



-To eat is a necessity, but to eat intelligently is an art-

A GUIDE FOR NUTRITION OF ATHLETES

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SPORT SUCCESS

A sports success is defined as an event in which an athlete achieved his/her goal defined, while at the same time his team and potentially his surroundings are satisfied. It brings joy, happiness and self-respect to the athlete. In order to achieve this, there are multiple variables that have to be satisfied, so therefore a sports achievement can be imagined as a final product of precisely defined elements, some of which are of greater, and some of lesser importance. However, they all have to "fall into place" in order for the puzzle to make sense. There are many factors, not all of equal importance, but there are five that stand out: genetic potential, training methods, nutrition, recovery and motivation.

1. GENETIC POTENTIAL
2. TRAINING
3. NUTRITION
4. RECOVERY
5. MOTIVATION

GENETICS

Although the „**composition**“ of **genes**, a genotype that was transferred to us by our parents **cannot be changed**, the last 10 or so years have proven that **activity or inactivity of genes can be changed** depending on environment, nutrition and, well, we could say, way of life.

The reason?

Epigenetic changes manifest through different expression and suppression of genes.

In other words, a person with a predisposition to be tall or explosive, it is quite likely that he/she will become that. You must know that one person who does not watch his nutrition, nor train, nor does he sleep well, and yet, when he comes to a soccer game he is faster than anyone on the field. However, maybe that run could be even faster if he trained professionally and made a living of this.

Therefore, it makes a difference whether he achieves 90 or 95% of his potential. Just one percent, or even a percentile, **could be a reason for not achieving his career**, because there is a fine line between an average and elite athlete.



SPORT SUCCESS

TRAINING

Although it is not a field of specialty to the author of this cookbook, we must still mention training to explain our aim of this whole story.

Taking into consideration **the complexity of a human body**, characteristics of each individual, and the **specifics of his sport**, it is of great importance how to organize the training process. For example, the fastest man in the world, Usain Bolt, will base his training on improving his explosiveness, speed and sprinting technique, while the training of the most enduring person in the world, Eliyuda Kipchogea will be focused on his aerobic endurance, while your training will additionally be focused on developing your soccer skills. An adequately planned, organized and performed training will **upgrade genetically defined physical virtues of a person**, his strength, agility, endurance and motor skills. Too low intensity of the training is not desired, while, on the other hand, too high frequency of high intensity training will lead to over-training, so **the key is in balance**. The training also improves the technique and performance tactics, new movement patterns are adopted and new skills and cognitive skills are developed.

NUTRITION

Since this guide has been created to promote optimal nutrition for an athlete, that in itself should lead you to a conclusion that nutrition has an immense influence to the success of an individual.

The importance of sports nutrition is further discussed in this guide.

SPORT SUCCESS

RECOVERY

The time within which **cells recovery and renew themselves from stress and damage caused by training or competition...** „Broken“ muscle cells fibers will recover, glycogen will reload glucose molecules, intracellular and extracellular electrolytic imbalance will balance itself out, and the lost water will be refueled.

A continuous and well programmed stress on the cells (training) **is the only way to „train“ cells.** They **adapt to stress** because, in a way, our body got a message „improve to survive“, and consequently **the next time the athlete comes to a training, he is more ready and prepared.**

The best recovery tool is by far **high quality sleep and lack of psychic stress** during the first few hours after the stress. In other words, **the higher the activation of parasympaticus and the lower the activation of sympaticus,** both parts of autoimmune nervous systems, the greater the recovery.

MOTIVATION

A parameter that id the hardest to measure: mental state of the athlete. Athlete's motivation is actually **„a product“ individual and situational factors „reactions“.** Each athlete is an individual with specific characteristics, needs, interests and goals, which are all called individual factors. All these factors are responsible for different reactions to situational factors, such as opponent, coach, environment... A wish to compete and win are the main starters of a sports activity **so we can say that competitiveness is the greatest motivator for an athlete.** This motivator is easily activated in sports competitions, and therefore there aren't many oscillations in this area in any athlete. However, **long term motivation is the hardest to maintain and a factor that enables an athlete to maintain optimal continuity** in training, nutrition and recovery. Therefore, although competitions are usually not present in the training process, an athlete should find his motivation internally, mainly in his improvement, knowledge and excitement.

What is proper nutrition?

Proper nutrition means expenditure of all essential nutrients (carbohydrates, fats, protein, vitamins, minerals and water), in moderate quantities, variable, suitable for age, physical and mental constitution, physical and intellectual strain, climate and work environment, all in balance to maintain optimal health.

SIMPLIFIED, PROPER NUTRITION CAN BE DEFINED AS THE NUTRITION THAT SATISFIES THE PHYSIOLOGICAL NEEDS OF A PERSON WHILE AT THE SAME TIME IT DOES NOT DIMINISH HIS PSYCHOLOGICAL OR SOCIAL ASPECTS OF LIFE.

PROPER NUTRITION PRINCIPLES

VARIETY

Our nutrition should include **all groups of foods** in order to satisfy our physiological needs, i.e. to consume all essential nutrients which our bodies need to function zadovoljili „normally“.

MODERATION

Although a part of human nutrition, some foods can **have a negative effect on human health** if consumed in abundance. Saturated/trans fatty acids, added sugar, salt and alcohol represent nutrition components which should be consumed **moderately** due to their negative health consequences.

BALANCE

No food is forbidden! What makes a difference between healthy and unhealthy diet are **frequency and amount of expenditure**. As the English would say, "The devil is in the detail", and in this instance the detail is the frequency and ratio of consumption of different nutrients.

Why is nutrition important in sport?

Sport nutrition **is often neglected**, and significantly influences success of the athlete and in key moments of the competition **defines the stronger, more efficient and better competitor**.

GOALS:

- APPROPRIATE ENERGY LEVELS FOR TRAINING/COMPETITION
- FASTER RECOVERY AFTER PHYSICAL STRAIN
- HEALTH MAINTENANCE AND ILLNESS PREVENTION
- GASTROINTESTINAL PROBLEMS RISK REDUCTION
- POSITIVE INFLUENCE ON MOOD AND CONCENTRATION

Sport nutrition goals differ depending on **individual needs of athletes** as well as different sports specifics, but in general all depend on nutrients quantity and timing, so it is therefore **important when, how much and what to eat** in order for the athlete to achieve his **maksimal sports performance and recovery after the activity**.

