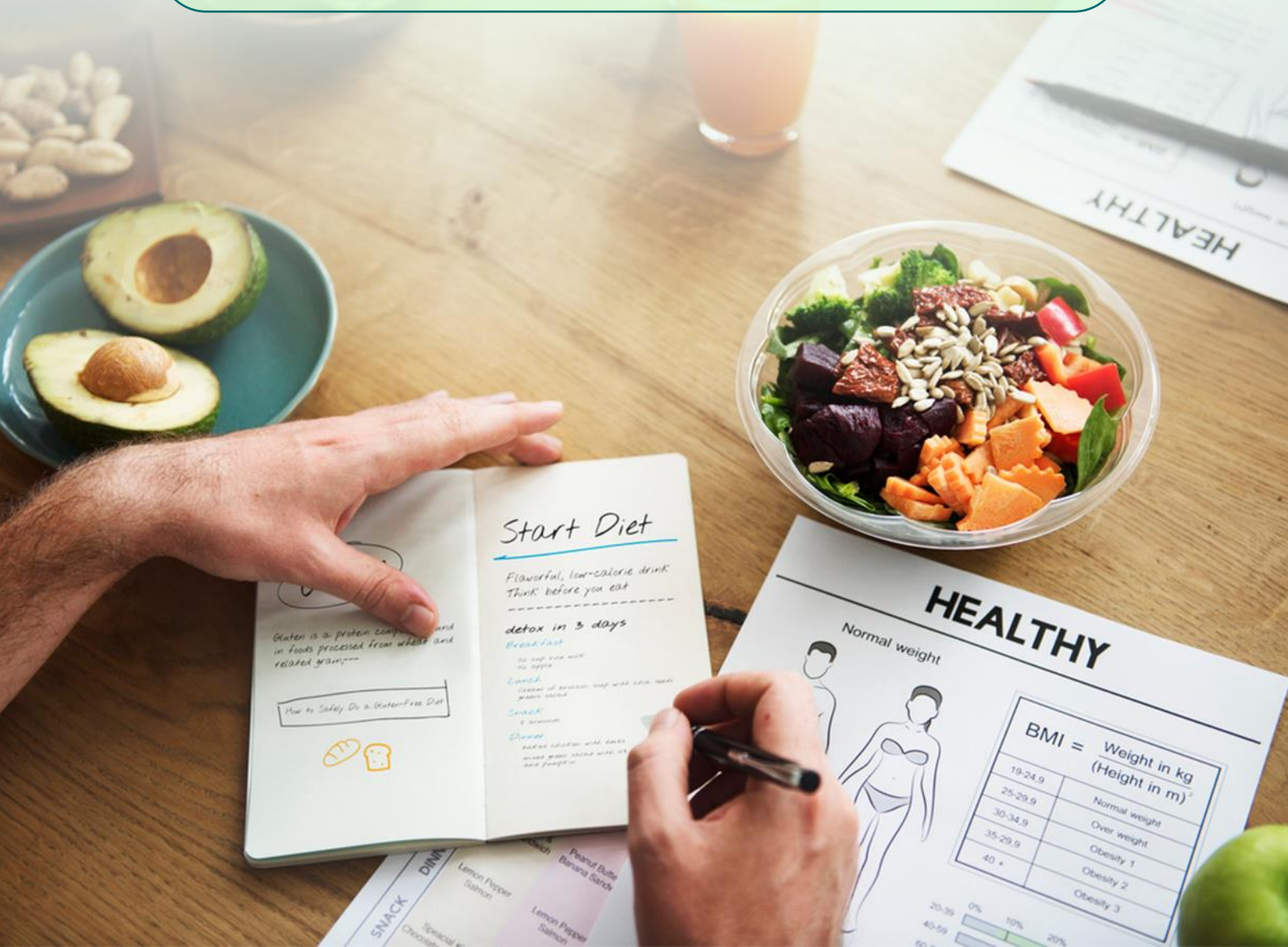


# HealthBioCare GmbH<sup>®</sup>

## Metabolic Health Panel



### Start Diet

Flavorful, low-calorie drink  
Think before you eat

#### detox in 3 days

##### Breakfast

1/2 cup rice with  
1/2 apple

##### Lunch

1/2 cup of oatmeal, soup with olive oil, bean  
or lentil salad

##### Snack

1/2 banana

##### Dinner

1/2 cup chicken with herbs,  
1/2 cup green beans with oil  
and parmesan

Gluten is a protein compound found  
in foods processed from wheat and  
related grain;---

How to Safely Do a Gluten-Free Diet



### HEALTHY

Normal weight



BMI =  $\frac{\text{Weight in kg}}{(\text{Height in m})^2}$

19-24.9	
25-29.9	Normal weight
30-34.9	Over weight
35-39.9	Obesity 1
40+	Obesity 2
	Obesity 3





Dear Ms. Jane Doe,

Your sample has arrived for analysis in our laboratory and has been evaluated according to the latest scientific findings and the highest standards in laboratory quality. The analysis of your data was subsequently assessed by our staff members and authorized by our head of laboratory. With this, we submit to you your personal report, which we generated for you individually. We thank you for your trust and would be happy to hear your questions and suggestions in order to continuously improve our services.

We hope that the analysis fulfills your expectations.

Best regards,

*Your HealthBioCare Team*





## Index

### Basic Principles:

- Nutrigenomics: DNA and Nutrition
- What are genes and how are they regulated?
- What is personalized nutrition?

### The Metabolic Health Panel:

- Metabolic Typing
- Genetic Markers: Single-Nucleotide Polymorphisms (SNPs)
- Epigenetic Markers: Methylation and MicroRNA (miRNA)

### Your Results:

- Nutrition and Lifestyle (according to your survey data)
- Genotyping (Single-Nucleotide Polymorphisms)
- Your Metabolic Type
- Your Genetic Risks
- Nutricosmetics
- Epigenotyping (Methylation und MicroRNA)
  - Overall Methylation
  - Inflammatory Response
  - Your Prognosis for Weight Loss and Weight Maintenance
  - Epigenetic Status of Your Metabolic Regulation
- Summary of Your Analysis Results
- General Information and Recommendations



