



TACKLING ADOLESCENT OBESITY
Towards healthier body & mind :
a guide for teenagers



This student's handbook is funded under the Erasmus + Programme of the European Commission.

TACKLING ADOLESCENT OBESITY PROJECT

The student's handbook is a part of a wider project entitled "Tackling Adolescent Obesity and promoting inclusion through nutrition trainings for disadvantaged youth" which is nicknamed TAO. This project is coordinated by Safe Food Advocacy Europe (SAFE).

The project is being implemented from September 2018 to February 2021. It gathers 10 partners from 5 different EU Member States (Poland, Germany, Italy, Greece and Belgium). The main objective is to create a comprehensive nutrition training for teenagers, which will address nutrition fundamentals, physical activity, health risks related to inadequate nutrition, bullying, discrimination and mental health.

The student's handbook is provided with a guide for teachers to set up the nutrition trainings. A website is also available with news, quizzes, recipes and an interactive map on the following address: <https://meet-tao.eu/>.

Follow the adventures of our two characters **TAO** & **LAMY**. The consortium of the project has a special thought for Marina Biglia who had this famous quote that symbolises our project : « At the core of eating disorders is silence, and this silence must be broken. Starting from us ! »



PURPOSE OF THE HANDBOOK

Worldwide, in 2016, over 1.9 billion adults suffered from being overweight and 650 million suffered from obesity. In turn, this problem affected as many as 340 million children and adolescents aged 5-19. Forecasts indicate that by 2030, for adults, these numbers will increase to 2.16 billion, and 1.12 billion respectively.

Being overweight or obese are correlated with the development of so-called diseases of civilisation, including, among others, type 2 diabetes, atherosclerosis and hypertension.

The Student's Handbook – Nutrition Guide, developed on the basis of the latest scientific knowledge, is part of a larger undertaking aimed at raising schoolchildren's awareness of rational nutrition as well as reducing the discrimination that results from eating disorders and promoting integration in the school environment.

In the first and second sections, the handbook presents, among others, a description of nutrients such as proteins, fats, carbohydrates and the health effects resulting from their excess or deficiency in the diet. In the third section, there is nutritional advice on preparing healthy meals and tips on how to read labels to allow you to make conscious choices of food products in your daily diet.

In addition, you can find more information on the TAO website (<https://meet-tao.eu/>) where you can play to quizzes in order to make sure you fully understood all the sections. Besides, the list of references of this handbook is on the website too.

AUTHORS

SAFE – SAFE FOOD ADVOCACY EUROPE

SAFE – Safe Food Advocacy Europe is the project coordinator of the TAO project.

SAFE – Safe Food Advocacy Europe was created in 2015 out of a concern for public health related to food issues. One of the most influential factors of the EU's food legislation is lobbying, indeed the large majority of EU legislation is influenced by lobbyists. There are more than 30.000 lobbyists in Brussels, 70% of them are working for businesses, only 10% work for NGOs.

Thus, SAFE was created to ensure that consumer's health and concerns remain at the core of the EU's food legislation. SAFE is the only NGO in Brussels focusing only on the protection and representation of EU consumers in the food sector. SAFE monitors the EU's food legislation process and cooperates with EU legislators and its actors to draft comprehensive food regulations.

More information on: <https://www.safefoodadvocacy.eu/>

UNIVERSITY OF RZESZÓW

The University of Rzeszów came into being by the Act of Parliament of 7th June 2001. The University of Rzeszów was created through the merger of the Pedagogical University of Rzeszów, the Rzeszów branches of Maria Curie Skłodowska University in Lublin, and Agricultural Academy (the Faculty of Economics) in Kraków.

The university continues the policy of these Institutions, develops research projects and participates in various educational programmes that are important for the South-Eastern Poland. Due to its geographical position, the University realises its unique tasks in cooperation with foreign higher education institutions. It plays the role of an intellectual and cultural bridge between Ukraine and European Union. It cooperates with 120 foreign institutions of higher education (with over 50 partner universities from Ukraine) and with over 200 universities within Erasmus+ programme.

More information on: <http://www.ur.edu.pl/en>

SONVE

SONVE is a nonprofit and voluntary organisation which aims to inform about plant-based nutrition scientific issues. SONVE stands for Società Scientifica di Nutrizione Vegetale (Scientific Society on Plant-based Nutrition) and accepts only health professional memberships. It carries out activities in biomedical research fields as well as information and training for doctors, biologists, dietitians and other health professionals.

SONVE also provides information and interviews to media (TV, Radio, Newspapers, Magazines, Socials) and group scientists and people concerned with plant-based nutrition into Committees, each studying a specific issue. Committees aim to produce SONVE position papers on such issues. The peculiarity of the Committees is a scientific cooperation approach among experts in order to exchange and update knowledge on the studied subject, by a reappraisal of the scientific literature on it, and by means of tailored research project designs, which SONVE will support.

More information on: <http://www.sonve.eu/>

EUROPEAN CHILDHOOD OBESITY GROUP

The European Childhood Obesity Group (ECOG) is a pan-European group of professionals dealing with childhood obesity and overweight. ECOG brings together experts from across Europe including: paediatricians, psychologists, nutritionists, geneticists, physical activity experts, economists and many more.

The group was founded in 1991 and its mission is to help the European community at large to fully understand the health, social, psychological and economic impacts of childhood obesity and work together to take this growing problem off the menu in Europe.

More information on: <https://www.ecog-obesity.eu/>

AMICI OBESI ONLUS – ASSOCIAZIONE NAZIONALE PAZIENTI OBESI

Amici Obesi (ANPO) is the Italian national association of obese patients and has a reach of more than 30,000 people that constantly benefit from their expertise on nutrition and treatments of obesity.

Created in 2005 to meet the information needs of obesity as a disease recognised by institutions and its possible treatments, ANPO provides counselling and psychological support to obese patients and their families and helps former obese patients that seek to be reintegrated into society.

More information on: <https://www.amiciobesi.it/>

ADISPOSITASHILFE DEUTSCHLAND

AdipositasHilfe Deutschland (AHD) is one of the two German nationwide patient organisations. The organisation is specialised in designing therapy programmes for obese children and adolescents.

Founded in 2013 as a patient organisation to support obese people and groups, its main goals are the recognition of obesity as a disease and the prevention of childhood obesity.

Since the organisation has experience in involving adults in the trainings for adolescents, it will be a valuable collaborator in the creation of the educational training materials.

More information on: <https://www.adipositashilfe-deutschland.de/aktuelles.html>

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CHAPTER I : THE FUNDAMENTALS OF NUTRITION

SECTION 1 – THE DIFFERENT FOOD FAMILIES AND THE ASSOCIATED NUTRIENTS

Introduction

Have you ever asked yourself “why do I eat?”

Eating is an essential need for the survival of all living creatures and each of them has specific food requirements and types of food that better meet their natural needs.

Human beings are also animals who need to eat and drink properly in order to stay healthy, grow, reproduce and live happy lives.

Food can provide those nutrients which are essential to us. This means that we cannot produce them ourselves and we therefore need to obtain them from the food we eat.

We are so used to eating three times a day that we usually do not pay attention to the ingredients in our plate nor to their nutritional balance.

This is sometimes enough, but a daily balanced diet does require attention to include sources of essential nutrients each day, as well as avoid some unhealthy eating choices.

It is therefore important to know the different food categories, which are basically groups of certain foods, providing essential nutrients and other compounds known as bioactive, because they can positively affect our health in multiple ways. Among bioactive components, there are **minerals**, **vitamins**, and so-called **phytochemicals** that are special molecules produced by plants only (see Section 2).

Healthy food and drinks are very important to protect our health because of the nutrients they contain. Combined with **health education** and **daily physical activity**, they help to achieve a healthy lifestyle. For example, plant-based protein-rich foods contain fibres and numerous compounds that have been associated with a variety of health benefits, while processed meats containing sodium, nitrites and heme-iron (see Section 2) have been linked with less-favourable health outcomes.



GOALS OF THE SECTION

The goal of this section is to present different food categories with their main nutrients and bioactive compounds, as well as to provide **awareness** on the nutritional composition and characteristics of different foods in order to prepare daily well-balanced meals.

According to the World Health Organization's (WHO) reports, this awareness will offer the easiest and **most powerful preventive weapon** against diseases.

KEY TERMS & CONCEPTS

BIOACTIVE COMPOUNDS:
Substances contained in certain food which, according to scientific research, have positive effects on our health.

MEDITERRANEAN DIET:
A particular type of diet inspired from the eating habits in the Mediterranean area.



COOKING METHODS:
Ways to make food more tender and/or digestible, such as boiling, frying, steaming, stir-frying.

ESSENTIAL NUTRIENTS:
Nutrients which our body cannot produce by itself and therefore need to be obtained from food.

KEY KNOWLEDGE



Vegetables

They provide vitamin C, beta-carotene, riboflavin, iron, calcium, magnesium, potassium, fibre and many bioactive compounds. **Dark green leafy vegetables** such as broccoli, collards, kale, mustard, turnip greens, chicory, or bok choy are especially good sources of these important nutrients. **Dark yellow and orange vegetables** such as carrots, tomatoes and pumpkin also provide beta-carotene, lycopene, lutein and other important phytochemicals. Choose **raw vegetables over cooked ones**, as their nutrients will remain

more intact, except for beta-carotene-rich foods, which concentrate this nutrient when cooked. When cooking vegetables, **choose stir-frying, steaming and oven-cooking** instead of frying, grilling or boiling. Boiling is actually known for releasing nutrients into the water, leading to quite nutritionally-empty, yet still fibre rich vegetables to eat.

The consumption of at least **3-5 servings a day** is suggested. Freshly made juice from raw vegetables can help you to reach the daily recommended servings.



Legumes

Also known as beans or pulses, these include chickpeas, soy, peas, peanuts and lentils. They are all good sources of fibre, protein, iron, calcium, zinc, and B vitamins, as well as useful fats. Legumes can be consumed whole, split, shelled, as pasta, flour, hummus and falafel.



Grains

This group includes bread, rice, bulgur, pasta, tortillas, hot or cold cereal. Grain products can be made from corn, millet, barley, sorghum, buckwheat, spelt, oat, quinoa, rice, teff, kamut, and wheat. Grains are rich in **fibres** and other **complex carbohydrates**, as well as **protein, B vitamins, iron** and zinc.

The consumption of 5 or more servings of grains a day is suggested, provided that they are **whole**, rather than refined cereals.



Fruits

Rich in **fibre** and **vitamin C**, fruits are also packed with beta-carotene, lycopene and other precious phytochemicals, such as quercetin and anthocyanins, all known to be strong **antioxidants**. Choose **whole fruits** over fruit juices, as the latter do not contain much fibre.

A consumption of **2-3 servings a day** is suggested. All kinds of fruit are included. They may be fresh, frozen, raw, cooked or in juice.





Milk and Dairy Products

This group includes a wide variety of products **derived from milk**, which are provided by **cows, goats and sheep**. **Fermented milk**, such as kefir and yoghurt, are among the **best for our health**, along with several types of cheeses ranging from fresh and soft, to hard and matured cheese such as parmesan. They all provide good quality proteins, calcium, and vitamin D.

Milk and dairy products also contain sodium, saturated fats and cholesterol, so the daily recommended consumption should not be exceeded.

A consumption of **1 or 2 servings a day** is recommended, provided that they are low fat, fermented, organic, low in salt and without added sugars.



Meat, Poultry, Fish, Eggs

These are good sources of protein, iron, zinc, copper, phosphorus, sodium, and cholesterol. Fish provides good fats (see Section 2) and iodine, as well as **protein, iron** and **vitamin D**.

If the meat comes from “free range” animals or their feed is enriched with B12, the vitamin will be present in their meat. Meat is classified as being either red or **white**, the latter being recom-

mended as the **healthier type**, provided that it is lean and from **organic farms**.