At the same time, one aspect, often neglected, should be taken into consideration: the contribution of proper nutrition to **promotion of overall health of the athlete** as well as prevention of acute and chronic diseases. This exact continuity of **proper nutritional habits** is one of the most efficient ways of „slowing the biological clock“, i.e. growing old of an athlete.

There is no magical combination of proper nutrition, but each athlete is a unique individual with specific needs.

**Athletes
vs
non-athletes**



Greater energy consumption needs



Greater protein consumption needs



Greater water consumption needs



Greater macronutrients consumption needs

FOOD SHOULD GIVE US:

- ENERGY



- MACRONUTRIENTS:

PROTEINS (ESSENTIAL AMINO ACIDS)



FATS (ESSENTIAL FATTY ACIDS)



CARBOHYDRATES



- FIBERS



- MICRONUTRIENTS



VALUES OF SPORT NUTRITION

1. MAKSIMAL SPORTS PERFORMANCE

During the competition, athletes **need the best possible physical and mental performance**, and the required energy levels impose needs for the best „fuel“ for cells. A cell needs energy, and during the sports performance it is mostly consumed by muscle cells, but energy for the neurons should not be neglected either (astrocytes). Although energy can be derived from carbohydrates or fats oxidation, as the intensity of the activity rises muscle cells **prefer glucose as primary source of energy**. This is so because glucose oxidation requires much lower oxygen levels than fats oxidation for the same energy levels. It is therefore easy to conclude that **carbohydrates are a more economical and faster source of energy** than fats, and therefore a more superior „fuel“ for the best sports performance longer than ten seconds. Shorter sports performances (powerlifting, olympic weightlifting, sprint...) do not differ between energy sources.



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ATHLETE NUTRITION GUIDE



2. FASTER RECOVERY AFTER PHYSICAL STRESS

After a training or a competition, the body is „tired“, glycogen levels are empty, muscle fibers are torn, liquids and electrolytes have been lost, and oxidative stress and central nervous system fatigue are present. There are numerous recovery components, and alongside with good quantity and quality of sleep „postworkout“ nutrition plays a major role. Dominantly carbohydrates based energy intake, alongside with the adequate protein with micronutrients and bioactive components present (such as antioxidants) shall speed up the recovery and adaptation to stress process.

3. IDEAL PHYSICAL COMPOSITION

Many sports require a combination of low body mass and low body fat, such as gymnastics or ski jumping, or a combination of high muscle and low body fat ratio, such as body building. In football, ideal body composition depends on position and game style, however, all football players have benefits from improving their physical composition, regardless. Although they differ in genetic predispositions, training methods, skills; all have one thing in common: they need to satisfy a certain physical composition, and nutrition is then nothing but a manipulation of energy and macronutrients levels input.

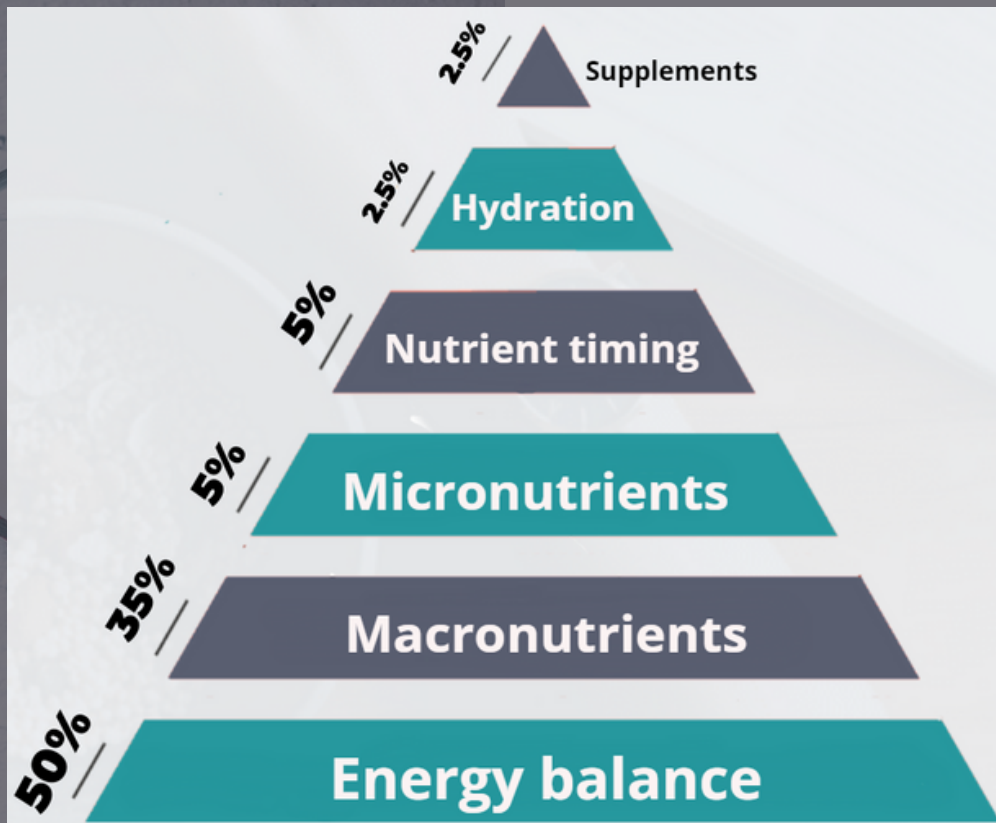
4. FATIGUE, INJURY AND ILLNESS RISK REDUCTION

Everyday nutrition based on refined and bakery goods, not only does not satisfy the body's need for nutrients, but also causes high levels of anti-oxidative stress and inflammation processes on cellular levels which all increase the risk of unwanted consequences, reduced sports performance, slower recovery, acute illnesses such as common cold, chronic diseases such as diabetes type 2. Various, well-balanced and moderate nutrition helps prevent all these situations and prolongs sports longevity of an athlete.