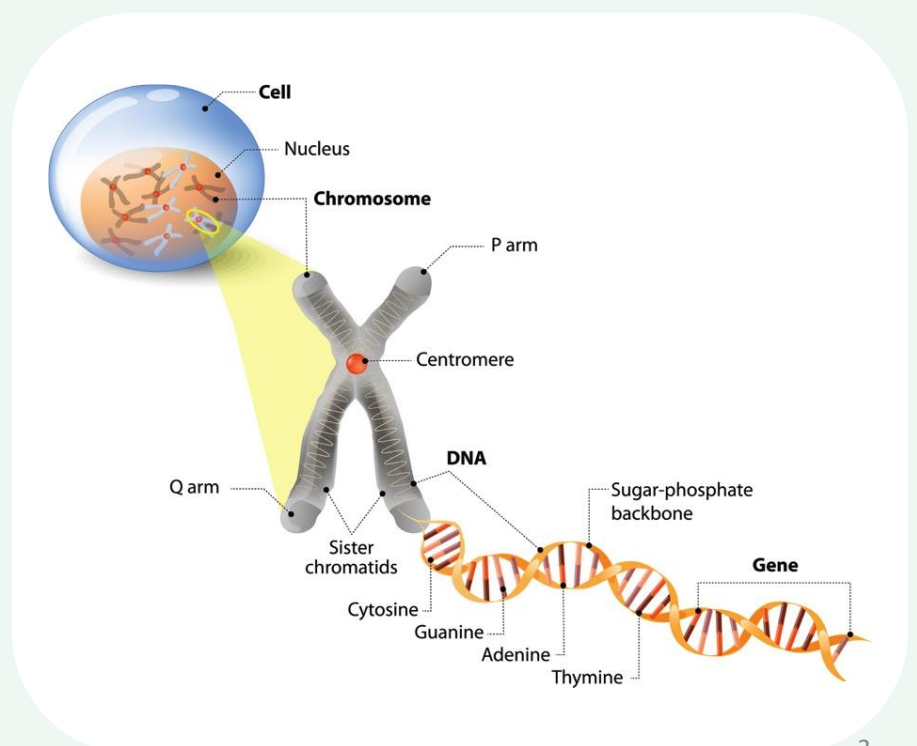
# Basic Principles: DNA and Nutrition

## What are genes and how are they regulated?

Our genetic information is saved in chromosomes. Chromosomes are comprised of a double-strand DNA which is coiled around histone proteins and located in the nucleus of the cell.

DNA, the genetic code, consists of four different nucleotides which are the main building blocks of DNA (A, G, C, and T). These building blocks repeat billions of times in a specific sequence. Genes are sections of DNA where the blueprint for proteins is located. They are read in the cell nucleus. Based on this information, the corresponding protein is then formed. Digestive enzymes as well as muscle tissue are built from these proteins. Small deviations in the sequence of these main building blocks within a gene can affect the function of the protein. One type of genetic variation is called SNP, which is short for single-nucleotide polymorphism.

SNPs represent about 90 % of all genetic variations in the human genome and are either inherited or are randomly formed. Each is individually distinct and remains for life. SNPs are important in terms of health as they can affect many areas such as metabolism as well as increase or reduce the risk of certain diseases.





Epigenetics accounts for the mechanisms of gene regulation that can be influenced by environmental factors, diet, and lifestyle. One of the most important mechanisms of gene regulation is DNA methylation. This is a process by which genes can be switched on and off. The activity of genes can thereby be strengthened or weakened. An example of this, is the amount of an enzyme that is being built. Epigenetic modifications like the methylation in regulatory regions of the genes can change over the course of one's life. External factors such as the environment as well as internal influences such as the specificities of one's diet greatly affect the rate of influence of methylation on metabolism and many other areas of our bodies. With a change in one's lifestyle (diet, exercise, and stress levels), gene activity can be increased and decreased.

## What is personalized nutrition?

The research field of nutrigenomics, which is concerned with the interaction between genes and nutrition, has been a focus of modern nutritional science in an effort to create and secure long-term individual nutrition recommendations.

We all express our genes in a unique way, which influences the functions of the metabolism. Therefore, we differ strongly in metabolic capacities as individuals. Depending on genetic conditions, there are also big differences in our needs for macronutrients (proteins, fats, carbohydrates) and micronutrients (vitamins, nutrients, trace minerals). It is scientifically proven that being overweight can be inherited up to 70 %.

People with a higher genetic predisposition have more difficulty in maintaining a healthy body weight or in losing weight. Specific gene variants may cause a strong feeling of hunger or low levels of satiation. In this case, the risk increases for one to gain weight. The efficacy of exercise related to body weight is also influenced by SNPs.

It is possible through modern gene diagnostics to determine your metabolic type on the grounds of your individual genetic characteristics. It is important to consider the genetic and epigenetic aspects collectively. Therefore, measurement of gene regulation is an additional pillar of the Metabolic Health Panel. Your genes are not your destiny. Our diet has a strong influence on our gene regulation (epigenetics).



Through the combined analysis of genetic and epigenetic markers, we can assess your risk for obesity and diabetes. Your analysis results offer indications such as how easy or how difficult it is, to lose weight and attain a stabilized, healthy body weight through calorie reduction, modulation of macronutrient intake, and by incorporating specific types and durations of exercise. This is the basis for your individual nutrition and exercise recommendations.

## Metabolic Typing

By analyzing twenty-three gene variants (SNPs) and various epigenetic markers (three methylation sites and two miRNAs), we assign you to one of four metabolic types:

- **Carbohydrate Type:** It is possible to metabolize carbohydrates well, but there are difficulties in digesting protein and fat.
- **Fat Type:** Fat is metabolized well, and you can achieve a desired weight with the right intake and lipid composition in your diet.
- **Protein Type:** Proteins are digested well, and you can lose weight with protein rich foods.
- **Balanced Type:** All three macronutrients (carbohydrates, fats, and proteins) are equally well metabolized.

In addition to classification into a respective metabolic type, all analyzed SNPs are evaluated individually and contribute to your personalized nutritional recommendations. These recommendations also include information on corresponding exercise.



## Epigenetic Markers

Epigenetic markers not only can be used to detect various diseases early, but they can also predict weight loss. Interleukin 6 (IL-6) and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) are important inflammatory biomarkers. Additionally, those who are overweight and those who are at a healthy weight differ in methylation patterns of these genes.

Long interspersed nuclear element 1 (LINE-1) is a marker for BMI, diabetes, insulin resistance, cardiovascular disease, and cancer. Some studies show that the methylation of LINE-1 can predict the risk of the metabolic syndrome before clinical symptoms appear.

MiRNAs are short RNA segments of nineteen to twenty-four nucleotides and have a variety of regulatory tasks in the body. The body's cells specifically target miRNAs, which can be used as biomarkers for certain diseases, for metabolic processes, and as signal molecules in cell-to-cell communication.



Name	Jane Doe
Date of Birth	01-01-81
Analysis Number	1
Date	05-04-23

## Analyzed Parameters

Nutrition

Lifestyle

Genotyping

- Metabolic Type
- Exercise Type
- Health Risks
- Nutritional and Metabolic Factors
- Nutricosmetics

Epigenotyping (Methylation and MicroRNA)