Edible fish can come from the sea or freshwater, providing good fats when living in cold waters and iodine if they are of marine origin.



Nuts, Seeds and Fats

Nuts and seeds are **complete foods**, which can help us meet daily nutritional requirements as they can supply energy, protein, good fats, iron, calcium, potassium, magnesium, phosphorus, precious bioactive components, vitamin E,

fibre, and folate. Nuts include almonds, walnuts, pistachios, peanuts (which are actually legumes), cashews, Brazil and macadamia nuts. Seeds include pumpkin, sunflower, sesame, hemp, flaxseed, poppy, and chia. **Oils are pure fats**, obtained from olives, seeds (pumpkin, sunflower, sesame, hemp, and flaxseed), palm or coconut and even legumes like soy or cereals like corn. Animal fatty foods include butter, cream, lard; vegetable fats can also be sold as margarine (see Section 2).



Water and Drinks

Our body is made of approximately **70% water**. Drinking water can be a good source of calcium, potassium, magnesium and bicarbonate. Regarding the body's liquid requirement, in general, drinking water and other beverages contribute to

about **70 to 80% of the daily liquid requirement** and water in foods represents the rest.

Drinks and beverages may be alcoholic or non-alcoholic, with or without added sugar and either based on natural plant-extracts or artificial flavours. It is very important to **choose carefully** what to drink apart from water, as alcohol and free sugars should generally be avoided.



TAO TOLD ME OUR BODY IS MADE OF APPROXIMATELY 70% WATER. IT'S AMAZING!

SUGAR ALTERNATIVES



Sugar is the **most commonly used sweetener**. Excellent alternatives are however available, not only as sweeteners, but also for their effect on our health. Foods can in fact be classified on their ability to increase our blood sugar level using a measurement known as the Glycaemic Index (GI). The **glycaemic index** is measured as an increase of blood glucose levels over the baseline level during a 2-hour period following the consumption of a defined amount of carbohydrates, usually 50g, which is compared with the same amount of carbohydrates in a reference food. Food values can range from 0 to 100 using glucose (rating 100) as the reference food. Foods with a **lower GI rating are generally better for us**. Foods are classified as having a low GI when their value is in the range of 0 to 55, medium when their GI is between 55 and 70 and high when their GI is in the range of 70 to 100.

Coming back to our **sugar alternatives**, there are sweeteners with a **very low GI**, close to or equal to zero, such as stevia, erythritol, and xylitol, while fructose or coconut sugar range from 15-35 GI.

A MEDITERRANEAN APPROACH

The Mediterranean diet is well known all over the world and is considered to be the **healthiest in the world**. It has been part of the UNESCO cultural heritage since 2009.



The Mediterranean diet is characterised by a nutritional model that has remained regionally consistent over time and recommendations arising from this ancient diet are **still valid today**. Scientists are still researching the benefits of certain food choices made by a number of Greek populations who lived in areas where the “genuine” Mediterranean diet comes from.



HERE ARE SOME TIPS COMING FROM THE AMERICAN HEART ASSOCIATION THAT REFLECT THE MEDITERRANEAN DIET APPROACH TO HEALTH:



01

Eat a majority of food from **plant sources**, such as potatoes, grains, pasta and breads, beans, fruits, vegetables, nuts, and seeds.

02

Eat **minimally processed foods**, with an emphasis on fresh, locally grown foods.

03

Replace other fats and oils with **olive oil**.

04

Eat **low to moderate amounts of cheese and yoghurt** (low fat and fat-free preferable).

05

Eat **low to moderate amounts of fish and poultry** and from zero to four eggs per week (those used in cooking and baking need to be counted).

06

Engage in **regular exercise** to promote fitness, a healthy weight and a feeling of physical well-being.

LOOKING AT A HEALTHY FUTURE THROUGH COLOURS:



GOOD FOR YOU!

- Eat a variety of **fruits** and **vegetables**, mainly raw and cooked
- Preferably stir-fried, steamed or oven-cooked meals
- Prepare **nutrient and fibre-rich dishes**, combining vegetables, legumes, seeds and olive oil



THINK ABOUT IT!

- Limit dairy products
- Limit fried, grilled and boiled food, especially meats
- When choosing the ingredients for your meals, try opting for **fruits or cereals**.



NOT RECOMMENDED

- Avoid junk foods like fatty cheeses, refined white bread, cakes, sweets and candy
- Reduce the consumption of alcoholic drinks of any kind and sugary beverages
- Reduce the consumption of red and processed meat, grilled, fried, and boiled meats

THINGS TO REMEMBER & TIPS

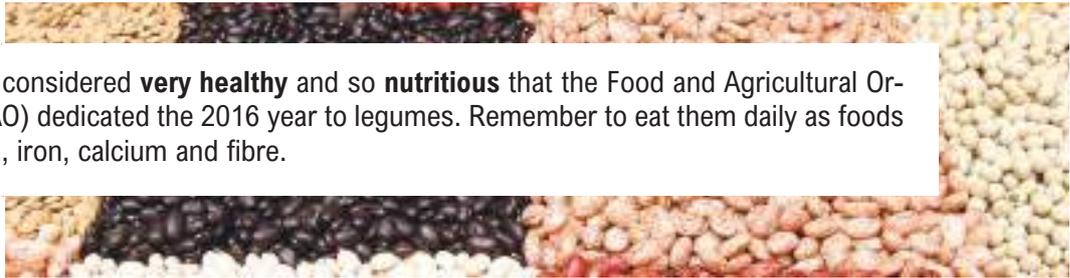
It is important to keep in mind that some books, articles and social discussions concerning nutrition may not be scientifically correct, and that food ads often can be misleading. Therefore, be smart and **look for qualified advice!**

Be curious!! Always make your meals different by choosing a **variety of food and brands**. Pay attention to varying your food routine, changing brands and products. For instance, do not eat the same brand of yoghurt every day!

Freshly made raw vegetable juices can help you to reach the recommended daily servings. Choose a higher proportion of vegetables than fruits and when preparing fresh fruit juices, add only one type of fruit as well as a quarter of lemon and many raw and colourful vegetables. This will help you to absorb **plant iron** and **reduce sugar consumption**; In this case, the sugar comes from a healthy source Remember that **alcohol** can contribute to **obesity** as well as **damaging your cells**, particularly at the brain and liver levels. It is a nutritionally poor food source and does not stimulate satiety. It is not necessary and naturally cannot be considered a healthy food.

Eating healthy meals and food that is good for you should not be done occasionally nor be a source of anxiety but should on the contrary be **a happy lifelong practice**, which everyone deserves, as life is much more fun if you are strong and healthy!

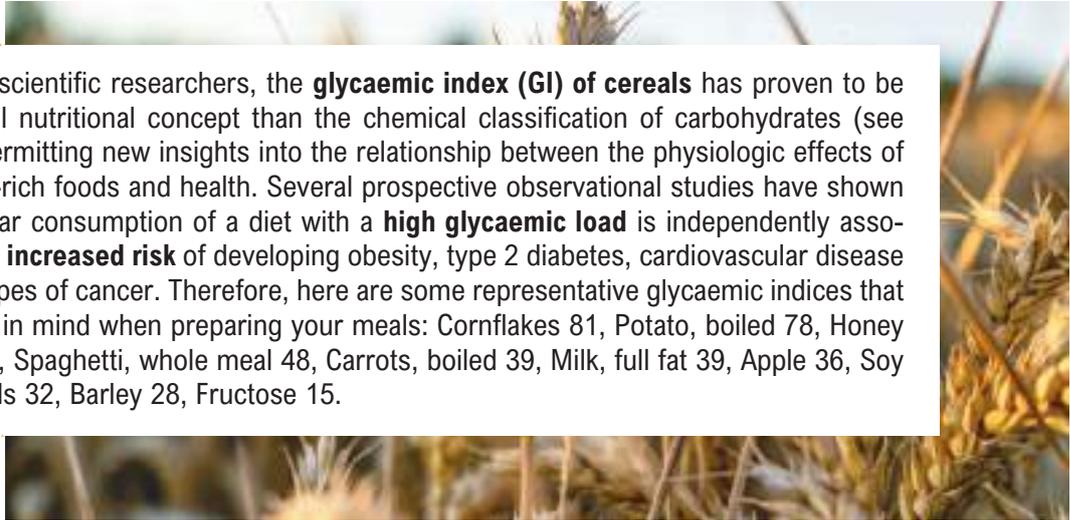
ADDITIONAL INFORMATION BUBBLES



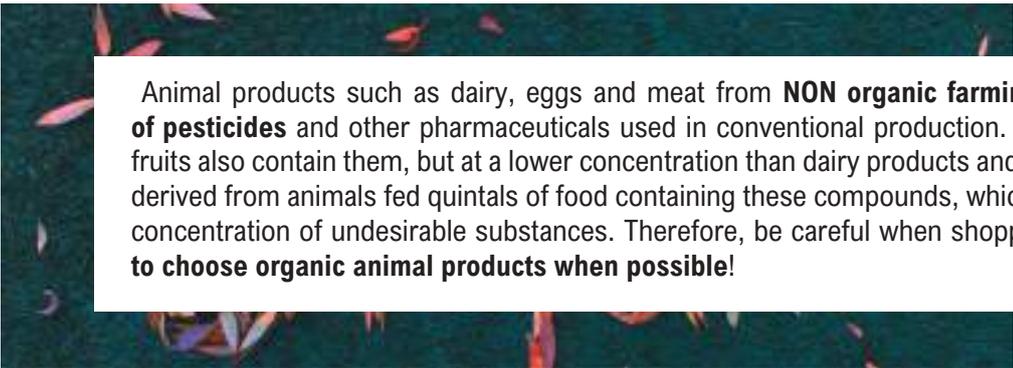
Legumes are considered **very healthy** and so **nutritious** that the Food and Agricultural Organization (FAO) dedicated the 2016 year to legumes. Remember to eat them daily as foods rich in protein, iron, calcium and fibre.



Eat plenty of fibre-rich foods, because fibre is very useful to our body, in particular as it is involved in nourishing friendly intestinal bacteria, helping to reduce bowel inflammation and reducing intestinal mucosa contact of dangerous molecules and toxins. Furthermore, it contributes to a healthy immune system, decreasing sugar and fat absorption. Remember that **animal products contain no fibre!**



According to scientific researchers, the **glycaemic index (GI) of cereals** has proven to be a more useful nutritional concept than the chemical classification of carbohydrates (see Section 2), permitting new insights into the relationship between the physiologic effects of carbohydrate-rich foods and health. Several prospective observational studies have shown that the regular consumption of a diet with a **high glycaemic load** is independently associated with an **increased risk** of developing obesity, type 2 diabetes, cardiovascular disease and certain types of cancer. Therefore, here are some representative glycaemic indices that you can keep in mind when preparing your meals: Cornflakes 81, Potato, boiled 78, Honey 61, Muesli 57, Spaghetti, whole meal 48, Carrots, boiled 39, Milk, full fat 39, Apple 36, Soy milk 34, Lentils 32, Barley 28, Fructose 15.



Animal products such as dairy, eggs and meat from **NON organic farming**, may be full of **pesticides** and other pharmaceuticals used in conventional production. Vegetables and fruits also contain them, but at a lower concentration than dairy products and other products derived from animals fed quintals of food containing these compounds, which increases the concentration of undesirable substances. Therefore, be careful when shopping, **always try to choose organic animal products when possible!**



SECTION 2 – NUTRIENTS AND THEIR RESPECTIVE ROLE IN THE BODY

Introduction

To be healthy and well nourished, you must provide your body with **key food nutrients**. The latter are classified into macronutrients, carbohydrates, fats, proteins, micronutrients, minerals, vitamins, water and fibre. Each nutrient is important but no food has all essential nutrients alone. It is therefore better to look for nutrients in **different foods and combine them**. This means that while carbohydrates (CHO), proteins and fats (lipids) are necessary for energy, they need the help of vitamins, minerals and water from other sources. In addition to that, proteins are fundamental for building and repairing body tissue.

