow and repair themselves.

🔋 ENERGY SUPPLY

Carbohydrates and **fats** fuel for our bodies, keeping us energized and ready to go.

⚡ METABOLISM REGULATION

Proteins take the lead again, but in a different way. They work as enzymes, which are like tiny managers, making sure all the processes in our body run smoothly.

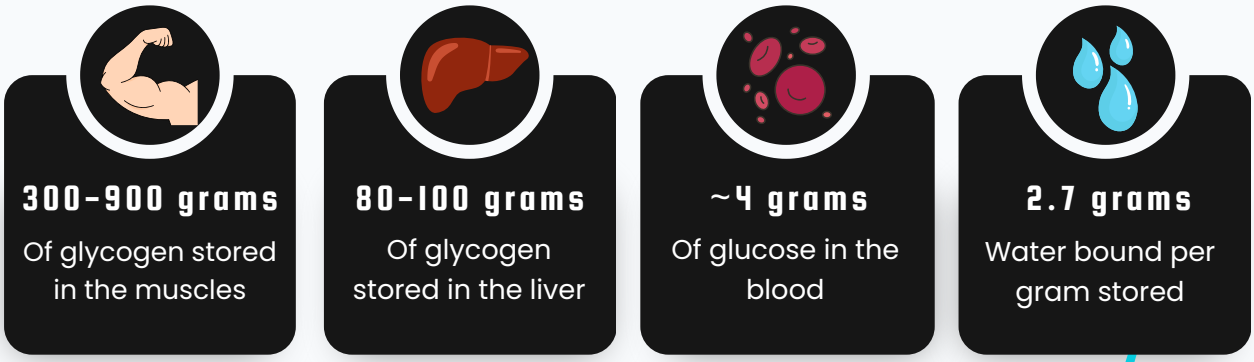
CARBOHYDRATES 101

Carbohydrates are aptly named as they are molecules built of carbon (**carbo**), hydrogen, and water (**hydrate**).

Carbohydrates are the primary fuel source for our bodies, especially during high-intensity activities. BUT they're not just about energy; they play a crucial role in the overall functioning of our bodies. More of that later.

Carbohydrates are found in all living cells and we get almost all of our intake from plant sources. One gram of carbohydrate substrate contains 4 kilocalories of energy (Calories).

Glycogen is the storage form of carbohydrate in our bodies and a person can store up to 1000 grams (4000 Calories) depending on their size and training status! This may sound like a lot, but in reality, it is minuscule compared to energy stores of fat!



DID YOU KNOW?

As ~2.7 grams of water is bound to each gram of stored carbohydrate, your body weight changes daily according to diet composition and exercise completed.

CARBOHYDRATES 101

> *All sugars are carbohydrates and all carbohydrates are sugars. Carbs are not the enemy.*

Carbohydrates can be classified into two main types: **simple** and **complex**. Simple carbs, found in fruits and sweets, are like quick-burning logs in a fire – they give you a fast energy boost.

Complex carbs, like those in whole grains and veggies, are more like slow-burning logs, providing steady energy over time. Below is a classification chart to better help you distinguish between them.

Classifications of Carbohydrates

Monosaccharides	Disaccharides	Oligosaccharides	Polysaccharides

Simple Carbs

- Fruits and fruit juices
- Sweets
- Baked goods
- Jams
- Honey
- Syrup
- Candy
- Sugar
- Sports Drinks
- Chocolate
- Beer
- Sugary cereals

Complex Carbs

Starches

- Cereals
- Potatoes
- Pasta
- Rice
- Bread

Fibers

- Wholegrain cereals & breads
- Oats
- Fruits
- Vegetables

CARBOHYDRATES 101

MONOSACCHARIDES

Monosaccharides are the basic unit of carbohydrate & there are 3 present in our diet.

Glucose is the only carbohydrate that can be oxidized in our muscles. Fructose and galactose must be converted into glucose before they can be oxidized. This conversion takes place in the liver and occurs slowly.

DISACCHARIDES

Disaccharides are combinations of two monosaccharides & there are 3 present in our diet.

OLIGOSACCHARIDES

Oligosaccharides are combinations of 3 or more monosaccharides and are found in most vegetables.

POLY SACCHARIDES

Polysaccharides are combinations of 10 or more monosaccharides. Polysaccharides containing 20 to thousands of saccharides are either starch, glycogen or fiber.