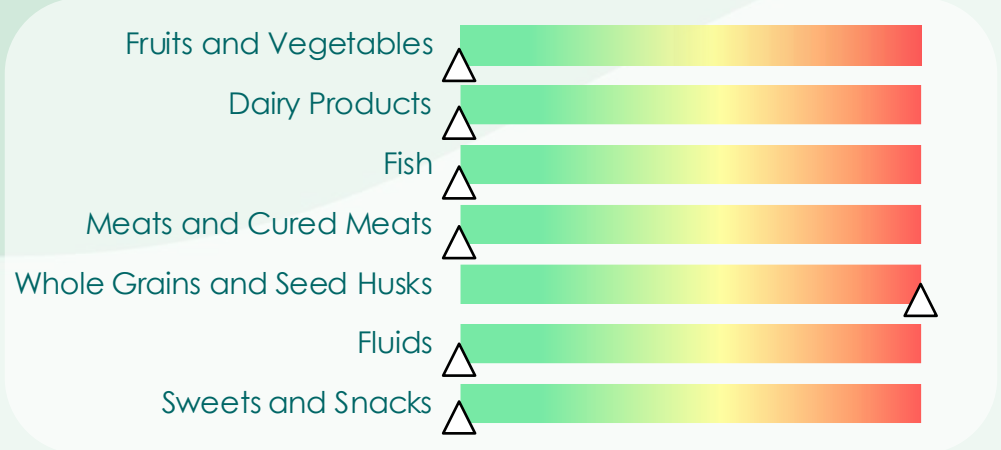
- Overall Methylation (DNA-Stability)
- Inflammatory Response
- Your Prognosis for Weight Loss and Stabilization
- Your Epigenetic Status of Metabolic Regulation





# Evaluation of Your Nutrition and Lifestyle Survey

## Nutrition



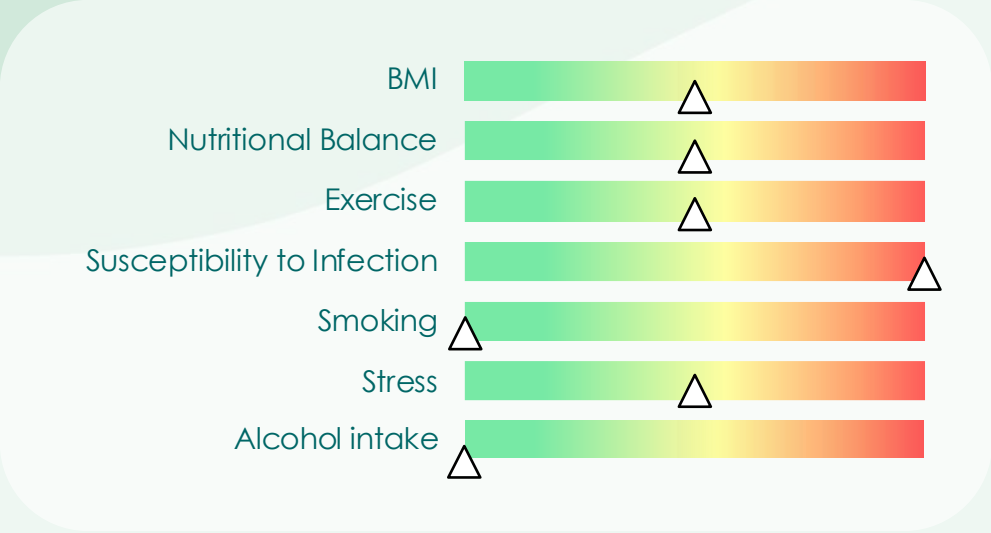
Your diet has been compared with the WHO-based recommendations. The results of each food group are shown using a traffic light system.

Your diet is relatively balanced. Increase your fiber intake, for example by consuming whole grains or seed(husks).

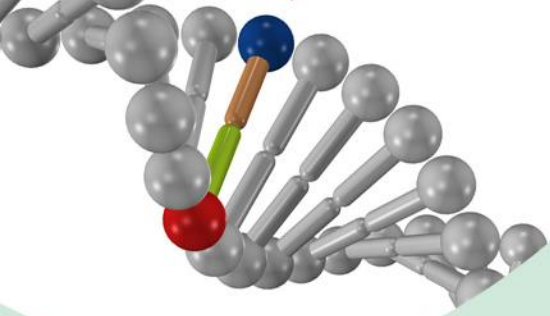


# Evaluation of Your Nutrition and Lifestyle Survey

## Lifestyle



Your lifestyle is relatively balanced. Focus on a more balanced diet. Try to increase your sporting activities (e.g. swimming, strength training with your own body weight), this can not only have a positive effect on your stress level, but also on your BMI by increasing the metabolically active muscle mass.



# Genotyping Results





# The analysis of your gene variations indicates that your metabolic health type is suited the most likely to: **Carbohydrate.**

## Your Results in Detail

Gene	Your Genotype	Effects on the Metabolism	Nutritional Recommendations
TCF7L2	C/T Heterozygous	Regulation of insulin secretion; Decreased insulin release, Slight risk for increased fasting blood sugar levels and for developing diabetes	Follow the recommendations of your metabolic type. Pay attention to both fat and carb intake as well as what quality they are. Diet should have a low glycemic load, increased complex carbohydrates, and very little to no sugar; Recommended sugar replacements: birch sugar, erythritol, stevia, and coconut flower sugar
ARDB3	A/A Wildtype	Regulation of fat accumulation and lipolysis rate (fat loss);	In your case, fat is not excessively stored, however pay attention to your energy balance and to the quality of the fats you eat.
MC4R	C/C SNP	Involved in the regulation of energy balance and appetite; Strong tendency for frustration/stress eating, and a strong tendency to eat large portions.	Avoid fast and processed foods; The following foods decrease levels of stress hormones with potassium and the protein building block, tryptophan: bananas, dried figs, and dates. Vanilla boosts the release of serotonin in the brain. Use real vanilla or vanilla powder (with no sugar!). Magnesium (found in berries, all whole grains, spinach, apples) inhibits the release of the stress hormones, adrenaline and norepinephrine.
FTOrs99	A/T Heterozygous	Involved in energy homeostasis and body temperature; Neuroendocrine regulation of appetite, hunger, and satiation; Energy consumption during rest and during exercise; Slight tendency to be overweight due to reduced satiation and simultaneously slightly reduced metabolic rate. Moderately increased risk for positive energy balance and weight gain.	Incorporate foods that can increase your metabolic rate and support satiation: high fiber intake, high protein intake, green tea, chili, and ginger. Nutritional supplement: glucomannan
PPARG2	C/C Wildtype	Regulates fat storage and insulin sensitivity	You are sensitive to fat but can metabolize carbs very well. Follow your nutritional recommendations. If you reduce calories, you are likely to have an increased weight loss compared to SNP carriers.

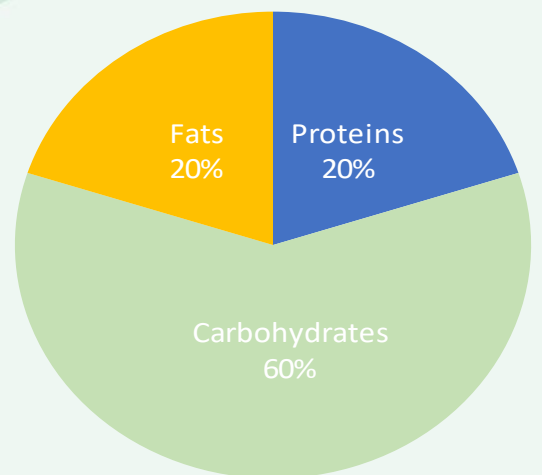


Gene	Your Genotype	Effects on the Metabolism	Nutritional Recommendations
ApoA5	A/A Wildtype	Regulates apolipoprotein which is essential for triglyceride metabolism.	Keep with the fat intake recommendations of your metabolic type.
TFAP2B	A/A Wildtype	Expressed in adipose tissue; Fat to carbohydrate ratio	No impact. Keep with the nutritional recommendations for your metabolic type.
LPL	G/G Wildtype	Enzymes cleave triglycerides.	Follow the recommendations of your metabolic type. Pay attention to your fat intake.