Dietary carbohydrates, fats and proteins **all provide energy**. This energy can follow very different pathways according to several factors:

- their chemical form and structure,
- other foods consumed during the same meal,
- the food matrix the foods belong to,
- the genetic profile of the consumer.

In order to understand how much of each nutrient our body needs, there are some reference intakes, which every country sets for their own population. The **Dietary Reference Intakes (DRI)** include two sets of values that represent objectives for nutrient intake: **Recommended Dietary Allowances (RDA)** and **Adequate Intakes (AI)**. The RDA reflect the average daily amount of a nutrient considered as adequate to meet the needs of most healthy people. AI are set when there is not enough evidence to determine RDA and both might be used as goals for nutrient intakes



GOALS OF THE SECTION

The aim in this section is to deepen our knowledge on nutrients, focusing on the main sources of the essential nutrients and on nutritional strategies used to increase their bioavailability.

One will also aim at raising awareness on the quality of food, including to do the best choices among fats as well as promoting nutritional label consultation as a shopping routine.

KEY TERMS & CONCEPTS

AI: Adequate Intakes of nutrients;

DRI: Dietary Reference Intakes of nutrients;

RDA: Recommended Dietary Allowances of nutrients;

EFA: Essential Fatty Acids. They need to be provided by food as our body cannot synthesise them;

EAA: Essential Amino Acids. They need to be provided by food as our body cannot synthesise them;

Heme-iron: The type of iron contained in animal products;

Omega fats: They are named by numbers: 9, 6 and 3. Omega-9 is present in olive oil, omega-6 is present in animal products, soy and nuts and omega-3 is found in seeds (chia, flaxseeds), walnuts, algae and fish;

Phytochemicals: Substances which are present in vegetables only and provide health benefits according to scientific researches;

Saccharides: Carbohydrate polymers which can go from one molecule to thousands joined by covalent bonds to form simple and complex carbohydrates;

TFA: Trans Fatty Acids, artificially made via total or partial hydrogenation of fats. They are mainly found in processed, fried, industrially prepared and fast foods.

KEY KNOWLEDGE

MACRONUTRIENTS

CARBOHYDRATES

Carbohydrates are the **major source of fuel for energy**. They are constructed from atoms of carbon, oxygen and hydrogen which are represented by the chemical element CH_2O , where the term carbohydrate (carbon-water) comes from. Carbohydrates comprise two major classes: simple carbohydrates and complex carbohydrates.

Simple carbohydrates include monosaccharides and disaccharides. **Monosaccharides** are the simplest form of carbohy-

drate, as they cannot be reduced in size to smaller carbohydrate units by the digestive system. Monosaccharides are called **simple sugars**. The most "famous" monosaccharide is the 6-carbon sugar, **glucose**. Galactose and fructose are other examples.

Disaccharides

Disaccharides are formed by two monosaccharide units: one glucose molecule and one molecule of fructose. Saccharose, lactose and sucrose are examples of disaccharides. Sucrose, to give a

more illustrative example is the white and brown sugar usually used for cakes and sweets.



Complex carbohydrates include oligosaccharides that contain 3 to 10 saccharide units joined by covalent bonds, while polysaccharides contain more than 10 units reaching even up to thousands of them. The number of units is indicated by a prefix such as tri-, tetra-, penta-, and so on. Among the oligosaccharides, trisaccharides occur the most frequently in nature.



PROTEIN

Protein is an important **macronutrient** used in building, repairing and maintaining healthy bones, muscles, skin and blood. It also provides the essential components of enzymes, hormones and vitamins.

The most commonly used classifications of dietary proteins are made according to their Essential Amino Acid (EAA) content (i.e. complete vs. incomplete), their origin (i.e. plant vs. animal) or other more specific classification. Proteins are **chains of amino acids**, both essential and nonessential and each protein source is composed of various amino acids with different properties.



The **quality of proteins** has been ranked by **assessing their biological value** (how efficiently the body uses protein consumed in the diet), **protein efficiency ratio** (body weight gained by a test subject divided by their intake of a particular food protein), and/or limiting amino acids. There are also other qua-

lity factors that should be addressed in the context of optimal health. For instance, insulinogenic properties and overall effects on glycemia when dealing with metabolic disease management should be considered. Among EAAs, leucine is more insulinogenic than other EAAs. It is abundant in egg white, cod, soy protein isolate, and parmesan cheese.

Animal protein sources usually contain **adequate proportions of all the EAAs** necessary to meet human requirements. While **plant proteins are limited in some EAAs**, such as lysine, threonine, tryptophan, cysteine or

methionine. Nuts, seeds, legumes, and certain ancient grains (e.g., quinoa, kamut, amaranth, etc.) are some of the plant foods highest in protein content. **Soybean** in particular is much higher in protein and EAAs than other plant-foods. **Combining different plant proteins** has been shown to be an effective way to meet the necessary ratio of EAAs for human requirements.



FAT

Like carbohydrates, fats are composed of carbon, hydrogen and oxygen but with a much lower proportion of oxygen. Most of the fats in the human body are **triglycerides**, which are composed of glycerol, derived from a water-soluble carbohydrate with three fatty acids attached.

They **provide energy** and are essential for **several body functions**. In particular, fats are the building blocks of cellular membranes, act as carriers for fat-soluble vitamins A, D, E, and K. Thanks to these fats stored in body tissues, they provide energy when nutrition is not possible. They also insulate the body and protect body organs.



Fats are present in both **animal and plant foods**, even though they are present in different types and proportions. They are classified as either **essential or nonessential** and also by their **degree of saturation** with hydrogen atoms.

Essential fatty acids (EFAs) are known as **omega-3 and omega-6** and must be obtained through our diet, since humans cannot synthesise them. **Nonessential fats** are **omega-9** fatty acids, which are necessary but can be produced by our body if not consumed.

Regarding the degree of saturation, fats can be classified as saturated, monounsaturated, or **polyunsaturated (PUFA)**, depending on their hydrogen content and the presence of carbon-carbon (double) covalent bonds.



- **Monounsaturated fats** have one double bond and they are traditionally considered **very healthy**, playing an important role in preventing cardiovascular diseases. Instances of food containing monounsaturated fats are olives, olive oil, peanut oil, canola oil, avocados, high-oleic sunflower oil and cashew nuts.



- **PUFA (Poly-Unsaturated Fatty Acids)** include omega-6 and -3 which have two or more double bonds and are commonly considered very healthy, even though the required omega-6 may easily be exceeded in Western diets causing some health problems, especially in relation to cardiovascular diseases.

- Similarly, **saturated fats** are useful to the human body in small amounts, but are otherwise considered **quite dangerous**, as they are notoriously involved in serious heart diseases. If one uses the previous classification, saturated fats would be considered nonessential, as our body can synthesise them. Usually, saturated fats are present in animal-based foods, although some vegetable fats, namely coconut, palm, and cocoa butter are considered exceptions, because they contain large proportions of saturated fats.



Among animal-based foods, the **richest sources of fats**, cholesterol, saturated and omega-6 are **meat** (red and processed meat, such as bacon and sausages), lard, whole milk, cream, butter, cheese and egg yolks (egg white contains no fat; it is almost entirely protein and water). Fish have a lot of omega-3 fat because they eat algae, from which these fats can be obtained.

The **plant-based foods containing the richest sources of fats** (omega-9,-6,-3) are olives, seeds (sesame, sunflowers, pumpkins, hemp), nuts, nut and seed butters, avocados, coconut and cocoa butter, algae, cooking oils made from olives, sunflower, safflower, corn, peanuts, soybeans, margarine (from vegetable oils) and other oils such as coconut and palm.

There is another type of fat, which is not good for our health, known as **Trans Fatty Acids** (TFAs). They are artificially made via hydrogenation, total or partial. Small amounts of TFAs are naturally present in animal food, while the rest found in our diet comes from **processed, fried, industrially prepared and fast foods**.



MACRONUTRIENTS

MINERALS

■ **Macro minerals** (calcium, sodium, magnesium and potassium) required in amounts greater than 100 mg a day,

■ **Essential trace minerals** (iron, zinc, copper, iodine, selenium and molybdenum). We need less than 100 mg a day of these minerals.



A balanced diet is the best way to obtain the necessary amount of minerals in order to stay healthy. We are now going to deepen our knowledge about iron and zinc.

IRON



Iron is a **metal** that exists in several oxidation states; however, we are only going to focus on two dietary iron forms, namely non-heme iron, found mostly in plant and animal food; and heme-iron, mainly found in animal products. The latter is absorbed at a **higher rate than non-heme** iron and its absorption can be increased by the consumption of plant-based products and vitamin C-rich foods.

Iron absorption may be reduced by the presence of phytates in beans and seeds, tannic acids from tea, calcium in dairy, fibre, polyphenols in coffee and cocoa, and certain spices such as turmeric, coriander, or chilies. **Iron deficiency** remains one of the most common and **widespread nutritional deficiencies**, especially anaemia, which is a lack of haemoglobin. Iron can also be found as myoglobin in muscles, and its principal role is to deliver oxygen to body tissues.

Foods high in iron are for instance liver and other animal organs, red meats, oysters, clams, eggs, poultry, beans, dark green leafy vegetables, dried fruits, blackstrap molasses, nuts, seeds, whole grains, dark chocolate, tahini, sun dried tomatoes, pumpkin-, sunflower- and hemp seeds.

Zinc is a metal which is almost universally found as a divalent ion (Zn^{2+}). Zinc is a cofactor for more than 300 enzymes and supports growth, immune functions, wound healing, healthy skin and hair, synthesis of protein and DNA. Notably due to the presence of dietary phytates or strong heating, the **bioavailability of zinc from plants is lower than from animal products**, but nutritional strategies such as soaking, sprouting, fermenting will improve its absorption. In order to meet the RDA, it is recommended to include legumes, cashews and other nuts, seeds, soy products, whole grains in your daily diet. Zinc is also present in animal-based foods, such as red meats (especially organ meats) and seafood (especially oysters and molluscs), poultry, pork, fish, eggs and dairy products.

After learning a bit more about iron and zinc, we are now going to discuss about another crucial feature of a healthy diet: Vitamins. Depending on their solubility, **VITAMINS** are divided into different groups: the **fat-solubles**, (A, D, E, and K), and the **water-solubles**, (B complex and C). Vitamins are organic compounds (as they contain carbon) that are essential to our body, in order to benefit from the energy provided by carbohydrates, fats, and proteins. Below, we are going to focus more on the vitamins A, C and B complex vitamin B9 (folate).

ZINC



VITAMINE A

Vitamin A consists of two dietary forms: preformed vitamin A, called **retinol**, and **carotenoids**, found in plants. Beta-carotene is efficiently converted to retinol. Vitamin A is essential for growth, reproduction, vision, bone development and the immune system.

Common dietary carotenoids like beta-carotene, can be found in **yellow, orange and brightly red fruits or vegetables** such as carrots, watermelon, papayas, tomatoes, pink grapefruit and pumpkins. Even some **green vegetables** (broccoli, peas, pepper and spinach) contain some carotenoids, although their pigment is hidden by chlorophyll, which gives their green colour to some vegetables'. Similarly, corn, potatoes, eggs, beets and kiwi provide some carotenoids.



Retinol is found in fat-containing animal food such as liver, butter, cream, whole milk, whole-milk cheeses, egg yolk, fish such as sardines, herring and cod liver oil.