5. MENTAL STABILITY

Many athletes have gastrointestinal problems during competitions, such as cramps, distention, diarrhea or vomiting. This happens mostly in long lasting or high intensity sports, as well as sports held in the open, such as marathon or football. In order to avoid these problems, the food consumed the day before and on the day of the competition is of utmost importance. Additionally, food consumed on the day of the competition can additionally improve the mood of the athlete, especially if that is food he likes to eat, and has already proven to be a good combination.

SPORT NUTRITION PYRAMID



The graph shows the basic **principles of nutrition** and their rough and estimated **quantification of importance for optimal sports performance achievement**.

The most important part is **energy balance at the bottom of the pyramid**, and all other segments must be built according to the energy intake. After the energy balance, the second most important segment is **macronutrients intake - protein, fats, carbohydrates**, i.e. their quantity and ratio. Following are the less important parameters, such as micronutrients input, nutrient timing during the day/at training time, hydration and supplementation.

As nutrition segments differ, and some are more important than others, it is smart to **pay the most attention to those at the bottom of the pyramid**, and the less important segments should be dealt with **only if we have stable and consistent basis**.

The following pages of this guide will help explain all parts of the pyramid and their importance, as well as how to optimize your nutrition.

It is also important to note that nutrition differs depending on goals of each individual, especially when referred to through body composition:

- 1.) Keeping your body mass
- 2.) Reducing your body mass - i.e. reducing the fat composition
- 3.) Increasing body mass - i.e. increasing muscle composition

This guide consists of all three goals, so each athlete can choose what is best for him.

ENERGY BALANCE

ENERGY INPUT



ENERGY EXPENDITURE



MACRONUTRIENTS:

- PROTEINS
- FATS
- CARBOHYDRATES
- ALCOHOL, FIBERS, POLYOLS

- BASAL METABOLISM
- PHYSICAL ACTIVITY
- THERMIC EFFECT OF FOOD

When nutrition is planned, its **energy input should be planned for each individual separately.**

Energy needs – energy expenditure

Total amount of energy necessary for all our activities is called – **METABOLISM.**

Metabolism is consisted of 5 components:

BMR – basal metabolism

RMR – rest metabolism

TEF – thermic effect of food

TEA – thermic effect of physical activity

NEAT – non-exercise activity thermogenesis

Compound together, these metabolic activities represent our total daily energy expenditure TDEE

Therefore, our metabolism can be calculated as: $TDEE = RMR + EA + NEAT + TEF$

When we talk about energy input, it is important to mention the following: many people forget **consumption of healthy foods does not mean unlimited consumption of them.**

ENERGY INPUT

Energy source from foods:

Each macronutrient produces a certain amount of energy through its' digestion and matabolism.

*Kcal ili kilocalories are a unit that represents the amount of energy produced in the body, and is expressed in grams of each macronutrient (fats, proteins, carbohydrates), and not in grams of a certain food.

1.) **Carbohydrates** - 4 kilocalories per gram



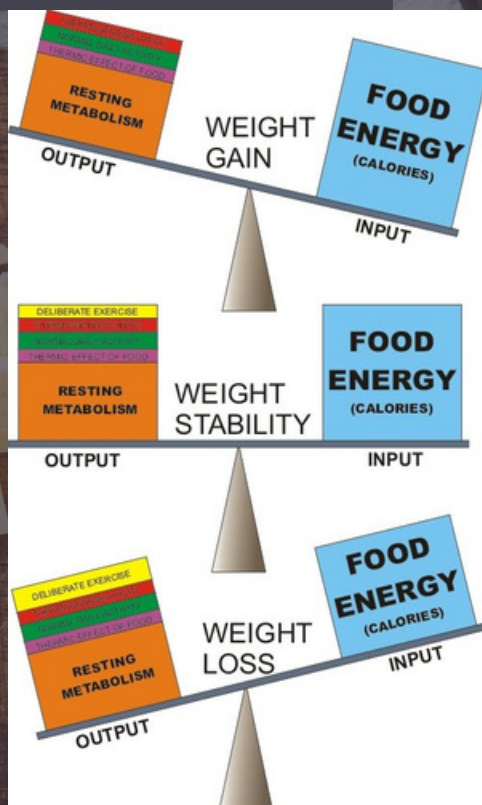
2.) **Proteins** - 4 kilocalories per gram



3.) **Fats** - 9 kilocalories per gram



4.) **Alcohol** - 7 kilocalories per gram



Energy balance is achieved when energy input (food intake) is equal to energy expenditure (daily activity), which finally leads to **maintenance of healthy body mass**.

If energy input is higher than the expenditure, **weight will be gained**, i.e. **positive energy balance**.

Negative energy balance means that energy expenditure is higher than the input, which leads to **loosing weight**.

ENERGY INPUT

How do you define your energy levels?

There are many different ways to do that, and one of the simplest ones is to use an online calculator.

Choose one of the popular online calculators, input the parameters (age, sex, height weight, physical activity levels) and calculate your approximate energy expenditure.

PROTEINS

Casein: potential benefit if consumed before bedtime (30 - 40g)

After Physical activity -> 20-40g (EAA 10g)

Distribute overall intake into several meals (0,3-0,4g/kg BM = 20-40g)