## Carbohydrate Type

People with the carbohydrate type convert complex carbohydrates and fiber very well, and these foods, therefore, should account for the bulk of the daily energy. The type of carbohydrate should still be taken into consideration, and the diet should consist of mostly whole grain products. In whole grains, the outer shell of the grain is not removed, and this shell contains valuable vitamins and minerals that your body needs.



Those in this metabolic type should also pay attention to the types of proteins in the diet. Biological availability can increase with a combination of other foods.




# Influence of Genes on Movement and Exercise

## Genetics and Exercise: Which Exercise Type Are You?

Some are successful with endurance sports while others are better suited to and will gain greater health benefits from strength training or a combination of both.

By assessing the variations of the genes ACE and ACTN3, we are able to assign you to different exercise types. Through a specific variation in the gene FTO, we can evaluate, how physical movement effects your body weight.

An alteration (SNP) in the ACE gene leads to a decrease in gene activity. ACE is part of the bradykinin-aldosterone system. Less activity results in a reduced conversion rate of angiotensin I to angiotensin II, which functions as a vasoconstrictor and narrows the blood vessels. When bradykinin increases in the body, the blood vessels widen, and more oxygen-rich blood is delivered to working muscles. This genotype is advantageous for endurance sports since oxygen-rich blood enables the muscles to work more efficiently and for a longer amount of time. The ACE gene is active in those with the wild type genotype in the ACE gene, and therefore those in this group will benefit from strength training.



We can also draw conclusions about your exercise type by analyzing the gene ACTN3. Human muscle tissue is sorted into two categories. Slow-twitch (red) muscle fibers are heavily supplied with blood. This optimal oxygen supply has a positive effect in endurance sports, however these slow-twitch fibers are indeed slow and do not generate a lot of power, therefore fast and powerful movements are limited. On the contrary, fast-twitch (white) muscle fibers have less oxygen and tire sooner. They can react quicker and more forcefully, rendering these fibers capable of fast and powerful movement.

The gene ACTN3 is generally active in white muscle tissue. With the SNP in this gene, functions of the white muscle tissues decrease and so does the capability for fast movements. Carriers of this variant benefit more from endurance sports and less from power and sprint training.

### General Benefits of Physical Exercise:

Physical activity is an important protective factor in the prevention of a variety of diseases and obesity. Regular exercise contributes to a balanced energy level as it results in the additional consumption of energy. In addition, it promotes the release of hormones, of which some can lower blood sugar levels. Muscles absorb the majority of glucose and fat in our diet and keep blood sugar and triglyceride levels in balance. HDL cholesterol is cardio-protective and is enhanced by exercise. This means that, one can adhere to a personalized diet and exercise plan to prevent diabetes and other common diseases. When we exercise, serotonin and other hormones are released which can prevent and relieve conditions such as depression, chronic pain, osteoporosis, and more.



# Exercise Type

## Analysis of Your Gene Variations According to Your Exercise Type in Detail:

Influence of sport on body weight



Exercise Type:

Strength

Gene	Your Gene Variation	Physical Activity
ACE	G/G	Strength training, such as weightlifting by using your own body weight and with dumbbells
ACTN3	C/C	Strength training, such as weightlifting by using your own body weight and with dumbbells

The results of your analysis for the ACE and ACTN3 gene indicate that exercise which requires both strength and sprint such as soccer, tennis can be beneficial. The reason for this is that more ACE is active and therefore less bradykinin and more angiotensin II is produced. This is not only vasoconstrictive but is also involved in cell growth and thus is beneficial for muscle building and strength training.

**IMPORTANT:** In the case that you are severely overweight, it is important to start with light intensity and endurance sports. These are gentler for the joints. After a period of healthy weight loss, one can then change to power training and exercises which correspond to your personal exercise type.



## Genetic Risks: Diabetes, Obesity, Nutritional and Metabolic Factors

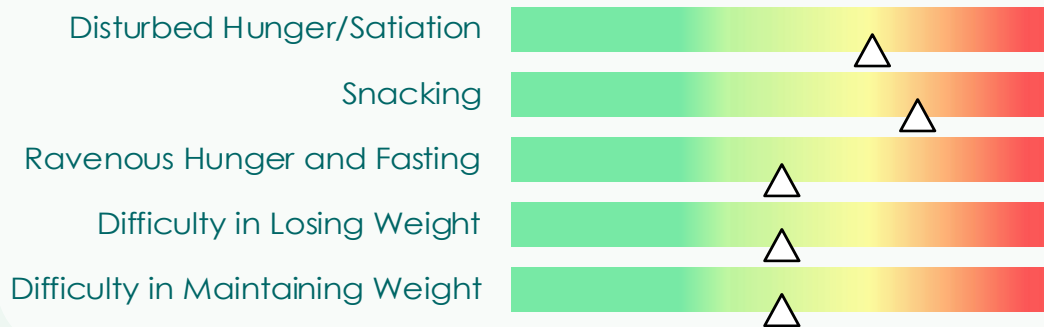
Diabetes is a metabolic disease caused by an abnormal elevation in blood sugar levels. In type II diabetes mellitus, the pancreas produces insulin, but not in sufficient quantity. In addition the cells in the body can often be resistant to insulin. This means that insulin can no longer optimally perform the vital task of transporting sugar from the blood into the cell. The sugar then, remains in the blood and can cause damage to nerves and small blood vessels. Risk factors for developing diabetes are: genetics, obesity (visceral abdominal fat is particularly relevant) and a flawed nutrition and lifestyle among other things. Obesity is the result of many factors. First, genetic conditions play an essential roll. A disturbed hunger and satiation systems, as well as cravings, often lead to an increased consumption of calories, which are stored immediately in the body in the form of adipose tissue. Genetic risk can be identified through the analysis of gene variations. Further factors, such as the environment (friends, occupation, etc.), lack of exercise, and a poor diet can cause weight gain. Unfortunately, obesity opens the door to a variety of other very serious diseases, such as high blood pressure, impaired blood lipids, and in extreme cases, arteriosclerosis, diabetes, and coronary heart disease. In addition, one's well-being and social life can also suffer.



Our analysis informs you about your genetic predisposition for these diseases and helps you to prevent and reduce your risks with proper metabolic diet and exercise.

For you, we have examined gene variations which influence body weight, obesity, the yo-yo effect, eating habits, diabetes, dyslipidaemia (blood lipids),  $\omega$ -3 und  $\omega$ -6 fatty acid metabolism, HDL-cholesterol, oxidative stress, and salt sensitivity.