VITAMINE C



Vitamin C is an essential compound with **six carbon atoms** that human beings are unable to synthesise. Vitamin C has **antioxidant properties**, helps the absorption of iron, reduces the risk of cancer by reducing nitrites in foods and is also essential for cell metabolism. It is easily destroyed by air, heat/cooking and boiling.

Good sources of vitamin C include asparagus, melon, cauliflower, broccoli, tomatoes, potatoes, peppers, grapefruit, kale, lemons, papaya, oranges, kiwi and strawberries.

Folate refers to the **reduced form of the vitamin B9**, found naturally in foods and in biological tissues, while **folic acid** refers to the oxidised form of the vitamin, commonly found in supplements.

Folate is needed for protein metabolism, formation of haemoglobin and DNA synthesis.

Foods which are a good source of folate include green vegetables such as spinach, Brussel sprouts, broccoli, asparagus, salads, turnip greens, as well as mushrooms, peanuts, legumes, lentils, strawberries, oranges, meat and eggs. **Folate in milk is more bioavailable**, because it binds to a special protein.

FOLATE

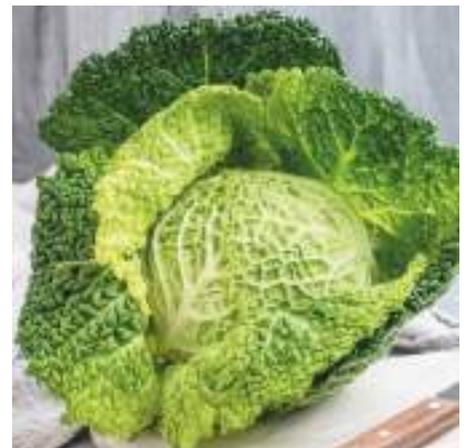


FIBRE AND PHYTOCHEMICALS

Fibres are divided into **soluble** (b-glucans, arabinoxylans, pectins) and **insoluble** (xylans, cellulose, and lignin) forms. Dietary fibre also includes the fraction of undigested starch called resistant starch. Fibres have **beneficial physiological effects** including increased transit time, blood cholesterol and glucose modulation, as well as positive colon bacterial selection. The colon fermentation of fibre and resistant starch produces **Short Chain Fatty Acids** (SCFAs) by the activity of intestinal bacteria (microbiota). SCFAs and healthy microbiota bring several benefits to our body: it modulates bowel inflammation, promotes a healthy immune response, limits pathogenic bacteria access through the gut epithelium, induces production of mucus by gut epithelial cells and promotes tissue repair.



Phytochemicals are a vast class of **thousands of compounds**, only found in plants. They work in our bodies as anti-inflammatory, antioxidant and anticancer agents and they are classified in three wide groups: glucosinolates (cabbage, kale, mustard, etc.), **carotenoids** (tomatoes, pumpkin, mango, carrots, etc.) and **polyphenols** (olives, berries, soy, flaxseeds, etc.). Their content is higher if plants are grown organically, as phytochemicals are produced by the plant to create their own defence.



LOOKING AT A HEALTHY FUTURE THROUGH COLOURS:



GOOD FOR YOU!

- Choose carbohydrates coming from unprocessed, plant-based complex carbohydrates such as vegetables, fruits, legumes, whole grains (rice, millet, buckwheat, quinoa, spelt, sorghum), whole grain breads and pastas.
- Daily consumption of at least one serving of kale or cabbage/broccoli, polyphenols and carotenoid-rich foods
- Always combine food rich in vitamin C with iron-rich foods, whether of plant or animal origin
- Choose mainly plant-protein food and limit animal protein food, preferring lean poultry and fish.
- Consume zinc by either eating animal food or fermented whole flour bread and pumpkin seeds



THINK ABOUT IT!

- Eat (moderately) food rich in PUFA and go for plenty of omega-3 sources
- Carbohydrates should not come from processed, refined grains that are found in most chips, crackers, breads and pastas.



NOT RECOMMENDED

- Pay attention to any type of food containing added sugars. Of course, free sugars (sweeteners, such as glucose syrup or honey) are not recommended.
- Avoid trans fatty acids and any food labelled as “hydrogenated” or “partially hydrogenated” fats on the nutrition label.

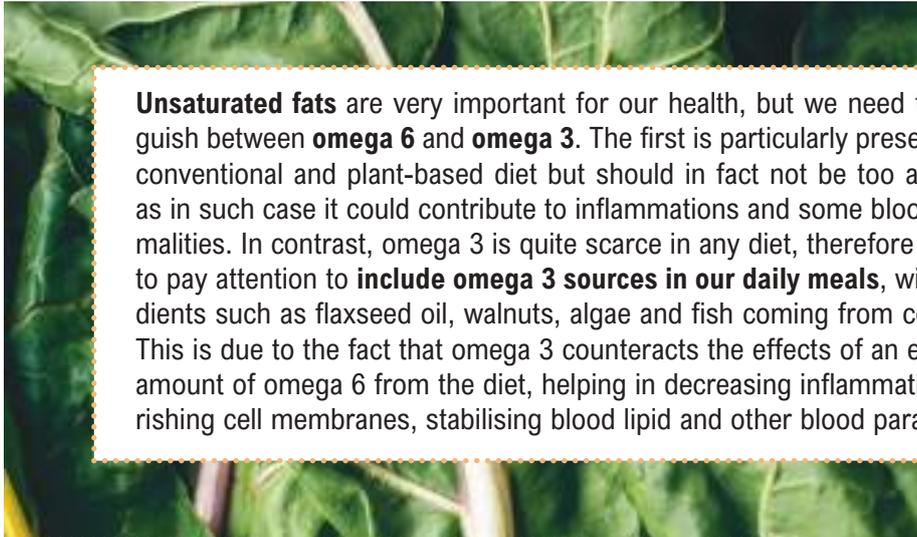
THINGS TO REMEMBER & TIPS

Nutrition labels display information about the nutrient content of food and drink products and are intended to **guide** us to make healthy food choices. Do not forget to read labels, looking for sugar, protein and fibre content. Indeed, it can be a great tool for **disease prevention**. The aim is to try to minimise as much as possible the intake of processed foods, animal and vegetable saturated fats and oils. To this effect we should limit animal protein and prefer plant-protein and fibre-rich food.

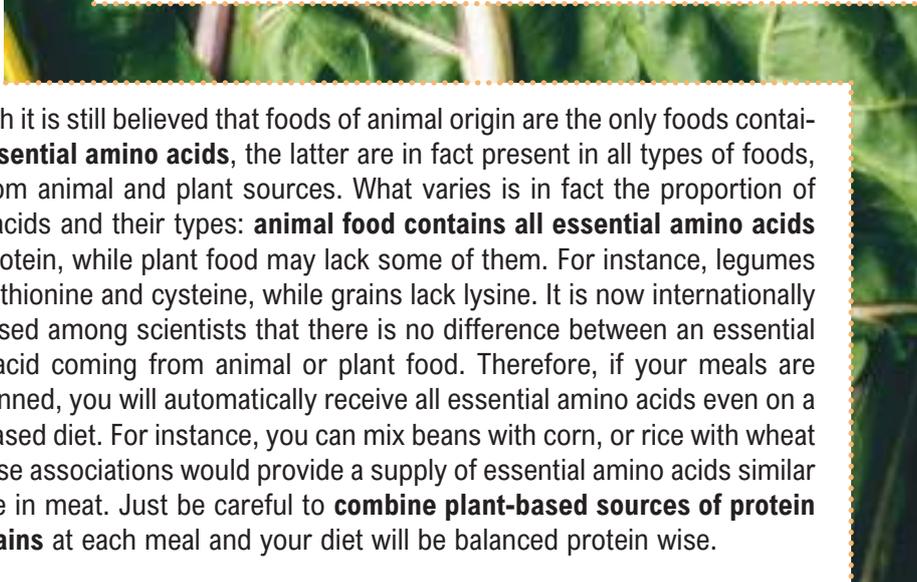
Do not forget to include healthy **omega-9 and omega-3** sources in your meals. These can be olive oil, flaxseed oil, dehulled hemp seeds, chia seeds, walnuts or algae for instance. Also, fish can be a good choice, if it is free of heavy metals, dioxin and microplastics. Other great fatty foods to include in our meals are avocado, nuts, seeds, nut butters, and full-fat soy products. Pay attention to **quantities**, as a low-fat diet is more preventive. Excessive fat, especially cholesterol, trans and saturated fats, can lead to health problems such as obesity and coronary heart disease, due to excessive caloric intake and increased blood lipid levels.

If you look at what are considered the healthiest populations around the world, most of their diets are based on **90 to 96% whole foods and plants**. A ratio favouring higher intake of plant proteins in the daily diet has led to **better glycaemic control** in several scientific studies. Therefore, it is recommended to increase the consumption of large quantities of vegetables (cooked or raw), beans, peas, lentils, seeds, fruits and nuts, as they are all generally lower in fat, free sugars, rich in fibres and healthy plant protein.

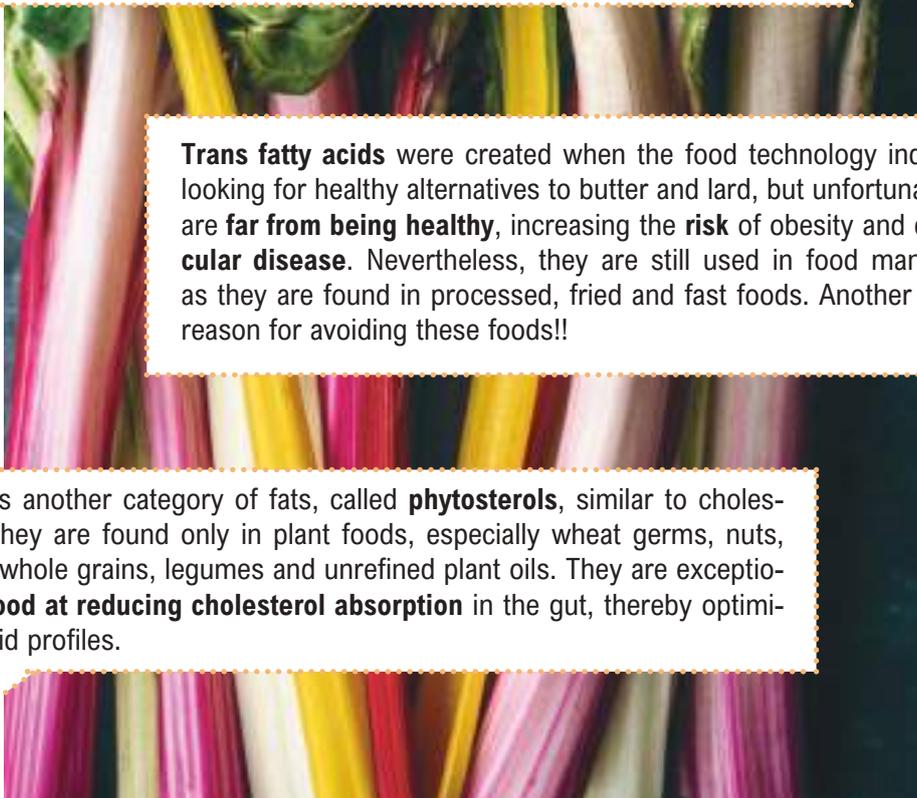
ADDITIONAL INFORMATION BUBBLES



Unsaturated fats are very important for our health, but we need to distinguish between **omega 6** and **omega 3**. The first is particularly present in any conventional and plant-based diet but should in fact not be too abundant, as in such case it could contribute to inflammations and some blood abnormalities. In contrast, omega 3 is quite scarce in any diet, therefore we need to pay attention to **include omega 3 sources in our daily meals**, with ingredients such as flaxseed oil, walnuts, algae and fish coming from cold seas. This is due to the fact that omega 3 counteracts the effects of an excessive amount of omega 6 from the diet, helping in decreasing inflammation, nourishing cell membranes, stabilising blood lipid and other blood parameters.