CARBOHYDRATE FUNCTIONS

ENERGY PROVISION & EXERCISE PERFORMANCE

Carbohydrates are key for high-energy activities. However, the body's carb stores are limited and can deplete quickly with strenuous activity. It's essential to replenish these stores post-exercise by eating carb rich foods.

NERVOUS SYSTEM

In normal conditions, blood glucose is the exclusive fuel for the central nervous system. This is crucial because the central nervous system, including the brain, functions optimally when blood glucose levels are maintained at appropriate levels.

FIBER INTAKE

Fiber, the indigestible part of carbohydrates, plays a significant role in digestive health and nutrient absorption. It's classified into two types: soluble and insoluble.

INSOLUBLE FIBER

Adds bulk to stools and helps retain water, which aids in bowel regularity and can be used to treat constipation.

SOLUBLE FIBER

Helps to lower cholesterol and stabilize blood sugar. It supports good gut bacteria, aiding the immune system and blocking harmful bacteria. It also aids in nutrient absorption, prolongs fullness, and thus can help low calorie intake and support fat loss.

CARBOHYDRATE INTAKE

Carbs are the **dominant fuel source for intense activities**. During exercise, you use this stored energy, and as it lowers you fatigue, affecting performance and decision-making.

Your body's stores are influenced by both what you eat and how you exercise. By eating foods rich in carbohydrates before working out and after you exercise, you can boost your energy reserves. This not only helps in delaying fatigue but also enhances your performance.

The goal is to consume enough carbs to fuel your muscles, support your central nervous system, and maintain other vital bodily functions.

Your daily carb needs vary between rest and training days, and they're also tailored to individual objectives, such as enhancing performance or reducing body weight.

😴 **REST DAYS**

2-3

g/kg/bm

e.g 80 X 2-3 = 160g-240g

😓 **INTENSE TRAINING**

4-6

g/kg/bm

e.g 80 X 4-6 = 320g-480g

🏋️ **GYM TRAINING**

3-4

g/kg/bm

e.g 80 X 3-5 = 240g-320g

🏆 **TOURNAMENT -I**

6-8

g/kg/bm

e.g 80 X 6-8 = 480g-640g

** g/kg/bm = grams per kg of body mass

PROTEIN 101

> *Everything we do, everything we are and everything we become depend on the action of thousands of different proteins*
>
> Houston, 2006

When you think of protein, you might picture muscle growth and repair, thanks to foods like chicken, fish, eggs, and milk. But let's take your understanding of proteins a step further. Proteins are the essential macromolecules of life, the cellular action molecules. They're **involved in virtually every function of our body**.

STRUCTURE
Proteins provide structure to all cells in the human body and are an integral part of muscle, bone, skin, hair and nails.

ENZYMES
Proteins act as enzymes that accelerate biochemical reactions, vital for the generation of energy for muscle contraction.

TRANSPORT AND STORAGE
Proteins transport and store substances, e.g. in our blood, oxygen is transported by the protein hemoglobin!

HORMONES
Proteins function as hormones that regulate different roles in the body such as the release of insulin from the pancreas which regulates our blood glucose levels.

SIGNALLING
The insulin receptor in the cell membrane of a muscle cell is bound by insulin released from the pancreas which signals to increase the uptake of glucose into the muscle cells.

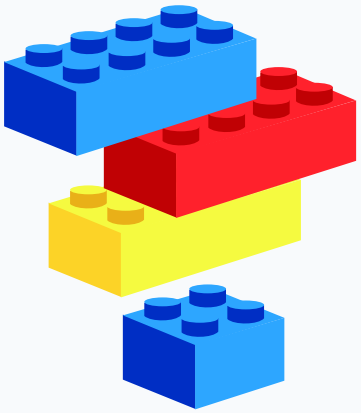
MOVEMENT
Proteins contract our muscles! The proteins in our muscles turn chemical energy stored in the bonds of ATP into mechanical work!

IMMUNE HEALTH
Proteins support out immune health by the creating antibodies to fight infections!

GROWTH AND DEVELOPMENT
Proteins have a regulatory role in the formation of new proteins and thus muscle growth and the development of new proteins.

PROTEINS - WHAT ARE THEY?

Similarly to carbohydrates, 1 gram of protein yields 4 Calories. Amino acids are the building blocks of all proteins.



Amino acids are connected by peptide bonds and once connected, they are called peptides.

The majority of proteins are polypeptides, poly meaning many, containing up to an astonishing 300 amino acids!