## Analysis of Your Gene Variations in Detail:



Your results show, that you have certain gene variants. SNPs in the gene SLC6A14, MC4R, or leptin unfortunately have negative effects which can cause people with these gene variants to more commonly suffer under ravenous hunger attacks than others. Furthermore, hunger and satiation regulation is often disturbed, which is why carriers of this mutation are hungry more often. This can lead to more snacking (often on fast, greasy food). Take care to get a high intake of fiber. Fiber has a high swelling capacity and makes you feel full longer. For ravenous food cravings, try using some of these tips: drink water, chew gum, nuts, opt for a piece of fruit or vegetable for a snack.



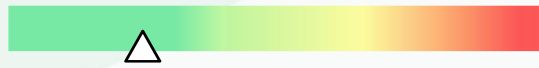
The combination of several genes can predict your genetic risk for diabetes and obesity. Your analysis shows that you have a low predisposition. Nevertheless, try to integrate a lot of exercise and a healthy lifestyle into your everyday routine.



Your analysis shows that you have no risk for an additional need for these vitamins.



$\omega$ -3 und  $\omega$ -6 FS Umwandlung



Since you are not a carrier of FADS1 SNPs, you probably do not have any problems in forming important fatty acids from  $\omega$ -3 und  $\omega$ -6 fatty acids.

Blood Lipids



Sensitivity to Salt



Your analysis shows that you have no genetic predisposition to have a disturbed balance of blood lipids. However, if you still have high cholesterol, high LDL, and low HDL levels, it is most likely diet-related. Pay attention to the quality of fats you consume. Reduce consumption of products with processed fats since they contain many saturated and trans fats and raise the risk for disease later on. Consume fats from plant-based sources such as olive oil, avocados, nuts, and healthy fats from animal products such as white meat and fish. These have less cholesterol and contain omega-3/omega-6 fatty acids. An increase in vegetable consumption helps to reduce LDL and increases HDL. You are more sensitive to increased salt intake. Keep an eye on your blood pressure and reduce the consumption of high-salt foods, e.g. cheese, sausages, bread. In addition, you are more sensitive to increased salt intake. Keep an eye on your blood pressure and reduce the consumption of high-salt foods, e.g. cheese, sausages, bread.



## List of Genes and Gene Variants Used to Calculate Individual Risks

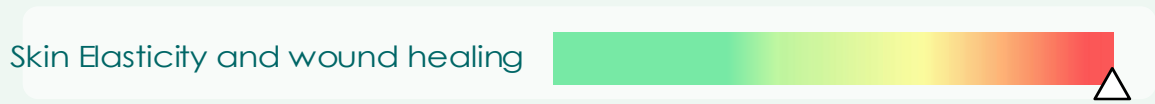
Gene	Your Genotype	Meaning
IL-6	G/G Heterozygot	Diabetes, blood lipids, Omega-3 and 6-fatty acid metabolism; Obesity, weight loss, weight stabilization, Appetite, hunger and satiation, stress eating
TCF7L2	C/C Wildtype	Diabetes, obesity, weight loss
ARDB3	A/A Wildtype	Diabetes, weight loss
MC4R	T/T Wildtype	Diabetes, obesity, weight loss Appetite, hunger and satiation, snacking
UCP	A/A Wildtype	Diabetes, obesity
PPAR $\gamma$	C/C Wildtype	Diabetes, obesity, appetite, hunger and satiation
FTO	A/A SNP	Obesity, appetite, hunger and satiation
SLC6A14	C/A Wildtype	Obesity, appetite, hunger and satiation, stress eating
TFAB2P	A/A Wildtype	Obesity
LEPR	A/A Wildtype	Weight loss, appetite, hunger and satiation; Weight stabilization
PLIN	C/T Heterozygot	Weight loss
FADS1	T/T Wildtype	Omega-3 and 6 fatty acid metabolism
APOA5	A/G Heterozygot	Blood lipids, weight loss
LPL	G/G Wildtype	HDL metabolism, blood lipids
MTHFR	A/A SNP	Genomic DNA methylation (increased amounts of genes which are turned off), elevated homocysteine levels; Formation and repair of DNA
GC	G/G SNP	Immune system, bone formation
ACE	C/C Wildtype	Salt sensitivity



## Nutricosmetics

Blemishes on the skin, wrinkles, dryness, and elasticity are complex processes which are 60 % reliant on genetics while your lifestyle and environmental factors account for the remaining 40 %. Our goal is to provide you with individualized care and individual anti-aging program matched to your skin condition by analyzing the polymorphisms of the genes IL-6, AQPR, COL3A1, NADPH and SOD2.

Gene	Your Genotype	Used to assess
IL-6	G/G SNP	Skin Elasticity
COL3A1	C/C SNP	Skin Elasticity and wound healing
AQPR	C/T Heterozygot	Dryness of Skin
NADPH	G/G Wildtype	Antioxidants
SOD2	A/G Heterozygot	Antioxidants

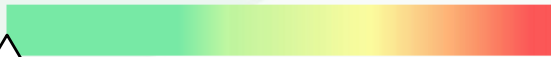


Skin elasticity is affected mostly by pro-inflammatory processes. Take care to get a sufficient intake of  $\omega$ -3 and  $\omega$ -6 fatty acids in your diet. Sources of  $\omega$ -6-FS are: sunflower oil, safflower oil, maize-germ oil; walnuts as well as meat and liver. Sources of  $\omega$ -3 are: fish, linseed oil, rapeseed oil, nuts, and chia seeds. The following also provide anti-inflammatory effects: turmeric, ginger, cinnamon, and cayenne.

A protein deficiency can also cause the connective tissue to slacken. In this case, focus on fish, lean meat, nuts, legumes, milk, and dairy products.



Dryness of the Skin



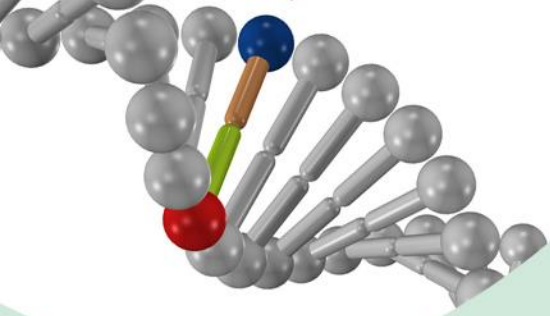
Dehydration dries our skin and can lead to a loss of its tension. Therefore, monitor your good hydration level and make sure to drink at least 2 liters of water or unsweetened tea per day.

Antioxidants



Your analysis shows that your detoxification of radicals is in balance. Free radicals attack and damage the cells. Antioxidants in your diet help to catch radicals and to prevent cell damage. To maintain and support your good status, incorporate the following foods into your meal planning: fruits and vegetables which provide valuable antioxidants (vitamin C and E, carotenoids, selenium, zinc, and polyphenols) such as berries, citrus fruits, spinach, apples, broccoli, tomatoes, garlic, grapes, nuts, legumes, and green tea.





# Epigenetic Analysis



## Methylation

Gene regulation is influenced by DNA methylation among other things. The binding of a small molecule in the methylation group on DNA can turn genes on and off. These epigenetic markers also work as predictive biomarkers for weight loss. They can help to explain and predict individual differences in weight loss following energy (kcal) restriction. For example, those who are overweight and those at a healthy weight show differences in their methylation patterns. We measure the methylation rate at specific sites in your genome and use this information to calculate your personal prognosis for weight loss. We also evaluate your health status graphically with the traffic light system.