Although it is still believed that foods of animal origin are the only foods containing **essential amino acids**, the latter are in fact present in all types of foods, both from animal and plant sources. What varies is in fact the proportion of amino acids and their types: **animal food contains all essential amino acids** in its protein, while plant food may lack some of them. For instance, legumes lack methionine and cysteine, while grains lack lysine. It is now internationally recognised among scientists that there is no difference between an essential amino acid coming from animal or plant food. Therefore, if your meals are well planned, you will automatically receive all essential amino acids even on a plant-based diet. For instance, you can mix beans with corn, or rice with wheat and these associations would provide a supply of essential amino acids similar to those in meat. Just be careful to **combine plant-based sources of protein with grains** at each meal and your diet will be balanced protein wise.



Trans fatty acids were created when the food technology industry was looking for healthy alternatives to butter and lard, but unfortunately, TFAs are **far from being healthy**, increasing the **risk** of obesity and **cardiovascular disease**. Nevertheless, they are still used in food manufacturing as they are found in processed, fried and fast foods. Another very good reason for avoiding these foods!!

There is another category of fats, called **phytosterols**, similar to cholesterol. They are found only in plant foods, especially wheat germs, nuts, seeds, whole grains, legumes and unrefined plant oils. They are exceptionally **good at reducing cholesterol absorption** in the gut, thereby optimising lipid profiles.

CHAPTER II :

HOW NUTRITION AFFECTS YOUR BODY & MIND

SECTION 1 – NUTRITION REQUIREMENTS FOR AN ADOLESCENT

Introduction

Before discussing the specific topic of nutrition during adolescence, it would be helpful to define what the term “adolescence” means. **Adolescence** (from Latin: *adolescere* = «to grow up») is a time of **rapid growth and development** with simultaneous biologic, psychological and emotional changes, generally occurring between puberty and legal adulthood. It starts around 14 years old and ends at around 18 years old.

In many societies, adolescence has not been and is not yet recognised as a phase of life and is simply used to distinguish childhood from adulthood.

The first description of this phenomenon is found in **Stanley Hall’s 1904 study «Adolescence»**, where he describes the stage of adolescence development. Hall attributed the new stage to social changes at the turn of the 20th century, but later on it was recognised that adolescent behaviours are very similar even in very different environmental contexts suggesting that it is in fact a stage of human physical, mental, social and affective development. Since changes in body composition are significant during adolescence, **nutritional needs also significantly change.**

The factors that influence the nutritional needs of adolescents are:

- increase in the speed of growth
- change in body composition
- levels of physical activity
- appearance of puberty phenomena
- menarche and menstrual cycle.

Speed of growth starts earlier for girls, before menarche, around the age of 11-14, whereas boys grow faster generally after the age of 13-14. The **changes in body composition** are different between girls and boys:

girls put a little more fat on and their body shape changes, their hip width increasing, whereas boys gain muscle mass and shoulder width. Both genders get longer legs.

Adult height and body shape are mostly due to **genetic factors** (70%) and only partially (30%) to environmental factors. Adolescence is a time of revolution in many aspects of daily life and, as such, **physical activity levels often change.** Unfortunately, adolescents usually reduce their level of physical activity instead of increasing it, missing a particular chance to improve health and body shape.

The **puberty phenomenon** is obviously different between boys and girls. Boys experience changes in their voices, their beards start growing and their genitals increase in size and maturity. Girls, on the other hand, start developing breasts and their genitals become mature. Both boys and girls might develop acne.

The appearance of **sexual maturity** is easier to detect for girls with the first period, known as “menarche”, while for boys it is more difficult as there is no specific phenomenon to observe.

All these changes require a new nutritional model to cover the new needs.



GOALS OF THE SECTION

If we want to have a clear idea of how to improve our diet to grow well, we need to have some basic knowledge of what nutritional needs are, how they change and which specific nutrients are most needed during adolescence. This will allow us to make healthy, and at the same time, tasty and pleasant choices without being «brainwashed» by mass media and poorly informed by friends.



KEY TERMS & CONCEPTS

We need to know the basic nutritional dictionary to fully understand the meanings and recommendations that are useful to us.

Adolescence is a special age in which several physical and psychological changes occur.

Energy expenditure: energy used to maintain bodily functions, physical activity and growth during childhood and adolescence.

Energy requirement is the sum of the food energy required to replace the energy used to maintain bodily functions, body composition, an adequate level of physical activity and growth during childhood and adolescence.

Energy balance is achieved when input (i.e. Dietary Energy Intake) is equal to output (i.e. Total Energy Expenditure), plus, in childhood and adolescence, the energy cost of growth.

Energy balance doesn't need to be reached day to-day, but it is important to be maintained over a prolonged period, including short periods during which the day to-day balance between intake and expenditure does not occur.

KEY KNOWLEDGE

Regarding nutritional needs, adolescents need to **increase their iron intake**. Boys need to increase iron intake because of the higher muscle mass and girls because they lose iron during the menstrual cycle. Iron is mainly found in meat, white or red, but also in legumes. Furthermore, if a little bit of fruits and/or vegetables are added to the meal, the vitamin C they contain **increases and improves the absorption of the iron** itself. Due to their menstrual cycle, girls need more iron than boys.

Calcium intake should also be increased due to bone mass growth at this stage of life. The mineralisation load that occurs at this age is very important because the more calcium settles, the less severe the risk of osteoporosis in later years and the later it starts to develop. During adolescence, however, in addition to the **risk of**

insufficient mineralisation due to low consumption of milk and other calcium-rich foods, it is possible that the daily consumption of sweet and soft drinks, which contain orthophosphoric acid and which may remove mineral calcium from the bones. In addition, we cannot forget that **physical activity** is also an important factor in maintaining adequate bone mineralisation.

Last, **energy intake** should be slightly increased to **cover the additional needs**, but only to a certain extent, since the cost of growth represents only 2% of total daily energy needs.

The most frequent causes of **inadequate energy** and nutrient intakes in this age group are **psychological** ones and, among these, especially anorexia nervosa, bulimia, and orthorexia.

CURIOSITY BUBBLES

Skipping breakfast helps to lose weight is a myth—the opposite is true. **Having breakfast helps to adequately divide daily energy intake** and therefore protects from weight gain.

Vegetarian and vegan diets perfectly fit human requirements: Vegetarian and vegan diets should be supplemented with B12 vitamins, and as for all diets, they need to be varied in order to meet all your requirements. However, if you choose to make the change towards a more plant-based diet, it is recommended to consult a nutritionist who is an expert on the matter.



THINGS TO REMEMBER & TIPS



- 1 Eat a variety of different foods during the day.
- 2 Prioritise foods from a **short supply chain** that are cultivated in the area you live in.
- 3 Eat a lot of **fruits and vegetables**, raw or cooked with simple dressings.
- 4 Have **breakfast** regularly with **milk and bread**, or healthy cookies with low sugar.
- 5 Eat when you're really hungry and not when you're angry, bored or worried. All these negative feelings will not go away with food.
- 6 **Limit the consumption of junk food** to a minimum.



SECTION 2 - HEALTH RISKS ASSOCIATED WITH AN EXCESSIVE CONSUMPTION OF SATURATED FAT AND TRANS-FATS

Introduction

Fats play an important role in nutrition. Fats are a **source of energy** that is necessary during periods of intensive growth. They are also an important **structural element of cell membranes**. Long-chain polyunsaturated fatty acids are essential for the development of important organs like the brain and retina in the eye.

Fats contain a **variety of fat-soluble vitamins**: A, D, E. Animal products are sources of fat in the diet, such as dairy products (milk, cheese, butter, yoghurts), meat, poultry, fish, egg yolk and vegetable oils used to prepare meals. From many studies to date, it seems that the types of fats that are very good for our health are those that are composed mainly of unsaturated and polyunsaturated fatty acids, i.e. vegetable oils. **Olive oil, soybean oil and rapeseed oil are especially recommended**. Olive oil and rapeseed oil can be used for frying. For preparing raw meals, shredded vegetables or salads for instance, we can use for example soybean, sunflower, corn, grape seed and other oils.

Fat should cover about **25-30% of all daily energy needs**. Restrictive limiting of fat in the diets of children and adolescents may adversely affect their growth and development rate.

Fats are composed of fatty acids, among which we distinguish: **saturated, monounsaturated** and polyunsaturated. The latter are divided into **omega-6** and **omega-3**. Each group has a slightly different role in the body. Fatty acids influence cholesterol metabolism, heart activity, blood pressure and blood clotting. Saturated fatty acids raise cholesterol levels in blood serum, and polyunsaturated acids lower this level, inhibit the development of atherosclerosis and have anti-inflammatory effects.



GOALS OF THE SECTION

The purpose of this chapter is to learn about the role of fat in the body, the adverse effects associated with excessive intake of trans fatty acids and saturated sources in food and to recognise where they can be found in food.

KEY TERMS & CONCEPTS

Atherogenic effect: Atherogenic action that takes part in the formation of atherosclerotic plaque

Cholesterol: A substance produced by all cells, especially in the liver, similar to fat, but which does not provide energy.

Fat: The common name of lipids that are esters of glycerol and fatty acids, mainly triacylglycerols.

Saturated fats: possess carbon atoms that form the fatty acid chain; they are connected by single bonds and each carbon has two hydrogen atoms attached.

Trans fats: Vegetable oils that have been hardened with hydrogen.

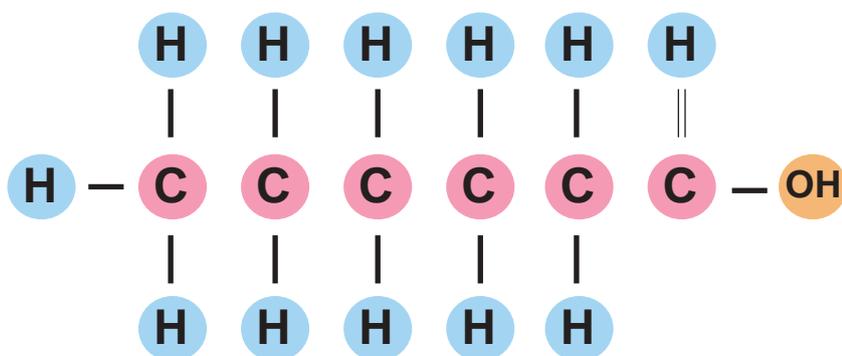
Unsaturated fats: Fatty acids containing double bonds between carbon atoms in the hydrocarbon chain are divided into monounsaturated fatty acids (one double bond) and polyunsaturated fatty acids (multiple double bonds).



SATURATED FATTY ACIDS

The simplest way to describe saturated fats is that the atoms forming the chain of a given fatty acid are **connected by single bonds and have two hydrogen atoms attached to each other.**

Below is an example of the structure of saturated fatty acid:



These fats are usually **solid at room temperature.** The most common fatty acids found in foods are:

- palmitic
- stearic
- myristic
- lauric

The harder the fat, the more saturated fatty acids it contains.

TAO, Where do we find saturated fatty acids ?



Well LAMY, They are found mainly in animal fat and have a solid consistency. Sources include:

- butter cheese,
- meat,
- meat products,
- full-fat milk and yoghurts,
- cakes,
- bacon fat,
- lard,
- fat from roasting,
- palm oil,
- coconut oil.



CONTENT OF SATURATED FATTY ACIDS IN 100 G OF SELECTED PRODUCTS

Coconut oil	87 g
Butter	55 g
Palm oil	50 g
Lard	47 g
Roasted pate	13 g
Sausage	6,9 g
Milk 3.2% fat	1,9 g



Coconut oil – not good for health?