Give priority to animal-based protein

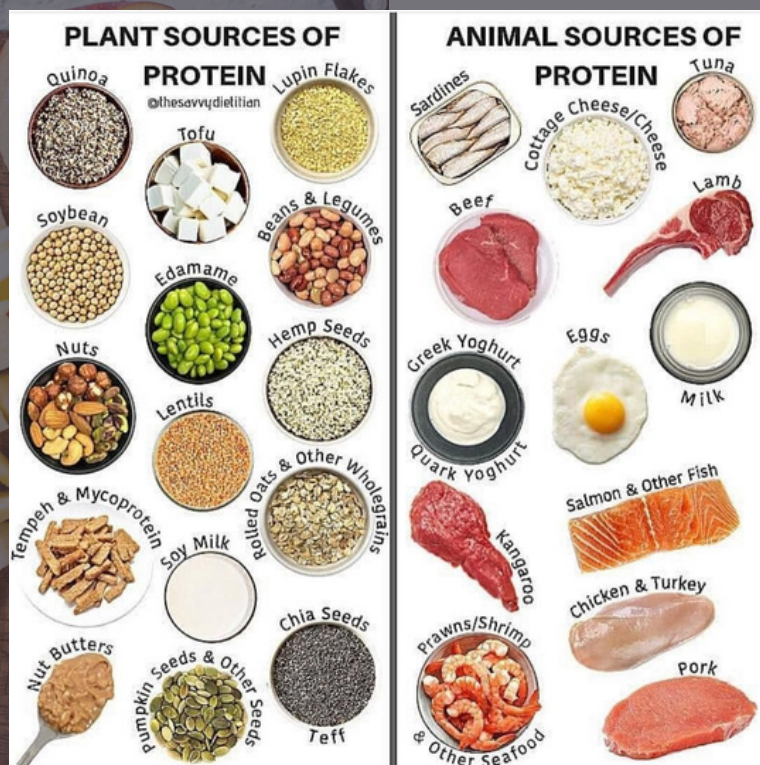
Satisfy daily needs for protein intake

- Building macronutrient
- Tertiary source of energy
- Essential amino acids daily intake necessary
- Daily recommendation: 1,6 - 2,2 g/kg of body mass
- When in calorie deficit, vegans and vegetarians greater needs for protein

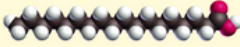







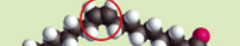







Proteins **build numerous parts of our bodies**: muscles, organs, enzymes, hormones, receptors, neurotransmitters, transport molecules...

Compared to non-athletes, **athletes** have **greater needs for protein intake** due to stress and damage on muscle cells, especially during greater loads (training strength training for example) and amino acids oxidation, a process that happens during activities, especially those of longer high intensity, such as football or basketball games.

PROTEIN SOURCES



FATS

Types of Fatty Acids	Examples of Sources	Health Impacts and Intake Recommendations
Saturated  <ul style="list-style-type: none"> No double bond Straight structure Solid at room temperature 	 Beef  Butter  Coconut oil	<ul style="list-style-type: none"> Increase risk of heart disease Less than 20g of saturated fats per day (for a 2000 kcal diet)
Trans  <ul style="list-style-type: none"> One or more double bonds in trans configuration Straight structure Semi-solid/Solid at room temperature 	 Margarine  Cream soup with puff pastry  Chicken pie	<ul style="list-style-type: none"> Increase risk of heart disease Less than 2.2g of trans fats per day (for a 2000 kcal diet)
Monounsaturated  <ul style="list-style-type: none"> One double bond in cis configuration Bent structure Liquid at room temperature 	 Olive oil  Canola oil  Peanut oil	<ul style="list-style-type: none"> May reduce risk of heart disease Moderate intake of monounsaturated fats
Polyunsaturated  <ul style="list-style-type: none"> Multiple double bonds in cis configuration Even more "bent" in structure Liquid at room temperature 	 Soybean oil  Corn oil  Fatty fish	<ul style="list-style-type: none"> May reduce risk of heart disease Moderate intake of polyunsaturated fats

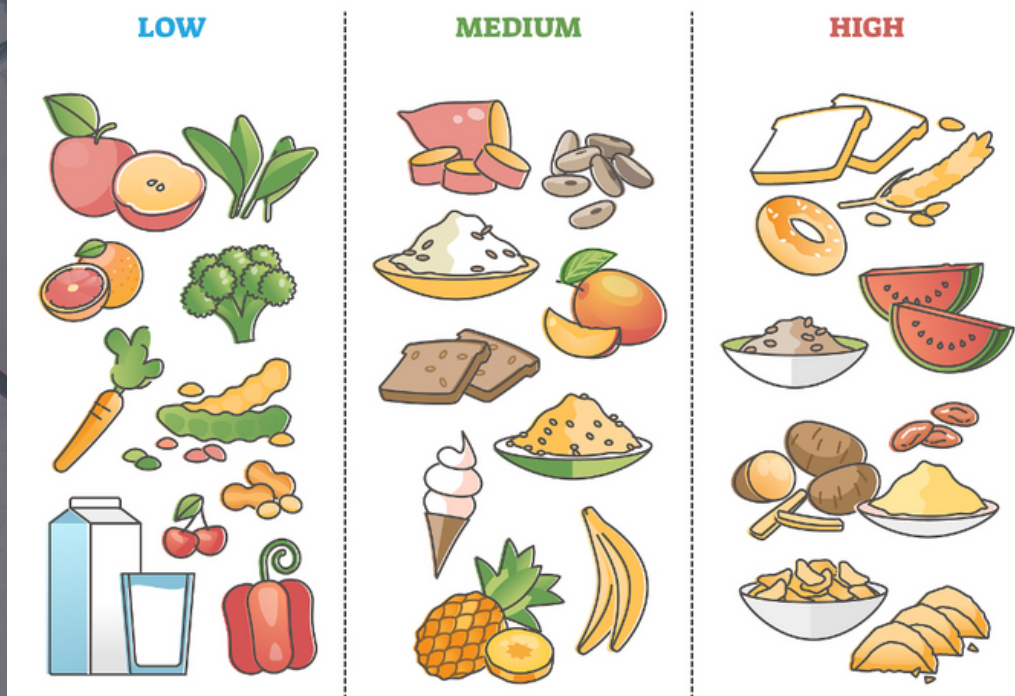
- Essential fatty acids sources => linoleic (omega-6) and alpha linolenic (omega-3)
- Vitamins solvent (A, D, E, K) and phytochemicals
- Type (saturation and omega number) more important than overall intake!
- Goal: omega-6 to omega-3 ratio 3:1
- Avoid trans-fatty acids!
- To be consumed in the part of the day with no physical activity

Fats **keep the integrity of all cells** (they build their membranes) and are precursors for steroid hormones and vitamin D synthesis.

Even though they are considered **a concentrated source of energy**, their functions are interesting. They are responsible for aroma, smell and taste of food. They also serve as **solvents for vitamins A, D, E and K** and enable their consumption, digestion and absorption.

CARBOHYDRATES

GLYCEMIC INDEX



Primary source of energy for muscles

Essential for optimal sports performance

Limited consumption (muscle and liver glycogen + glucose in blood)

Differ in glycemic index

Before activity => CHO with low GI (<50)

After activity => CHO with high GI (>69)

Although often stigmatised and considered "bad", carbohydrates are essential for athletes, glucose is a preferred source of energy for most cells, especially muscle and brain cells. an average person need 130-150 grams of glucose per day for minimal brain activity. During any sports activity longer than 10 seconds glucose and glycogen presence are essential for maximal performance. Intake of carbohydrates of high glycemic index during high physical stress is of utmost importance, since it replenishes glycogen reserves, and stimulates muscle cells renewal.