### DNA Stability

Met. Line-1



Met. TNFa/IL6



LINE-1 refers to an element of the human genome that is not statically fixed but can change location in the genome. In regard to medicine, the LINE-1 family is of great importance, since some diseases are caused by the activation or inactivation of genes by the LINE-1 element. Those with a higher LINE-1 methylation (green areas) respond well to hypocaloric nutrition and have better antioxidant levels. Those who have lower methylation (red areas) should increase calorie deficit with exercise and proper diet. A higher intake of foods rich in antioxidants or a supplement (for instance, TIMEBLOCK® inspired by nature or PriosaSOD®) is also advised.

### Inflammation

Both, TNF- $\alpha$  and IL-6 have a central regulatory role in inflammation and immune responses since it influences immune cells. If you are in the green area indicates a lower inflammatory event, whereas the red area means a high level of inflammation. At a value in the red range a higher intake of foods, which have anti-inflammatory effects or a supplement (e.g. PriosaSULF®) is advised.

Furthermore, a high occurrence of TNF- $\alpha$  in adipose tissue leads to the deterioration of insulin signaling and can contribute to the development of insulin resistance and further weight gain.



Combination of Relevant  
Markers for Weight Reduction



Your value, which is a prediction for successful weight reduction, is in the middle range. This means that you can expect steady weight loss with an energy deficit of 23 % of your total caloric intake. However, to avoid a decrease in energy expenditure during calorie restriction, you should maintain a fasting window of at least 5 hours between meals. This gives your body a chance to lose fat. Your last meal of the day should be about three hours before you go to bed so that your body can be in optimal hormonal position to lose fat during the night.

### **Intermittent fasting — How does it work?**

The execution of intermittent fasting is conceivably easy. Periods of normal food intake are followed by intervals when you eat nothing.

This deliberately sets the body up to be in a state of no-calorie intake with the goal of reducing fat while protecting muscle mass or even expanding muscle mass. The word intermittent means that food intake is only interrupted and that caloric intake must not be restricted for too long. This stabilizes insulin levels, making it easier to lose weight. Various studies have shown that intermittent fasting protects the immune and cardiovascular systems and possibly slows down the aging process.

### **Metabolism and Fasting:**

Intermittent fasting does not cause a decrease in metabolism though this myth is often attributed to the practice.

### **Health Benefits of intermittent fasting:**

Potential health benefits were found mainly through studies on animals.

These studies indicate:

- Longer lifespan
- Lowered risk for type II diabetes
- Cardio-protective and neuro-protective effects
- Better brain function in old age
- Decreased likelihood for cancer

There are two basic types of intermittent fasting, that can be split into further varieties.

1: One or two fasting days each week (5:2 method)

This variation calls for fasting on one or two days in a week. On days when you eat, take the amount of macronutrients (proteins, carbohydrates, fats) that we have specified based on your genotyping.

2: Daily fasting periods (16/8 method)

The numbers 16 and 8 refer to the two timeframes when you fast and eat. A 16-hour fasting interval is followed by an 8-hour meal phase.

Within these eight hours, take the amount of macronutrients (proteins, carbohydrates, fats) that we have specified based on your genotyping. The 8-hour calorie intake phase is followed by 16-hours of fasting.

### **What is allowed while fasting?**

- Water (at least 2.5 liters)
- Coffee (without or with very little milk, a dash of cream, or alternatively unsweetened nut milks)
- All types of tea (without sugar)

*Green tea with a dash of lemon is particularly advantageous since it promotes metabolism.*

*Add a dash of lemon juice to water. The lemon deploys alkaline effects in the body. It is important to support the body with alkaline foods especially when fasting and losing weight. Many toxins accumulate in fatty tissue. When fat is broken down, it gets into the bloodstream and must be detoxified.*

An example of a time table for a 16/8 plan would be: fast from 7 pm to 11 am and eat from 11 am to 7 pm. This timetable can, of course, be flexible according to your everyday life and wishes, but the 16/8 apportionment must be retained.

Simply try out how the periodization works for you personally. It is also possible to switch back to a more normal food intake on weekends.

## Your epigenetic Status of microRNA Metabolic Regulation:

MiRNAs are short RNA fragments of 19 to 24 nucleotides. These non-coding RNAs have diverse regulatory functions in the body. A good third of human genes are regulated by miRNAs. They take care of the “fine-tuning” of gene regulation. Cells in the body target miRNAs which function as signal molecules in the communication between cells. These small signal molecules, therefore, serve as biomarkers for the metabolism. We have determined the blood levels of two miRNAs which can be positively influenced by lifestyle.

### Inflammation- and micronutrient-associated miRNA

Increased inflammation and poor zinc and folate levels increase the amount of this marker in the blood. It is important to strive for a normal BMI if you are in the high or medium status (indicated by red or yellow) and to take care to increase zinc and folate intake.

Inflammation- and Micronutrients-associated miRNA



Your level for the inflammation- and micronutrient-specific miRNA is not in the optimal range. Increase your fiber intake e.g. with whole grain products, which are beneficial for your positive intestinal bacteria and as a result can strengthen your immune system and prevent inflammation. In addition, pay special attention to your zinc and folate intake. Whole grains, legumes, oil seeds, and nuts are good sources of zinc. Increased meat consumption has a negative effect on this miRNA. If necessary, reduce your intake of meat, especially processed and red meat.



## MiRNA and the Formation of Fatty Tissue

All humans have white and brown or beige adipose tissue. The latter provides more energy in the form of heat. Certain miRNAs influence whether more brown or beige adipose tissue is formed in relation to white adipose tissue. Brown and beige fat requires more energy which is then released in the form of heat. This increases your basal metabolic rate. A low miRNA level in the blood reduces the negative influence on energy metabolism in FTO-SNP carriers, as more brown or beige adipose tissue is formed from the white. This promotes weight reduction. With regular exercise, the blood level of this miRNA can be lowered.

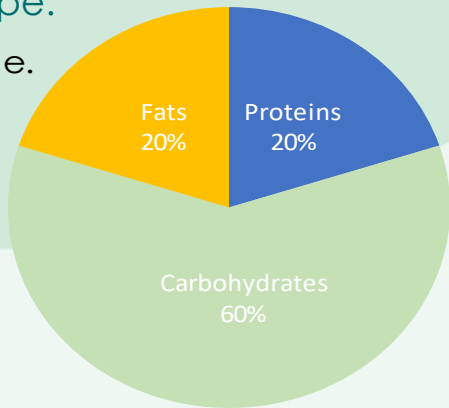
MiRNA and the Formation of Adipose Tissue



Your level for this miRNA is in an average range. You can positively influence your metabolism by increasing your daily activities. For example, take the stairs more often instead of the elevator or take long walks. Sport in general has a positive effect on this miRNA. If you are already doing a lot of exercise in your everyday life, you can also increase your sporting activities. To improve the value for this miRNA, conscientiously implement the personalized diet and exercise recommendations generated for you. In this way, you can use even more of the described positive effects of this FTO gene-regulating miRNA for your weight loss and your health.