In 2017, the **American Heart Association (AHA)** clearly stated that coconut oil is **comparable to other saturated fats** such as lard, butter and beef fat. Coconut oil increases the concentration of LDL cholesterol in the blood, so **it cannot be used as a substitute for healthy fats**, such as, for example, vegetable oils. The AHA does not recommend using coconut oil in your daily diet.

The fashion for coconut oil: The popularity of coconut oil comes from the fact that it contains so-called **medium chain fatty acids (MCFA)**. However, their content is so low that to administer them to the body at doses having beneficial health effects would require eating very large amounts of coconut oil, which would result in too much fat in the diet.



DAILY RECOMMENDED INTAKE OF SATURATED FATTY ACIDS

These fats **should not exceed 10%** of our total energy intake.

For example, if your daily energy requirement is 2000 kcal, the amount of saturated fatty acids should not exceed 22 g per day.

- 1 slice of pizza (100g) provides 4.5g of saturated fatty acids
- 1 slice of yellow gouda cheese (20g) provides 3.4g of saturated fatty acids
- a pack of chips (100g) provides 10g of saturated fatty acids
- shortbread cakes (100g), about 10 pieces provide 11g of saturated fatty acids



The graph below presents the composition of fatty acids in selected food products.

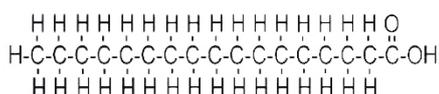


* standard portion size

TRANS – ISOMETRIC FATTY ACIDS

Trans fatty acids (trans-fats) are **derived from unsaturated fatty acids** (which are good). In most unsaturated fatty acids, there is an opposite form, called cis, which is beneficial to health. Trans fatty acids, due to their physical and health properties, are **closer to saturated fatty acids**. They are **one of the most harmful fats** for health.

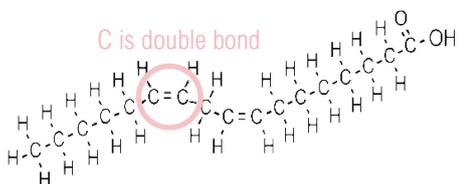
Below is an example of fatty acids: cis (good) and trans-isomeric (bad).



SATURATED
Stearic Acid
(Found in butter)

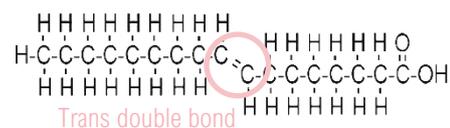
They can come from two different sources:

- Natural
- Artificial



UNSATURATED
Linoleic Acid
(Found in vegetable oil)

Trans-fats from natural sources occur in the meat of ruminants, e.g. cattle, sheep, goats, their milk and processed meat.



TRANS
Trans-Linoleic Acid
(Found in some margarine)

NATURAL TRANS-FATS

The trans-fat content of meat can reach 6% and that of dairy products 4 to 6%.

Artificial trans-fats are formed as a result of **partial hydrogenation of unsaturated fats**. Thanks to this reaction, a **liquid fat** (vegetable oil) **produces a fat with a solid consistency**. It has a longer shelf life and a higher smoking temperature.



MYTH
All margarines are the main source of trans-fats.
FACTS
Soft margarines have up to 1% trans-fat content. But beware, hard margarines used primarily for baking can have up to 22%!

ARTIFICIAL TRANS-FATS

What is the difference between **partial and total hydrogenation of fats**?

In the case of **complete hydrogenation**, hydrogen is added to all unsaturated sites (double bonds) which is why **unsaturated fats turn into saturated**. If the vegetable oil is partially hydrogenated, double bonds may change from cis to trans forming a trans-fat. This is the **process most harmful to health**.



THERE CAN BE UP TO 60% TRANS-FATS IN BAKERY PRODUCTS AND FAST FOOD.

HEALTH RISKS ASSOCIATED WITH EXCESSIVE CONSUMPTION



Non-communicable diseases (NCDs) caused 38 million of the 56 million deaths worldwide in 2012. Amongst the major non-infectious diseases, **the leading cause of death was cardiovascular disease**. Modifiable risk factors for these diseases include poor diet, lack of physical activity, smoking and excessive alcohol consumption. **Saturated fatty and trans fatty acids** have a strong atherogenic effect, as high levels of consumption are **associated with the increased risk of cardiovascular disease**. High intake of these fatty acids has a negative effect on the lipid profile in the blood, including the increase in LDL («bad cholesterol»).

MYTH

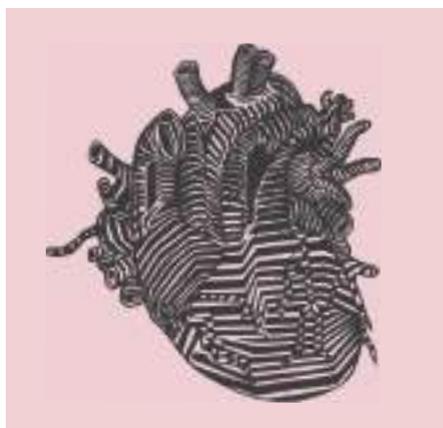
Cholesterol is unnecessary and harmful to the body.

FACTS

Cholesterol is a component of cell structures, vitamin D3, sex hormones and bile acids. The liver produces 700 mg of cholesterol on a daily basis. Therefore, it is necessary to limit its supply from food products.

Atherosclerosis

Atherosclerosis is a disease of the arteries that causes **arterial narrowing** (stenosis) that **restricts blood flow**. The cause of the stenosis is atherosclerotic plaque, which is mainly composed of cholesterol that grows out of the arterial wall, leading to a decrease in blood flow (ischemia), resulting in hypoxia (oxygen deficiency) in body tissues.



Ischemic heart disease

Ischemic heart disease involves a **limitation of blood flow in the coronary vessels**. Chronic cardiac ischemia can produce symptoms in the form of **chest pain** during physical exercise. This condition is called **angina pectoris**. Due to a rupture of the atheromatous plaque, the coronary vessel is completely closed resulting in a decrease in blood flow through this part of the heart and, consequently, a heart attack.



Type 2 diabetes

Type 2 diabetes belongs to the group of metabolic diseases that result from **impaired insulin function or secretion**. Its development is gradual. The most important symptom is an **increased concentration of glucose in the blood**. Chronic hyperglycaemia can lead to many complications such as damage to the eyes or kidneys, extreme unbalance of blood sugar levels and can, in the most serious cases, lead to diabetic coma and even death.



Overweight and obesity

Excessive fat consumption, combined with low physical activity can lead to **systemic disease**, namely obesity. It can lead to the disorders described above as atherosclerosis, type 2 diabetes, arthritis and hormonal disorders.

In addition, excessive consumption of fat may cause **nervous system disorders**, such as attention disturbance and loss of memory.

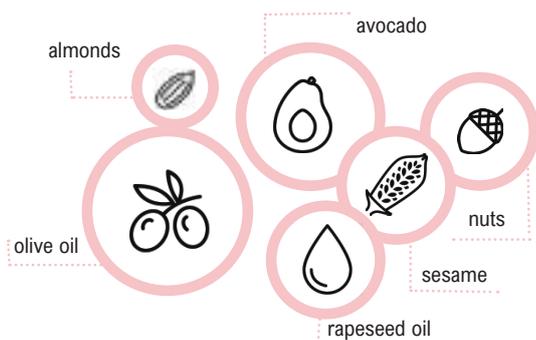


MYTH	FACTS
You need to eliminate fat from the diet if you want to lose weight.	Weight gain is associated with increased food consumption and thus carbohydrates, protein and fat. If you want to reduce your weight, you should limit the overall intake of calories in your diet. But remember, do not limit them too much, because it can bring an effect opposite to what you expected and in addition to reducing body fat, you will also reduce muscle mass in your body.

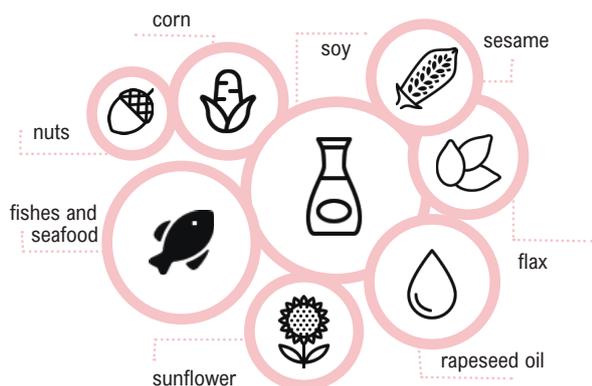
THINGS TO REMEMBER & TIPS

CHOOSE

MONOUNSATURATED FATTY ACIDS

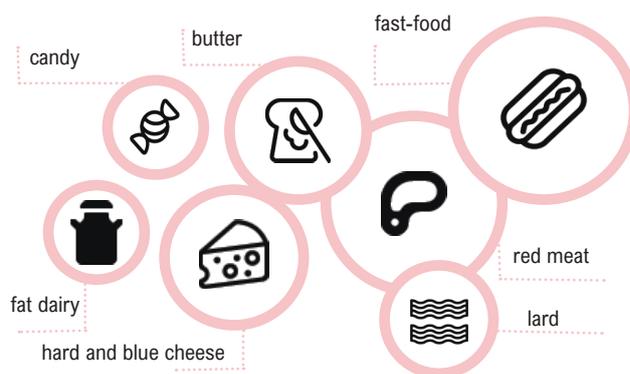


POLYUNSATURATED FATTY ACIDS

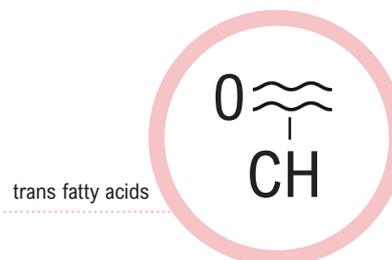


RESTRICT

SATURATED FATTY ACIDS



TRANS FATTY ACID



READ PRODUCT LABELS

O1

AVOID PRODUCTS WITH PARTIAL HYDROGENATION

O2

O1 Pay attention to whether the product contains trans fat. They can also be hidden under the name : partially hardened/hydrogenated fat.

O2 - Popcorn
- Bakery products
- Chips

O4 AVOID EATING JUNK FOOD OR READY MEALS

HOW TO REDUCE TRANS FAT IN THE DIETS ?

O3 NEVER FRY SEVERAL TIMES USING THE SAME VEGETABLE OIL

O3 Even vegetable oil undergoes unfavorable changes if we subject it to high temperatures several times.

O4 - Chips
- Powdered soup

SECTION 3- HEALTH RISKS ASSOCIATED WITH AN EXCESSIVE CONSUMPTION OF SUGARS & ADDITIVES

Introduction

As stated by Dr. Douglas Bettcher, Director of the Department for the Prevention of Non-Communicable Diseases (NCDs) at the World Health Organization (WHO), “consumption of free sugars, including products like sugary drinks, is a major factor in the global increase of people suffering from obesity and diabetes”.

Indeed, our bodies naturally **struggle to process the significant amount of sugar** that is now present in so many food products consumed daily.

In addition to the increased presence of free sugars, many daily food products also contain a number of food additives, some of which **represent a serious danger to human health**.

It is no surprise, therefore, that our bodies can react negatively to substances that are not originally present in ‘natural’ food products.

For example, an overconsumption of free sugars may result in an increased risk of developing unhealthy weight gain, overweight, obesity, cardiovascular diseases or dental issues.

GOALS OF THE SECTION

The purpose of this section is to provide you with essential information regarding sugars and additives and their respective health effects.

This information should help you grasp the implications of overconsumption of sugars and food additives for your body and consequently enable you to make healthier food choices in the future.



KEY TERMS & CONCEPTS

Body Mass Index (BMI): It is an approximate measure to establish the nutritional status of an individual. It is the person's weight divided by the square of his or her height (kg/m²).