Because muscle is mostly protein, meat is seen as a good source of protein. That being said, **protein sources are not exclusively animal-based**, there are also many plant-based protein sources. Vegetarians, however, are at risk for incomplete protein intake due to plant-based sources lacking in certain amino acids.

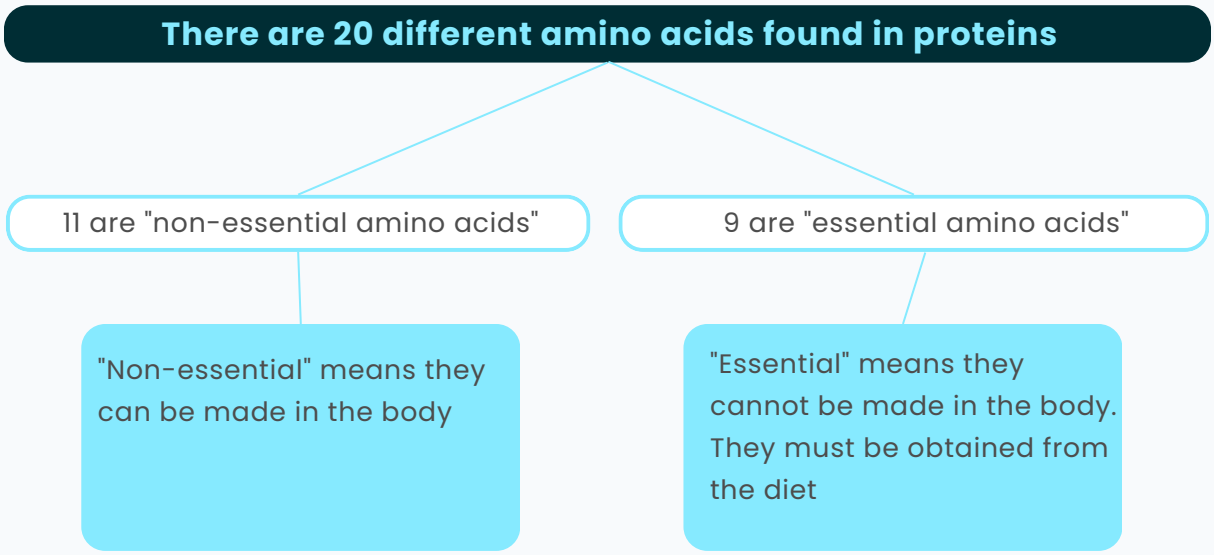
Incomplete protein intake is unable to sustain life and for that reason, our diet must include all essential amino acids in adequate amounts.

If you tried to build a wall without cement to bind the bricks, the wall would not be standing for a long time! You need all of the equipment to do the job properly. The same goes for protein intake. We need all amino acids to sustain life.

Diet diversity is therefore extremely important for vegetarians to ensure they get all essential amino acids in adequate quantities.

PROTEINS – WHAT ARE THEY?

When addressing protein intake, there is a need to understand the different amino acid types.



DID YOU KNOW?

Amino acids in animal based sources are NOT better quality than plant based sources. In fact, despite common misbelief, they are identical! The quality of a source of protein source is determined more so by the kinds of amino acids present. A short supply of essential amino acids will interfere with normal protein synthesis.

When you eat protein-containing foods, they will have varying amounts of the essential amino acids present in them.

This list to the right shows some of the common protein sources we obtain in our diet.

- Poultry
- Eggs
- Fish
- Red Meat
- Milk
- Yogurt
- Soy
- Tofu
- Beans/legumes

PROTEINS - HOW MUCH?

The RDA (recommended dietary allowance) of protein is 0.8 grams per kg of body mass daily. However, this amount only signifies the amount of protein needed to avoid deficiency, not how much you truly need.

I recommend that you consume between 1.6-2.2 grams of protein for every kilogram of your weight daily.

To maximize the benefits of protein intake, aim to spread your protein intake evenly throughout the day, every 3-4 hours in 4-6 servings.

Ideally, each serving should have about 0.4g/kg grams of protein. Also, having 30-40 grams of protein before bedtime can boost your overnight recovery.

DAILY INTAKE

1.6-2.2

g/kg/bm

e.g 80 X 1.6-2.2 = 128-176g

PER SERVING

0.4

g/kg/bm

e.g 80 X 0.4 = 32g

CHICKEN BREAST

Average raw breast contains ~27g of protein

GREEK YOGHURT

200g of 0% fat contains ~20g of protein

BEEF MINCE

100g raw 95% lean, contains ~30g of protein

SALMON

Average fillet contains ~25g protein

FIRM TOFU

300g contains ~30g of protein

FAT 101

Fats play a crucial role in maintaining your body's health and functionality. It is a source of energy, but a rather inefficient source as it cannot sustain energy supplies for high-intensity exercise.