Therefore, carbohydrates are crucial for the most effective sports performance and optimal recovery.

Pre-Workout Meal Ideas



CARBOHYDRATES BEFORE TRAINING

FIBERS

From a chemical aspect, they are the same as carbohydrates, but **less accessible to enzymes so their digestion is more difficult**. Fibers are digested in large intestine, unlike starch, which is digested in small intestine. Fibers are **very important in human nutrition** since they bring numerous good bacteria to large intestine, which means healthy **immune and nervous systems**. Bad mood or frequent sickness can be signs of inadequate fibers intake. Foods rich in fibers enable even glucose levels in blood, which is important for activities with high physical and/or mental intensity. Fibers also regulate **our digestion**.

A general daily intake recommendation is a **minimum of 25 g of fibers for women, and 38 g for men**.

MICRONUTRIENTS



Micronutrients are **vitamins i mineralne substances, and they are both essential**, i.e. a human body can either not synthesize them or cannot synthesize them in sufficient amount, but **cannot function without them either**. Therefore, they need need to be supplemented in our body, mainly with food, and, if necessary, with supplements as well. Vitamin D is an exemption and, since found in food only in traces, is synthesized through sun rays. **Micronutrients have numerous roles: as co-factors and co-enzymes** they are parts of every metabolic reaction, they build bones, they are antioxidants, enable nervous impulse transfer, muscle contraction, they support ceratine fibers growth, build hemoglobine, are part of blood clotting, immune system, and many others. **Verious, rich nutrition enables intake of all micronutrients, and athletes should pay extra attention**, since their needs for micronutrients, as well as all other nutrients, are higher.

Except for essential, there are also non-essential micronutrients, bioactive components, **phyto and zoo chemicals**si **zoo kemikalije**. They are in charge of reduction of antioxidative stress in cells and therefore minimize the aging and disruption of cells and can prevent chronic non-infective diseases and prolong a person's life.

MICRONUTRIENTS

19 ESSENTIAL MICRONUTRIENTS AND THEIR FUNCTION

Iron

Function: Immune function, major role in regulating energy production and delivering oxygen to the tissues
Sources in food:



Zinc

Function: Involved in the synthesis of DNA
Sources in food:



Iodine

Function: Required for the formation of thyroid hormone
Sources in food:



Vitamin A

Function: Required for vision
Sources in food:



Vitamin C

Function: An antioxidant, supports synthesis of collagen
Sources in food:



Vitamin D

Function: Bone health
Sources in food:



Folic Acid

Function: Required to prevent neural tube defects in infants
Sources in food:



Vitamin B1- Thiamin

Function: Role in nerve cells, required to maintain carbohydrate metabolism
Sources in food:



Riboflavin

Function: Central as a co-factor for energy yielding metabolism
Sources in food:



Niacin

Function: Part of the energy yielding metabolism
Sources in food:



Pantothenic Acid

Function: Central for energy yielding metabolism
Sources in food:



Vitamin B6

Function: Part of the energy yielding metabolism and has a role in the modulation of steroid hormones
Sources in food:



Vitamin B12

Function: Key role in brain and nervous system functioning
Sources in food:



Vitamin E

Function: Antioxidant
Sources in food:



Calcium

Function: Bone mineralisation, blood clotting
Sources in food:



Phosphorous

Function: Bone mineralisation, blood clotting
Sources in food:



Biotin

Function: Important in the synthesis of fats and energy yielding metabolism
Sources in food:



Vitamin K

Function: Needed for blood clotting
Sources in food:



Selenium

Function: Antioxidant
Sources in food:



NUTRIENT TIMING

BEFORE TRAINING

CHO + Protein

Fats slow down digestion



DURING TRAINING

CHO + Protein (EAA)

If the training is intensive enough



AFTER TRAINING

CHO + Protein

Minimal amount of fats



ACTIVE INDIVIDUALS (NON-STRENGTH TRAINING)

CHO+ Protein, if long lasting

BEFORE BED:

Protein + fat



Before training - CHO + protein

- Ensures high glycogen levels for training and amino acids

During training - Mainly CHO

- Unless the training is intensive and lasts longer than 60 minutes, or if you notice a drop of energy level during the training. It is recommended to consume **EAA** (essential amino acids) if not consumed before training

After training - protein + CHO

- Ensures levels of amino acids are high enough and high levels of CHO to resynthesize glycogen

Highly active individual (non-strength training)- CHO

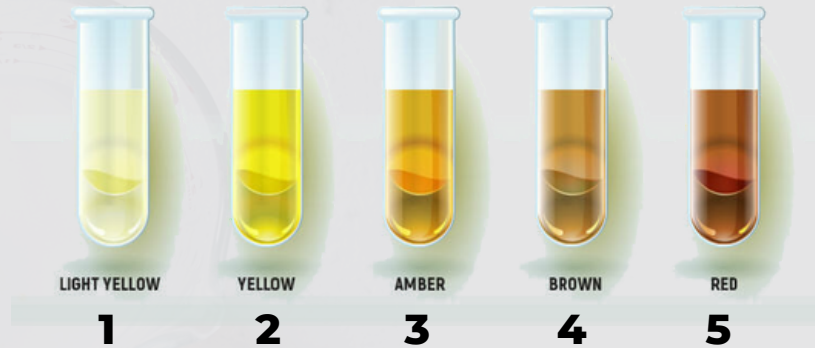
- If hiking, trail running, biking and performing similar activities, it is recommended to bring carbohydrates with you, and if such aerobic activities are extra long, it is also recommended to also **include proteins**.

Before bed - Protein (slow-releasing) or Protein + fat:

- Proteins titrate amino acids release during the night, and fats slow down the digestion, which helps the release to slow down.

HYDRATION

What Your Urine Color Says About Your Health



Adequate liquid intake represents a **wide spectrum of volume of liquid** and the needs of each individual should be inspected through certain methods of hydration levels estimation.

Although **water is essential and the the most important nutrient for hydration**, it is often neglected.

One practical and and simple way to monitor your hydration level is the **colour of your urine**.