Disaccharides: Carbohydrates composed of 2 molecules of simple sugars (monosaccharides) linked to each other. Examples include sucrose, maltose and lactose.

Food additives: Substances added to food to preserve or improve the taste, texture, freshness, or look of food products such as flavouring agents, food colourings or sweeteners.

Free sugars: Monosaccharides (e.g. glucose or fructose) and disaccharides (e.g. sucrose or table sugar) that are either added to food products and drinks or naturally present in honey, syrups, fruit juices and concentrates.

Intrinsic (natural) sugars: Monosaccharides or disaccharides that are naturally present in fruits, vegetables and dairy products.

Monosaccharides: Carbohydrates composed of one sugar molecule such as glucose or fructose

Non-Communicable Diseases (NCDs): Chronic diseases which are the result of a combination of environmental, genetic, physiological and behavioural factors and which can have long term effects.



THE DIFFERENT CATEGORIES OF SUGARS



One might think that there is only one type of sugar, but in fact sugars, or more accurately **carbohydrates, exist in multiple forms** and can be subdivided into different categories. Carbohydrates or “**saccharides**” are biomolecules, which consist of atoms of **carbon (C)**, **hydrogen (H)** and **oxygen (O)** such as sugars, starches and cellulose. Carbohydrates are classified into 4 categories, according to the number of molecules they are composed of: **monosaccharides, disaccharides, oligosaccharides** and **polysaccharides**. Most commonly, the term “sugars” refers to monosaccharides and disaccharides.



WHAT ARE MONOSACCHARIDES :

Monosaccharides can be differentiated according to the number of carbon atoms contained in the molecule. For example, monosaccharides containing 3 atoms of carbon are called “trioses” (“tri”: meaning 3 atoms of Carbon and “ose” meaning carbohydrate), tetroses are composed of 4 carbon atoms, pentoses of 5, hexoses of 6 and heptoses of 7 carbon atoms. In the context of nutrition, the most important monosaccharides are: **glucose, fructose** and **galactose**.

IN
2016, BRAZIL WAS THE 1ST
PRODUCER OF TABLE SUGAR IN THE
WORLD WITH 38,8 MILLION TONS!

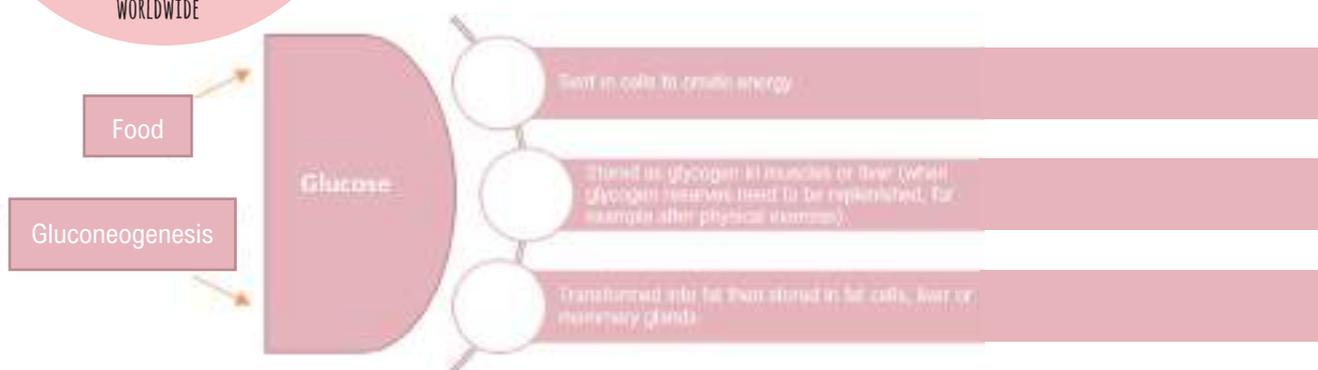
GLUCOSE

Glucose is **naturally present in food**. However, it can also be created during the digestion of more complex carbohydrates or by **gluconeogenesis**, which is the creation of glucose from non-carbohydrate carbon substrates (mainly in the liver). Glucose does not need digestive enzymes to be absorbed directly through the small intestine.

Insulin is a hormone, which allows glucose present in blood to enter human cells in order to be **transformed into energy** or to be **stored** for later use. In basic terms, the “mission” of insulin is to **regulate the blood sugar level**. Therefore, it is produced according to the needs of the body.

Once the glucose present in blood is used to create energy and replenish glycogen reserves, **the remaining glucose gets transformed into fat**. Therefore, the more glucose is simultaneously present in blood, the more it will be transformed into fat.

EVERY YEAR, ABOUT 170 MILLION TONS OF TABLE SUGAR ARE CONSUMED WORLDWIDE



FRUCTOSE

Glucose is **naturally present in food**. However, it can also be created during the digestion of more complex carbohydrates or by **gluconeogenesis**, which is the creation of glucose from non-carbohydrate carbon substrates (mainly in the liver).



Glucose does not need digestive enzymes to be absorbed directly through the small intestine.

GALACTOSE

Galactose is a component of the disaccharide lactose that is found most notably in **milk and dairy products**. As such, it cannot be found as an 'independent' monosaccharide in nature, but **only in association with other galactose molecules or with glucose**. When assimilated by the human body, galactose is transformed into glucose and then used as energy substrate.



WHAT ARE DISACCHARIDES :



Disaccharides are formed by two monosaccharide molecules usually including one glucose molecule associated with another molecule. The most important disaccharides in nutrition are: **saccharose (or sucrose), maltose and lactose**.

LACTOSE INTOLERANCE IS NOT DUE TO AN ALLERGIC REACTION TO LACTOSE BUT SIMPLY TO AN INSUFFICIENT SECRETION OF LACTASE

SACCHAROSE

Saccharose (sucrose) is known as **table sugar** and is made up of **one glucose molecule** and **one fructose molecule**. It is the most commonly used disaccharide in nutrition. It is naturally present in sugar beets and sugar canes and we can find it in sweets, jams or pastries.



MALTOSE

Maltose, also called **malt sugar**, is composed of **two glucose molecules**. Maltose can be found in beer, cereal or germinated seeds.

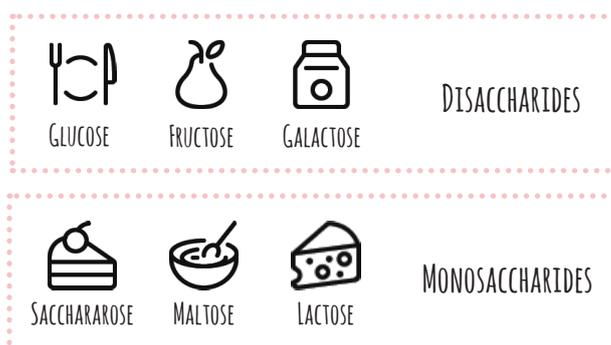
This disaccharide is less present in our daily diet than saccharose.



LACTOSE

Lactose or milk sugar is naturally present in **milk and dairy products**. It is made of a molecule of glucose, associated with a **molecule of galactose**. The small intestine cannot absorb unaltered lactose as a disaccharide. Indeed, in order to be absorbed, lactose must first be divided into one glucose molecule and one galactose molecule, which can then enter the bloodstream. This separation can only happen through the release of **lactase**, which is a digestive enzyme secreted by the pancreas.

SUMMARY



THE WORLD HEALTH ORGANISATION (WHO) RECOMMENDATIONS

Even if carbohydrates are essential to a balanced diet, **some sugars when consumed in excess quantities, can be dangerous for your health.** In this context, sugars can also be divided into two categories, according to their absorption process and their impact on health: natural (intrinsic) sugars and free sugars.



Natural Sugar

Natural sugars are sugars naturally present in **fruits, vegetables and dairy products, which are not harmful** to human health. That is because, as stated by Jim Mann, member of the WHO Nutrition Guidance Expert Advisory Group: “These sugars are encapsulated by a plant cell wall. They tend to be digested more slowly and take longer to enter the bloodstream than free sugars”.



Free Sugar

On the contrary, free sugars, such as table sugar, added sugars or sugars naturally present in fruit juices, syrups and honey, when consumed very often and in large quantities, **can increase the risk of developing health issues.**

This is the reason why the **World Health Organization (WHO)** only refers to free sugars when issuing the following recommendations:

ACTUAL CONSUMPTION OF SUGARS

Most people tend to assume that their consumption of free sugars is relatively reasonable. Yet on the contrary, a large portion of the population in the European Union **consumes far more sugar than is recommended by the WHO**, due to generally obesogenic environments and to the increasing prevalence of free sugars in many food products.

Indeed, the quantity of sugars in food has drastically increased in the past decades and continues to grow. Currently, **most of the sugars consumed on an average day are ‘hidden’** in a broad range of processed products, far from being limited to sweets, chocolate and cakes.

For example, did you know that **one tablespoon of ketchup** contains 4 grams of free sugars? In other words, almost half of the tablespoon is in fact composed of **free sugars** (4 grams = 1 teaspoon = 1 sugar cube)! Did you ever wonder what the free sugar content of **a can of soda** (33 cl) is? Having just one can of your favourite soda already represents more than a half of your recommended daily free sugar intake!

While it may not seem particularly surprising that processed food products contain large amounts of free sugars, what can be surprising is the amount of free sugars contained in **fruit juices**.

As aforementioned, fruits contain intrinsic sugars such as fructose, which are not harmful for human health as long as the natural plant cell wall allows intrinsic sugars to be slowly digested. In other words, the **sugars**

that can be found in ‘whole’ fruits are unlikely to have any sort of negative impact on your body.

The issue when pressing or squeezing fruits to obtain juice is that the cells are then deprived of their natural wall (intrinsic sugars thus become free sugars). In addition, the amount of fructose is multiplied because juices tend to contain more than one fruit. Therefore, when drinking fruit juice, you quickly increase the amount of fructose entering your bloodstream.

For example, a bottle (33cl) of ‘supermarket’ apple juice can contain 37gr of free sugars, which already represents 41% of an adult’s reference intake (2000 kcal)!

If these numbers are a surprising, it is all the more important to question the composition of our favourite daily food products and learn how to read food labels (see Annex I).

In addition to its potential negative effects on health, sugar is addictive. Indeed, when eating too much sugar, your dopamine levels increase, as they would when consuming drugs. Therefore, the more sugar you consume, the more your body will crave it.



HEALTH RISKS ASSOCIATED WITH AN EXCESSIVE CONSUMPTION OF FREE SUGARS

Consuming more free sugars than the amount recommended by the World Health Organization may increase the risk of developing Non-Communicable Diseases such as:

Tooth Decay



Tooth decay or dental caries/cavities is the **deterioration of the outer layer of our teeth**. When we consume food or drinks that contain significant amounts of free sugars, acids are created by plaque bacteria to break down the sugar in our mouths. Therefore, **the higher the consumption of free sugars, the higher the risk of damaging tooth enamel**. For example, in the UK, nearly **500 children per week** require hospitalisation to remove their rotten teeth, mainly because of an overconsumption of fruit juices and fizzy drinks.

Overweight & Obesity



As mentioned above, the more glucose is in our bloodstream, the more it can be transformed into fat, leading to **unhealthy weight gain and an increase of BMI** (Body Mass Index). In fact, overweight and obesity are **the result of abnormal fat accumulation**. The Body Mass Index is the most effective and easiest measurement tool to evaluate a person's nutritional status.

Type 2 Diabetes



Type 2 diabetes is a metabolic disorder characterised by a **high amount of sugar in the bloodstream and insulin resistance**. In principle, when glucose enters the bloodstream, the body produces insulin to regulate blood sugar levels by triggering a process by which glucose enters the cells **to be used as energy**. This causes a decrease in blood sugar levels and prevents hyperglycaemia.