Each gram of fat gives 9 kcal of energy, more than twice as energy-dense as carbs and protein. This is one reason people are told to **limit fat intake**.

Dietary fats fall into three main categories: **saturated**, **monounsaturated**, and **polyunsaturated**. While most foods contain a mix of these, they predominantly lean towards one type.

Unsaturated fats, found in foods like avocados and nuts, are seen as healthier than saturated fats, which are abundant in foods like butter and fried items.

High intakes of saturated fats can elevate cholesterol levels, posing health risks. Moreover, excessive fat intake can lead to weight gain, potentially hindering performance and causing negative health implications.

SATURATED

Butter, cheese & fatty meats

MONOUNSATURATED

Avocado, olive oil & nuts

POLYUNSATURATED

Salmon, flax, sunflower oil

FAT 101

Fats otherwise known as **lipids** are stored in the body as triglycerides or triacylglycerols (TAGs) as shown below.

The useable forms of energy are the fatty acids, intramuscular triglycerides (stored in the muscle cell) and circulating plasma triglycerides.

Lipids can be found in adipose tissue (fat), muscles and in the blood. Triacylglycerols (TAGs) are the most abundant form of fat consumed by humans. These can be either saturated ("unhealthy fats") or unsaturated ("healthy fats").

DID YOU KNOW?

There is an abundant store of fat in the human body. If a person has a 15% fat mass at 70g or 10.5kg of fat mass, this equates to a whopping 93,212 kcal! That is 23 times more energy than the maximum carbohydrate storage capability.

Higher saturated fat intakes are linked to higher prevalences of **coronary heart disease** and instances of certain **cancers** such as colon cancer.

Linolenic, linoleic acids and arachidonic acids are known as essential fatty acids. Linolenic acid is commonly known as omega-3 fatty acid and linoleic acid is known as omega-6 fatty acid.

Being essential fatty acids implies that it is essential to obtain them from the diet regularly or else symptoms of deficiency can present.

FAT - HOW MUCH & WHEN

Your fat intake should account for the remaining amount of your energy intake once carbs and protein are accounted for. This will typically be around 20-25% of your total daily energy intake.

Aim to for about 0.80-1 grams of fat per kg of body mass.

High-fat foods should be avoided in the meals before and after training.

This is due to the possibility of suffering from gastric discomfort during exercise, as fat slows the rate of digestion. This can impact post-exercise recovery too.

OMEGA-3 FATTY ACIDS

Omega-3 fatty acids are a type of polyunsaturated fat. They are classified as essential which means that they cannot be made by your body, and so you must consume them in your diet.

Dietary sources include salmon and other fatty fish, avocados, chia seeds and more. Omega-3 fatty acids may also have benefits on exercise recovery and the maintenance of muscle mass during injury.

If you do not consume foods with omega-3, consider getting a supplement.

WATER - THE FOURTH MACRO

Water is the essence of life. It plays a pivotal role in nearly every function within our bodies, from regulating temperature to aiding digestion. As it is essential and we need it in abundance, it is a macronutrient.

Typical hydration can be sustained through regular eating and drinking habits. Your body possesses excellent biological mechanisms that dictate how much fluid you keep or excrete as urine.

That being said, dehydration, even in its mildest forms, can have profound effects on the body.. Dehydration is measured in percentage, which is equal to the % body weight lost as sweat during an activity e.g. 1% dehydration = 1% body weight loss in sweat. Here's a deeper look into the consequences of dehydration.

1 % DEHYDRATION

Stroke volume, the volume of blood being pumped from the heart, will decrease by 10%. Reducing nutrient delivery and performance.

2 % DEHYDRATION

Dehydration of 2% can increase rates of perceived exertion significantly. You will find exercise more difficult.

2-4 % DEHYDRATION

Is associated with impaired cognitive performance, mood, vigilance-related attention as well as mental “readiness”.