When referred to picture colours 1 and 2 show hydration (appropriate level of hydration=, 3 hows mild dehydration an, 4 dehydration and 5 extreme level od dehydration.

Athletes must be even more careful and rehydrate properly. **Dehydration** is in tight connection to **athletic performance decline**, and the reason for this is the importance of liquids during many functions in a human body, including **normal function of skeletal muscles**. During intensive bodily activities, **thirst is postponed**, which means one should not rely only on the signal of thirst to intake enough liquids.

This is the reason athletes must have planned protocols for water intake.

- The maim thing to prevent is starting phzysical activities while in state of dehydration
- Limit loss of body mass to no more than 2 per cent
- After the activity replenish the lost body mass in ratio water to lost body mass 1.5:1

The exact amount of water intake **is individual**, and depends on the person, the amount of sweat he produces, climate conditions, type, length and intensity of training, so the exact number cannot be defined as a general rule.

SUPPLEMENTATION?

A complete and varied diet can satisfy all nutritional needs and should always be the first source of nutrients.

However, if there is need or wish to intake supplements, only those with scientifically proven efficiency and in scientifically and medically proven amounts should be taken into consideration.



SUPPLEMENTS WHICH IMPROVE SPORTS PERFORMANCE

Supplements of **the greatest interest** are, or at least should be, the ones that **have been scientifically proven to have effect**, i.e. with ergogenic aids, means they have a direct effect on performance during the physical activity.

Regardless of the amount of commercialized products, **there is only a handful of products with proven and repeated positive immediate effects** on sports performance.

SUPPLEMENTS THAT IMPROVE SPORT PERFORMANCE



Caffeine

-ENDURANCE
-INTERMITTENT
SPORTS
-STRENGTH &
POWER



Creatine

-INTERMITTENT
SPORTS
-STRENGTH &
POWER



Nitrate

-ENDURANCE
-INTERMITTENT
SPORTS



Sodium bicarb

1-10MIN
BOUNDS OF
INTENSE
EXERCISE

Beta-alanine

3-10MIN
BOUNDS OF
INTENSE
EXERCISE

MUSCLE MASS GROWTH

Growth in mass is simple: our **energy intake** during the day/week should be greater than the energy spent during this time. Therefore, if you input enough energy, your mass will grow, nego energija koju **potrošimo** kroz isti period vremena. Dakle, ukoliko unesete dovoljno **energije** povećat ćete tjelesnu masu. However, most people do not want to only gain weight, they want to specifically increase **muscle mass**.

Muscle mass growth is not as simple, at least not in the more advanced training processes.

Unlike fat loss, to gain muscle mass, the most important aspect is **appropriate strength training with progressive load increase**. Although not as important, nutrition still represents an **important part of the process**.

9 HABITS TO EAT AND LIVE BETTER



Eat 7-9 servings of fruit and vegetables a day



Eat 0.3-0.4 g/kg BM proteins during each meal



Drink enough water / track the colour of your urine



Train 2 to 4 times a week



Walk at least 8-10 steps a day - be active



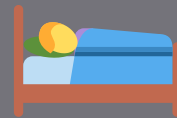
Be mindful of your food



Spend at least 20 minutes a day in the sun



Do at least one activity a day to reduce stress



Sleep 7-9 hours every night

"Dieting" is not the smartest measure to take when you want to reduce or increase your body weight.

Regardless of the goal, **the best solution is to change your nutrition and lifestyle**.

Which habits? What makes the difference the most?

The pictograms above show the most important, basic habits which should be incorporated into your nutrition and lifestyle in order for your life to change and for you to achieve your fitness goals.

Muscle mass growth basics.

TRAINING



- Strength training for all large muscle groups
- 2-3 trainings a week
- Focus on multi joint exercises
- 65-85% 1RM intensity (5-15 repetitions)
- 30-70 total repetitions per training

NUTRITION



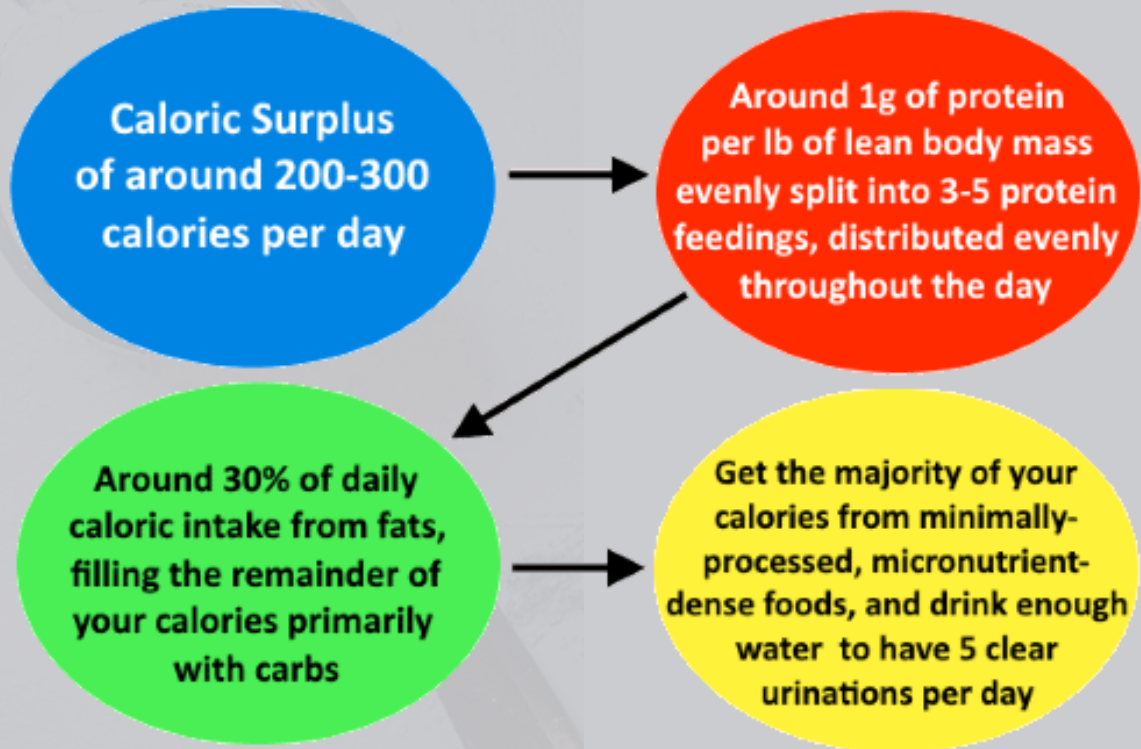
- A small surplus - 200-500 kcal per day
- Adequate protein intake (app. 2g per kilogram of body mass)
- 3-5 meals with equal distribution of protein intake

RECOVERY



- Enough good sleep (6-10 is a number appropriate for most adults)
- Anti-stress activities
- Fun activities and active relaxation

Nutritive priorities for muscle mass growth.