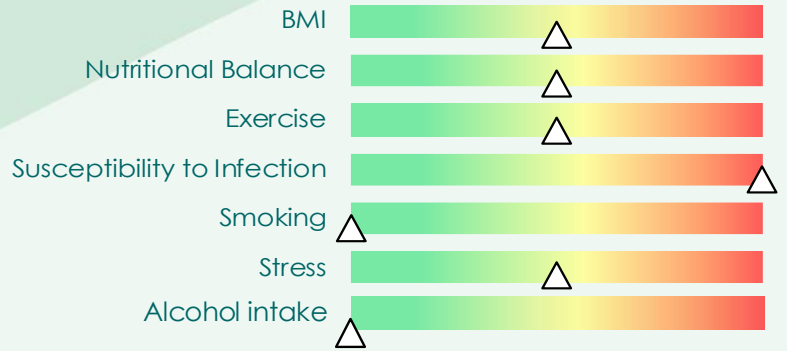
# General Overview

Metabolic Type:  
Carbohydrate.



BMI: 26

Lifestyle:

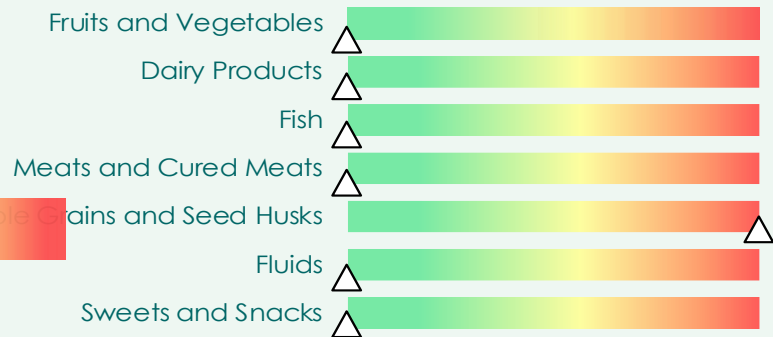


Exercise Type:  
Strength

Influence of sport on body weight



Nutrition:

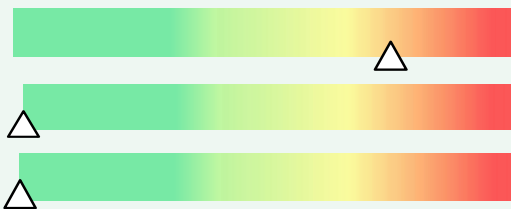


Nutricosmetics:

Skin Elasticity and wound healing

Dryness of the Skin

Antioxidants

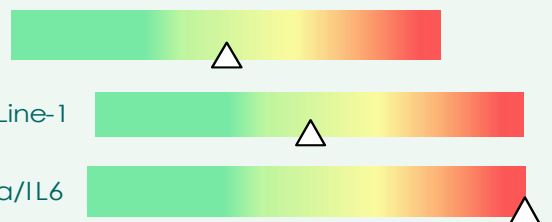


Methylation:

Combination of Relevant Makers for Weight Reduction

Met. Line-1

Met. TNFa/IL6



MiRNA:

MiRNA and the Formation of Adipose Tissue

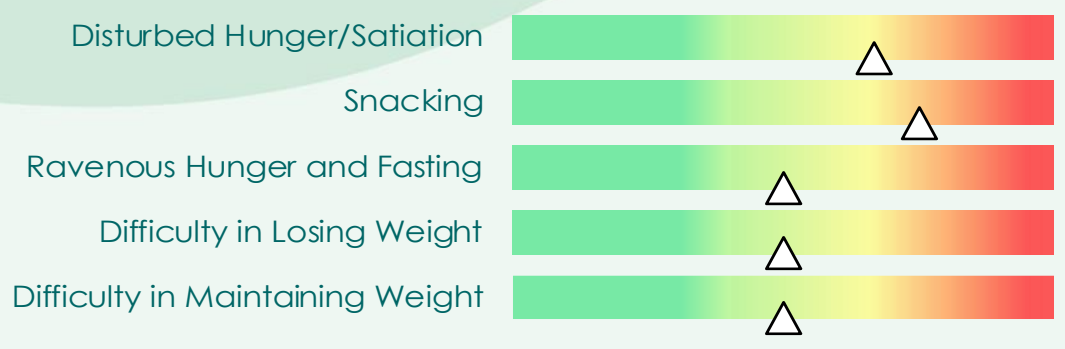
Inflammation- and Micronutrients-associated miRNA





## Risks:

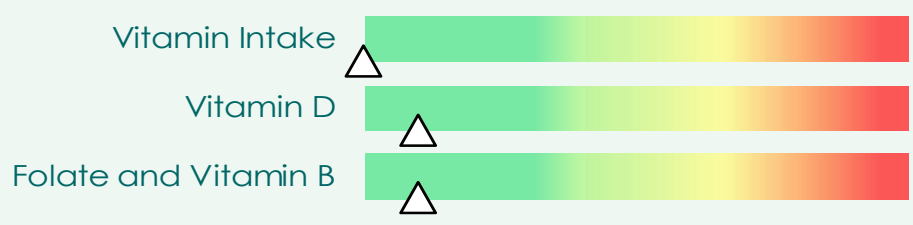
### Eating Habits:



### Diabetes/Obesity:



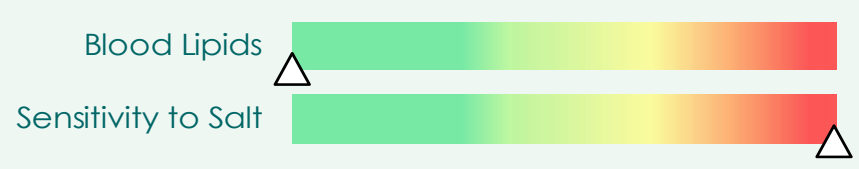
### Vitamin Intake:



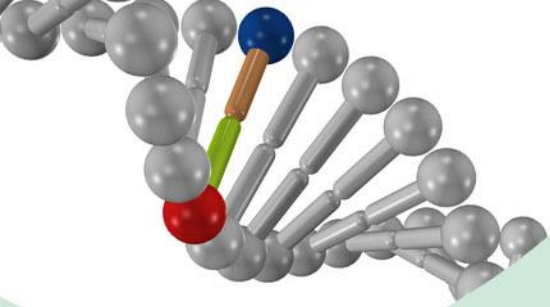
### Omega-3 and Omega-6:



### Blood Lipids:







# Interpretation of Your Nutritional Status





The basal metabolic rate (calculated with the Harris-Benedict formula) indicates how many calories a person needs per day if that person is in a completely quiescent state. This value is to be understood as a guideline and varies depending on each body. Certain activities require more calories and are not taken into account. These will be accounted for in your daily energy metabolism.

$$\text{BASAL METABOLIC RATE} + \text{ENERGY VOLUME} = \text{CALORIC NEED}$$

Age: 42                      Your Basal Metabolic Rate: 1639 kcal

Your Daily Energy Demand: 2327,38 kcal

The evaluation of your epigenetic markers for weight reduction show that successful weight loss can result from a 23 % energy (kcal) deficit.