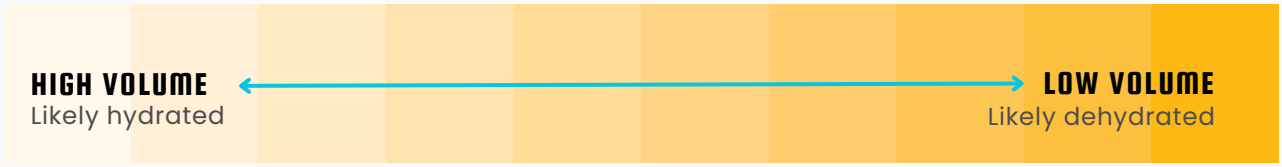
MONITORING HYDRATION

Typical hydration can be sustained through regular eating and drinking habits. Your body possesses excellent biological mechanisms that dictate how much fluid you keep or excrete as urine.

Your hydration status can be gauged through body weight, urine, and thirst. Regularly measuring your morning body weight can help establish a baseline.

A weight drop of over 1% likely indicates water loss, which might be paired with dark urine, reduced urine volume, and increased thirst. Monitoring these factors can guide your fluid intake adjustments.

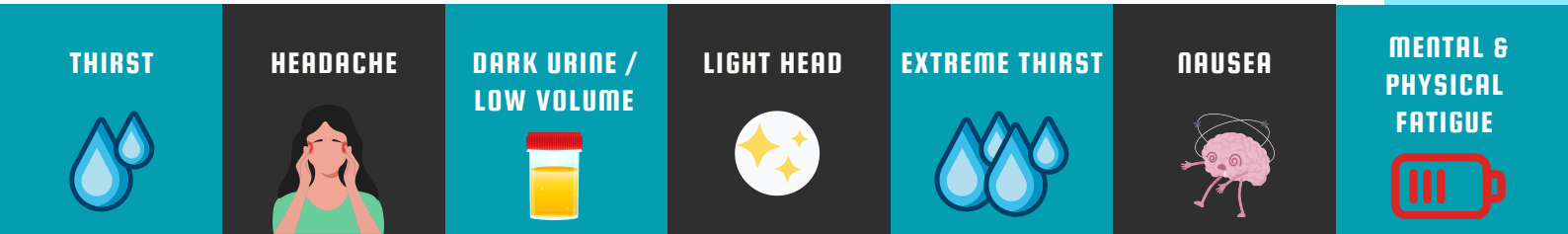
URINE COLOUR CHART



THIRST SCALE

Not thirsty at all — Neutral — Very very thristy

SIGNS & SYMPTOMS OF DEHYDRATION



WATER - HOW MUCH?

All food and drink contribute to your daily fluid intake. Drinking during meals aids in fluid retention. Most beverages are over 85% water, including tea and coffee.

While caffeine has a slight diuretic effect, it doesn't negate the drink's hydration benefits. However, certain drinks are more appropriate for specific times.

For instance, avoid fizzy or concentrated drinks before or during workouts to prevent stomach issues. Also, avoid caffeine late in the day to ensure good sleep.

DAILY INTAKE

30ml

per kg body mass

BEFORE TRAINING

5-7ml

per kg body mass

DURING TRAINING

~500ml

per hour, sweat rate dependent

AFTER TRAINING

1.2-1.5L for every kg of body weight lost during training.

CALCULATING YOUR MACROS

Calculating and tracking your calories and macronutrient requirements is far from essential but it can be a valuable tool. There are many, many ways to do this but the below method is one that I suggest you follow.

STEP 1 - DETERMINE YOUR PROTEIN INTAKE

1. To lose fat: body weight X 2.2 e.g. 80 X 2.2 = 176g of protein or 176 X 4 = 704 calories.
2. To gain muscle: body weight X 1.8 e.g. 80 X 1.8 = 144g of protein or 144 X 4 = 576 calories.

STEP 2 - DETERMINE YOUR CARB INTAKE

1. Rest days: **body weight X 2.5** 80 X 2.5 = 200g of carbs or 200 X 4 = 800 calories.
2. If light training (<1hr daily): **body weight X 3** 80 X 3 = 240g of carbs or 240 X 4 = 960 calories.
3. If heavy training/weight gain (~1+hr or intense): **body weight X 4+** 80 X 4 = 360g or 360 X 4 = 1440 calories.

STEP 3 - DETERMINE YOUR FAT INTAKE

1. Body weight X 0.8-1 = 80 X 0.8-1 = 64 to 80 grams of fat or 64-80 X 9 = 576-720 calories.

NOTE

This is **not a perfect method** and there are no perfect estimates. I will go through this personally with you as it is heavily impacted by your goals, current health and activity levels. Additionally, you do not need to track to achieve your goals so please don't let this scare you.