CALORIE SURPLUS

What calorie surplus should a person maintain depends on the starting point - **level of training and percentage of muscle mass ratio**:

- Beginner: calorie intake **10%-20% higher** than the maintenance level
- Intermediate - calorie intake **5-10% higher** than the maintenance level
- Advanced: calorie intake **2,5-5% higher** than the maintenance level

Based on this, an average calorie surplus is 200-300kcal a day.

MACRONUTRIENTS.

PROTEINS

- Protein intake, when in surplus, is somewhat smaller than when in calorie deficit, around **1,6-2,0 g/kg** of body mass - due to larger energy intake, proteins are not as necessary to maintain muscle mass, but can largely contribute to the feeling of satiety, which can be a problem.
- **Larger quantities** of protein should be consumed if you are **an advanced athlete** and your starting body composition is of lower fat percentage
- Protein intake schedule is also important: try to distribute protein consumption equally throughout the day.
- More attention should be paid to protein intake around training time.



FATS

- In general, **20-35 percent** of energy consumption should come from fats
- **Never** consume **less than 20%** of energy from fats
- How much fats you intake, within the given ratio, is up to you; our recommendation is to stay around **30% of calorie intake**.



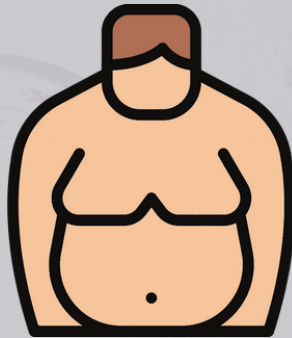
CARBOHYDRATES

- After you have decided on your protein and fat intake, the rest of the **calories should** be from carbohydrates
- Pay attention to carbohydrates consumption especially around training time
- Additionally, try to maintain an equal level of carbohydrates and fats intake throughout the whole period - i.e., no low carb/high carb days are recommended



DIRTY BULK VS. CLEAN BULK.

DON'T.



- Too big calorie surplus
- Large quantities of ultra processed, palatable foods
- "I am bulking, I can eat whatever I want"
- "The goal is to gain as much weight as possible"
- "I don't need to track my calories nor body mass when bulking"



DO

- Balanced surplus - 200-300 kcal
- Track calories and/or body mass
- Control n+body mass growth - 1-3 kg per month

During the past centuries "dirty bulk" and "clean bulk" had different meanings.

"Dirty bulk" meant consuming large quantities of food to quickly gain a lot of weight. It is quite common to gain a lot of fat during this process. "Clean bulk" meant only eating wholegrain, unprocessed foods, typically labeled as "healthy foods", and gaining fats slower than when on "dirty bulk".

However, these definitions are unnecessary, old-fashioned and there are no more discussion as to which principle is better.

There shouldn't exist definitions such as "clean bulk" and "dirty bulk". Instead of this, your "bulk" should be somewhere in between these two, although in its characteristics more similar to "clean bulk". The most important thing is that the process is slow and controlled, especially with advanced and intermediate athletes.

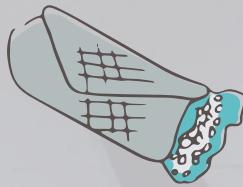
Whatever food you consume, you can gain weight. We recommend you look at nutrients from the point of view of their frequency - something that is more or less desired in your daily diet. The amount of body mass you accumulate during this period depends on your calorie intake and how much greater than your maintenance calorie intake is. You should aim for slow weight gain of about 1 to 3 kilograms per month.

Most of your food should be wholegrain and healthy, but, there shall be no harm if you eat some processed, more palatable foods.

Weight (muscle) gain advice

- There are certain people who have a hard time consuming large quantities of food to gain weight.
- If you are not gaining weight - **you should intake more energy**
- Here are some tricks how to **increase energy input**, and reduce/keep the same the food volume.

Eat food of higher energy



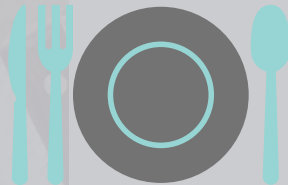
„Liquid“ calories



Eat early, eat often



Get bigger plates and bowls



Eat processed/palatable food more often



Adjust your environment and ask for support



Buy ahead and meal prep



Sleep long and well



FATTY TISSUE REDUCTION.

Instead of focusing on short-term diets, if you plan to lose fatty tissue, here are:

3 laws for fatty tissue reduction.

1

Eat in such a way that your energy intake is lower than your energy consumption.

IT'S NOT A SHORT
TERM DIET. IT'S A
LONG TERM
LIFESTYLE
CHANGE.

2

Eat foods rich in protein, fiber and water, except if it conflicts with "Law number one"

FIBER



PROTEIN



3

Choose highly palatable and enjoyable foods as long as they are not in conflict with "Laws number one and number two"

HYPERPALATABLE FOODS



Habits for successful mass reduction.

Enjoy your food



This is not a diet, it is a lifestyle change



Accept healthy lifestyle changes



Sleep enough



Control your stress levels



Do not put any food on a forbidden list



1. Enjoy the food you eat - try to eat foods you like, that you likesvakom trenutku pokušajte pronaći namirnice koje volite konzumirati, a uklapaju se u koncept pravilne prehrane i pomoći će vam u ostvarivanju vaših ciljeva

2. This is not a „diet“ - decide there are some changes you need to implemen into your life and follow through.

3. Create healthy environment - make sure you have healthy nutritional foods at home, and as little „junk food“ as possible. Plan all your meals, and try to avoid consuming nutritionally poor foods. Also, surround yourself with people who support your process.