A 23 % kcal deficit of your energy volume of 2327,38 kcal is 535,21 kcal/day.

Target intake of energy per day during weight loss period: ca. 1791,79 kcal

BMI (Body Mass Index):

26

Age	Normal BMI Female	Ideal BMI Female	Normal BMI Male	Ideal BMI Male
<b>19-24</b>	17,5-23,9	20,75	18,5-24,9	21,75
<b>25-34</b>	18,5-24,9	21,75	19,5-25,9	22,75
<b>35-44</b>	19,5-25,9	22,75	20,5-26,9	23,75
<b>45-54</b>	20,5-26,9	23,75	21,5-27,9	24,75
<b>55-64</b>	21,5-27,9	24,75	22,5-28,9	25,75
<b>Über 64</b>	22,5-28,9	25,75	23,5-29,9	26,75

## Recommendations

- Try to maintain your fasting intervals in order to give your body the chance to regenerate.
- The last meal of the day should be about three hours before you go to bed. This way, your body can use hormone levels which are optimal for fat loss during the night.
- Protein levels should be at least 0.8 g/kg body weight per day for men and women aged 19 to 65 years and older.
- Opt for complex carbohydrates which are absorbed more slowly, provide more energy, and contain more vitamins.
- The intake of saturated fats should be kept as low as possible.  $\omega$ -3 and  $\omega$ -6 fatty acids should occur at least in a 1:5 ratio, but better in a 1:3.
- Try to have at least two liters of fluid per day for the body to function better.
- Reduce or, better yet, abstain altogether from calorie-containing beverages. Infuse your water, instead, with lemon, cucumber, berries, mint, lemon balm, etc. This not only tastes great but is also calorie-free. Unsweetened tea is another great option.
- Alcoholic drinks should be reduced and even eliminated when trying to lose weight. Alcohol makes the metabolism sluggish, contains lots of calories, and disturbs your appetite. Remember that even alcohol-free beer contains lots of calories which are converted to sugar in the body.
- Try to eat fruit or vegetables five times a day, focusing more on vegetables since they contain relatively little to no fructose (so there is no worry about excess).
- Do not underestimate the calorie count of fruit juice, both from concentrate and fresh pressed.
- While enjoying your meal, chew each bite for a longer duration of time. This will slow down your eating, which is very effective as the feeling of satiety sets in only after twenty minutes.
- Opt for a small plate rather than a large plate. This provides the illusion of having the same amount of food on the plate although the portion is actually smaller.
- Eating while in front of the television or computer can lead you to eat more food than you otherwise would have wanted or needed.
- Keep a food diary if that helps you keep track of what you eat and drink.
- Daily exercise helps to maintain a good energy balance. Thirty minutes per day of fresh air can help metabolism and can put you in a good mood (vitamin D is also synthesized through the skin).
- Exercise increases your basal metabolic rate, and that means you can also absorb more kcal every day.



- Opt for the stairs instead of taking an elevator or escalator. Instead of the bus, take a walk to work. Squat while brushing your teeth. Use your shopping bags as arm weights. Small amounts of movement are easy to integrate into your everyday life.
- Weigh yourself regularly. It is the simplest way to measure your current physical condition. Make sure to meet the same conditions when you weigh yourself from day to day. For example, weigh yourself first thing in the morning after you use the toilet.
- Set realistic goals when it comes to losing weight. Losing a pound in a week of dieting is healthy and sustainable.
- Try to avoid stress and anger. These decrease motivation and can lead us to fall back on unhealthy eating habits.
- When you have reached a goal or milestone, reward yourself with something.
- When you first attempt to lose weight, try to go out to eat less, though there should be occasions when you make an exception. Eating at home and cooking your own meals provides an opportunity to familiarize yourself with this new nutrition plan and lifestyle and to assess what is the right and healthy meal for you. When you cook for yourself, you get a good sense of what kind of and how much oil, salt, etc. you really need to use. In restaurants, taste is the most important factor for the cook, and that means that fats and other flavor enhancers are generously used.



## Stabilization of your new weight: Prevention of a rapid decline of metabolism

- Follow the energy deficit calculated for you. It should not be less kcal than your basal metabolic rate!
- Use carbohydrates cyclically if your metabolic type is fat or protein. Carbohydrates are closely linked to the activity of the thyroid and ensure adequate function of the metabolism.
- By rule of thumb, the lower the body fat percentage is already, the more often a carbohydrate-refeed (cheat day) should take place.

### In Practice

You may enjoy your favorite foods on refeed or cheat days, even if they do not match your metabolic type. But don't go overboard!

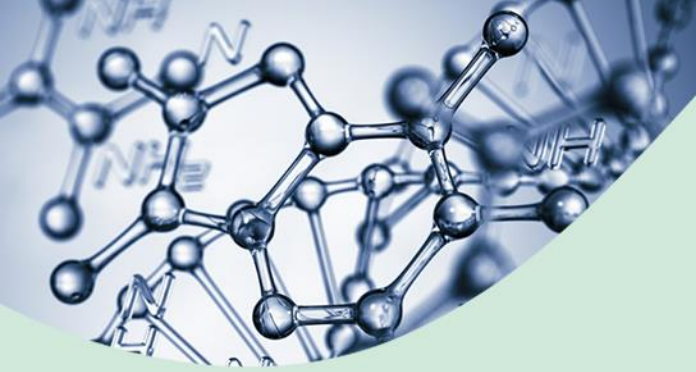
With your BMI, a refeed should occur approximately every two weeks. Once you have reached a BMI of  $<25 \text{ kg/sqM}$ , a cheat day can occur every 4-6 days.

Good food carries a special cultural and social significance. Therefore, refeed days are particularly suitable for the weekend. In this way, you can indulge in culinary favorites with your family and friends without feeling guilty. In these refeed days, your metabolic performance does not sink too much and at the same time, your motivation to persevere is increased.

The raise in caloric intake after reaching your optimal weight should be slow and steady. A common mistake is to increase energy intake too quickly. Increase your caloric intake weekly by about 100 kcal until you reach your isocaloric need. This is the quantity at which no calorie excess or calorie deficit occurs, and your body weight is stable. Keep this caloric intake at a constant level to stabilize your new weight. Your body must first learn to deal with your new optimal weight. In an effort to make up for the loss in fat mass, the body will increase the distribution of hunger hormones such as ghrelin and will reduce leptin which is an important satiation hormone that is also strongly influenced by energy metabolism. But when you follow your personalized lifestyle recommendations and the methods described above during and after weight loss, you will be well equipped to maintain your healthy weight!

We wish you much joy and perseverance on your way to a healthier, easier, and above all, happier life!

Your HealthBioCare Team



#### Further Advice:

For more information, visit our website, [www.healthbiocare.at](http://www.healthbiocare.at). If you still have questions or concerns, send them to: [office@healthbiocare.at](mailto:office@healthbiocare.at), and one of our experts will take care of your questions immediately.