4. Sleep and stress - these are often forgotten, and yet, very important variables of a healthy lifestyle.

5. Healthy diet allows all foods. You should focus on nutritionally dense food, but in smaller quantities, you can also consume calorie-dense foods.

The most common mistakes during fatty tissue reduction

Too little physical activity



Incorrect database



Food quantity approximation



Forgetting consumption of food



Lack of patience



Overeating cycles



„Hidden“ calories



„Liquid“ calories



Weighing cooked food



How is it you are not losing weight although you are watching your nutrition or "dieting"?

It is simple: **If you are not losing weight, you are not in a calorie deficit.**

The reasons for this could be different:

- You intake **more energy** than anticipated (sauces, oil, liquid calories, wrong estimation of food quantities, inaccurate apps)
- **Forgetting** certain food intake (snacks, sugar in coffee...)
- **Fooling yourself on the quantities you eat**
- Insufficient **physical activity** (not necessarily in forms of training, but general daily activity)
- Surreal expectations on how fat you can achieve certain goals and you are lacking **consistency and patience**.

CALORIE DEFICIT

The amount of a calorie deficit depends on two factors - **level of training of a person** and **a person's body fat index**.

- a beginner with a higher body mass index: **20%-30% lower** calorie intake than maintenance level
- intermediate recreational athlete - **15-20% lower** calorie intake than maintenance level
- Advanced athlete with low body fat index: **5-15% lower** calorie intake than maintenance level

**IF YOU AREN'T LOSING WEIGHT OR BODY FAT,
THEN BY DEFINITION...**

YOU ARE NOT IN A CALORIE DEFICIT

CHANGING BODY FAT AND DIET

DIET TYPE	DESCRIPTION	HOW IT WORKS
Low carb (LCHF)	Eat less carbohydrates, more protein and fat	Maintaining calorie deficit
Keto diet	Eat less carbohydrates, moderate amounts of protein, lots of fat.	Maintaining calorie deficit
Low fat (HCLF)	Eat less fat, more carbohydrates and protein.	Maintaining calorie deficit
Intermittent fasting	Limit your food intake for several hours per day.	Maintaining calorie deficit
Paleo	Eat only unprocessed or minimally processed food.	Maintaining calorie deficit

All diets work the same way - by maintaining a calorie deficit.

HUNGER

- Most people give up due to the feeling of hunger that occurs during a diet.
- **In order to contain our feeling of hunger, we need to have some trick to help us reduce its feeling.**

How to feel less hungry.



Satiety scale

Choose food that help you feel full.



Increase protein intake

High protein intake (up to a certain level) can help you feel less hungry.



Eat fiber-rich food

Fibers slow our digestion and can help us feel less hungry for a longer period of time.



Drink water before meal

Can stimulate receptors in our digestion and help us feel full.



Timing of nutrients

Consume smaller amounts of food when you are less hungry, and eat larger meals when you are more hungry.

A list to help your shopping list become "healthy"

GRAINS, LEGUMES, & STARCHES

Always have:

- ☐ High-fiber cereal
- ☐ Oats
- ☐ Panko breadcrumbs
- ☐ Sweet potatoes or yams



Always have at least one of the following:

- ☐ Whole-wheat or gluten-free pasta
- ☐ Brown rice
- ☐ Quinoa



Always have at least one of the following:

- ☐ Whole-wheat, gluten-free, or sprouted bread
- ☐ Whole-wheat wraps
- ☐ Whole-wheat English muffins

MEAT/PROTEIN

Always have:

- ☐ Boneless, skinless chicken breast
- ☐ Wild salmon
- ☐ Filet, hanger, flank, sirloin, or 93% lean ground beef (Ideally grass-fed and organic)
- ☐ Turkey bacon



Vegetarians and vegans, always have:

- ☐ Firm tofu
- ☐ Tempeh
- ☐ Frozen edamame



PRODUCE

Always have:

- ☐ Onions
- ☐ 3 in-season fruits*, including 1 berry
- ☐ 5 in-season vegetables*, including 1 leafy green

**Aim for one new fruit and one new vegetable (or ones you haven't had in a while)*



DAIRY

Always have:

- ☐ Nonfat milk or non-dairy milk
- ☐ Low-fat or nonfat plain Greek or regular yogurt
- ☐ Eggs



Optional:

- ☐ Parmesan cheese
- ☐ Low-fat cheese

CANNED GOODS

Always have:

- ☐ Tomato sauce
- ☐ Low-sodium vegetable and/or chicken broth
- ☐ 1 can no-salt-added beans or lentils
- ☐ 1 can chunk light or Albacore tuna
- ☐ Low-sodium soup



Optional:

- ☐ Canned sardines with bones

OILS, VINEGARS, & CONDIMENTS

Always have:

- ☐ Extra-virgin olive oil
- ☐ White wine vinegar
- ☐ Mustard
- ☐ Low-sodium soy sauce



Optional:

- ☐ Canola oil
- ☐ Other vinegars (balsamic, rice, red wine)
- ☐ Ketchup
- ☐ Horseradish
- ☐ Low-sodium Worcestershire sauce

SEASONINGS

Always have:

- ☐ Kosher salt
- ☐ Black pepper
- ☐ Lemons or limes
- ☐ Fresh or bottled minced garlic
- ☐ Agave

Optional:

- ☐ Sea salt
- ☐ Fine salt
- ☐ Capers



DRIED HERBS & SPICES

Always have at least two of your favorites, such as:

- ☐ Cinnamon
- ☐ Cumin
- ☐ Crushed red pepper
- ☐ Rosemary
- ☐ Thyme
- ☐ Turmeric



FROZEN FOODS

Always have at least one of each of the following:

- ☐ Vegetables
- ☐ No-sugar-added berries or other fruit

Always have one of the following:

- ☐ Extra-lean ground turkey meat
- ☐ Vacuum-sealed fish
- ☐ Shrimp



Always have at least one of the following:

- ☐ Vegetable burgers (no more than 200 calories, at least 4g protein and 4g fiber; be sure vegetables are in the ingredients list)
- ☐ Healthy meals (with no more than 500mg sodium per serving)

Additional tips for grocery shopping

- Plan ahead
- Make a shopping list
- Do not go shopping when you are hungry
- Read nutritional declaration on groceries