The issue with excessive sugar consumption is that the blood sugar level becomes so high that the body is **neither well-equipped to absorb all the excess sugar** in its cells, nor store it in the glycogen. In this case, cells cannot respond to insulin as they normally would, **insulin becomes ineffective** in keeping blood sugar at normal levels and most of the excess sugar is **transformed into fat**. If blood sugar levels remain high and no dietary changes are made, it can lead to **long-term medical complications** such as heart disease, kidney failure, or even stroke.

Fatty Liver



As already mentioned, table sugar consists of one molecule of glucose and **another molecule of fructose**. When ingested, those two monosaccharides are sent to the liver. Glucose is then normally absorbed by cells or stored as glycogen. Once the glycogen stocks are full, **the remaining fructose in the liver is transformed into fat**, metabolised as triglycerides and part of this fat remains **'blocked' in the liver**. When this fat is sent into the bloodstream it can lead to unhealthy weight gain, clogged arteries or heart disease. Furthermore, when insulin is 'busy' dealing with all the glucose, it prevents the fat burning process from happening.

Cardiovascular diseases



A scientific study conducted by Pr. Frank B. Hu from Harvard University shows a consistent **correlation between the over-consumption of sugar and a greater risk of cardiovascular disease**. For example, the study results demonstrate that people consuming more than 10% of their total caloric daily intake from added sugars have 30% higher risk of developing cardiovascular disease.

HEALTH RISKS ASSOCIATED WITH THE CONSUMPTION OF FOOD ADDITIVES

Nowadays, in addition to increasing the amount of sugars in food products, food manufacturers also use a wide range of food additives such as **sweeteners, food colourings and preservatives**.

Food additives are substances added to food products to **preserve their freshness, appearance or taste**, similarly to how salt was used to preserve food in the past. These substances can be natural (extracted, for instance, from plants or animals), but **they can also be entirely artificial**. Problematically, when these man-made substances enter our bodies, they can have harmful effects on our health. Furthermore, **the presence of food additives** in daily food products **has increased** over the years.

In the European Union, food additives can be identified through a number of denominations, including so-called “**E-numbers**”, which are a range of codes starting with the letter E (standing for “Europe”).



FLAVOURING AGENTS

The most frequently used additives are flavouring agents, which can be either **natural** (for e.g. spices) or **artificial** (imitating natural flavours). In this context, the food industry often uses flavouring agents to ensure that processed foods (which have a longer shelf life thanks to preservatives) retain sufficient flavour over time. Even if the benefits of flavouring agents are undeniable for the food industry, some of the existing artificial flavouring agents **can be harmful to human health**.



MONOSODIUM GLUTAMATE

Have you ever noticed that when you eat certain chips, you cannot help but eat the whole bag? This is usually due to a **flavour enhancer** called monosodium glutamate (E621 or MSG), which can be found in thousands of daily food products and **can be very dangerous to human health**, especially since some people are allergic to it.

Problematically, MSG is an excitotoxin, that is to say a substance **that excites cells to the point of damaging or killing them**. When absorbing too many excitotoxins through nutrition, or when magnesium reserves are too low, our body's glutamate receptors are too sensitive and overstimulated, which may result in heart arrhythmia. An overconsumption of excitotoxins can increase the risk of developing obesity, eyesight issues, headaches, depression, tiredness, numbness or tingling sensations and severe learning disabilities. **MSG is hidden in many processed food products** such as cup noodles, chips, processed or canned soups, salad dressings, snacks, baby food products, etc.

In order to avoid this substance as much as possible, you should be aware that the following ingredients always contain MSG: autolyzed yeast, calcium caseinate, gelatine, glutamate, glutamic acid, hydrolysed proteins, monopotassium glutamate, sodium caseinate, texturised proteins and yeast extract.



SWEETENERS: ASPARTAME & ACESULFAME K

Many reputable studies have shown that the consumption of some sweeteners such as aspartame (E951) and acesulfame K (E950), which have a **sweetening power that is approximately 200 times stronger than that of sucrose** (table sugar), can increase the risks of developing health issues.

For example, studies have demonstrated that consuming too much aspartame can lead to the following: headaches, irritability, tachycardia, nausea, anxiety, loss of hearing and brain tumours. Acesulfame K can increase the risk of developing cancers, high cholesterol and leukaemia. Those sweeteners are very often found in soft drinks (e.g. diet soda), chewing gums, sweets, or even in pharmaceutical products such as vitamins or sugar-free cough drops.



Food colourings

Similarly, food manufacturers use food colouring to ensure that food products with a longer expiry date **remain visually appealing** to consumers and do not lose their colour during processing and distribution.

In fact, this is the only reason why food manufacturers use food colouring: to keep their products looking appetising **beyond the point when home-made products would normally be edible.**

This is particularly problematic because artificial food colouring may have **serious health consequences** on children and adolescents.

In a number of cases, it can increase the risk of developing sleep disorders, hyperactivity, depression, anxiety attacks and other problematic symptoms.

Another issue is that **food additives can be hard to identify.**

For example, food colouring can be found under misleading denominations such as “**paprika extract**” (orange colouring found in certain sodas), which misleads many consumers into thinking that the product contains natural, harmless colouring.

However, as already mentioned, food colouring can also be identified through a range of **E numbers** from E100 to E199.

The dangers of food colouring for children and adolescents have been widely recognised, with some substances being so harmful to human health that food products containing the specific colouring must, since July 2010, bear the mention: “**may have an adverse effect on activity and attention in children.**»

THIS LEGAL MENTION IS BINDING FOR THE FOLLOWING FOOD COLOURINGS:

- **YELLOW:** E102, E104
- **ORANGE:** E110
- **RED:** E122, E124 AND E129

YOU SHOULD ALSO BE WARY OF THE FOLLOWING FOOD COLOURINGS:

- **BLUE:** E131, E133
- **GREEN:** E143
- **RED:** E120, E127
- **WHITE:** E171 (OFTEN USED IN CHEWING GUM)



AVOID AS MUCH AS POSSIBLE

- . Soft drinks containing large amounts of sugar or sweeteners
- . Artificial food additives such as artificial food colouring, artificial sweeteners (E950 & E951) and artificial flavouring agents (E621)
- . High fructose corn syrup
- . Sodium Nitrite (E250): artificial substance found in ham, bacon and many other types of meat products



FAVOR AS MUCH AS POSSIBLE

- . Fresh fruits & vegetables over processed food
- . Water or fruit-flavoured water over soft drinks
- . Plain yogurt with added fresh fruits over processed fruit yogurts
- . Oat flakes, rye flakes or any plain cereal over the favourite brand of breakfast cereals
- . Dark chocolate over milk chocolate because it contains less sugar
- . Natural food colouring or spices to prepare cakes and dishes, over artificial colourings

TRY AS MUCH AS POSSIBLE

- . To reduce the daily intake of free sugars
- . To reduce the amount of table sugar when baking or cooking
- . To reduce the consumption of fruit juice

ALWAYS REMEMBER

- . The recommended daily free sugars intake for adolescents
- . The amount of sugar (in grams) contained in a teaspoon or a sugar cube
- . To read food labels

SECTION 4 - OVERWEIGHT AND OBESITY: THE EFFECT OF DISCRIMINATION ON MENTAL HEALTH

Introduction

The aim of this chapter is to explain to young people the importance and the consequences of prejudice and discrimination towards people suffering from overweight or obesity. Obese people are more likely to report institutional and interpersonal discrimination compared to their slimmer peers, in addition to teasing and strained relationships within the family.

The problems regarding overweight are not linked to a lack of “willpower”, but they depend on many other different causes, such as: genetics, psychological and social issues. Generally, **prejudices and criticisms about excessive body weight bring several negative consequences on physical and mental health and on interpersonal and affective relationships.**

In particular, there may be consequences such as: anxiety, depression, social withdrawal, low self-esteem and in most serious cases, suicide. Being both very widespread and difficult to change, **negative views on obesity became a big social problem.** It is therefore extremely important to make the effort of explaining and increasing young people’s awareness on this serious problem to fight stigma, prejudice and discrimination. Indeed, people suffering from obesity should not have to feel guilty for being affected by this disease.

Feeling guilty for one’s own body weight becomes unbearable and a big source of suffering over time. **It is therefore necessary to fight the obesity disease and not obese people.**



INCIDENCE OF OBESITY IN ADOLESCENCE

- . Worldwide obesity has nearly tripled since 1975.
- . In 2016, more than 1.9 billion adults aged 18 years and over were overweight. Of these, more than 650 million were obese.
- . 39% of adults aged 18 years and over were overweight in 2016 and 13% were obese.
- . Most of the world's population live in countries where overweight and obesity kills more people than underweight.
- . 41 million children under the age of 5 were overweight or obese in 2016.
- . Over 340 million children and adolescents aged from 5 to 19 were overweight or obese in 2016.
- . While just under 1% of children and adolescents between 5 and 19 were obese in 1975, more than 124 million children and adolescents (6% of girls and 8% of boys) were obese in 2016.

World Health Organization, 16.02.2018



Adolescence is a critical time for all young people. Everyone changes and grows differently during this time of life, and accepting changes in our own body and that of others can therefore be difficult.

The idea of not being like the others, not being able to meet expectations, 'not being up to it' and not being popular is frightening and increases the feeling of anger. That is why, at this age, we feel that we are inadequate and judged for our small or large defects, whether physical or psychological, which we consider ourselves as unpleasant to others. Thus, out of self-defence and fear, we also begin to examine what are considered other people's defects: "attack before being attacked and unable to defend myself".



THE YOUNG AND OBESITY

A recent report by the World Health Organization (WHO) shows that **overweight among young people aged 5 to 19 is increasing.**

Obesity, at any age, is known to be **related to other diseases including diabetes, heart problems**, cancer, etc, and can lead to death in the most extreme cases. It is also associated with major psychological and emotional problems to such an extent that overweight and/or obese people are **among the social categories the most affected by discrimination, prejudice and stereotyping.** Outward appearance is one of the very few important evaluation and acceptance criteria for young people to avoid being considered as a 'loser.' This results in a high degree of discrimination against those who do not meet physical standards, resulting in mockery and alienation from their peer group. These are constant humiliations, implicit or explicit, which increases personal suffering, resulting in defensiveness and the avoidance social situations.



DISCRIMINATION AGAINST OBESITY



Introduction

One of the most damaging consequences of obesity, which is often overlooked and little researched, is **stigma and social discrimination**.

In **Europe**, as reported by the World Health Organization, slightly less than 20% of obese people have personally experienced stigma and prejudice. If we look at the morbidly obese, this percentage goes up to 40%. Moreover, this is common in all Western countries.

Discriminating against an overweight or obese young person equates to isolating them because they are different from others who are considered “normal.”

This kind of attitude is based on stereotypes, that is to say, judging someone according to one’s preconceived ideas. These despicable attitudes come from the simplistic and banal belief that not adhering to superficial aesthetic principles of appearance immediately puts us in a separate category, with those who are different: the stigmatised.

An example of discrimination that is very frequent and close to “you” as teenagers/adolescents is **bullying**. The latter is a form of behaviour found in schools and among students which takes the form of derogatory comments, offensive nicknames and aggressive verbal or physical behaviour, leading to real isolation. In recent years, with the growing use of the Internet by teenagers, there have been forms of ‘cyber-bullying’ which avoid direct contact with the person and spread lies and rumours through social networks such as Facebook and YouTube.

It is deeply worrying to note that the frequency of bullying of obese young people has sky rocketed in recent years, with young people being subjected to arrogant and confrontational behaviour aimed at overwhelming obese youth who are deemed weak. This is an important warning because the number of overweight-obese boys and girls is increasing exponentially in all countries.

It has been observed, for instance, that some adolescents tend to believe that by intimidating and dominating the group, they could gain power and thereby become the leader. On the contrary, these types of behaviours demonstrate a deep ignorance, since they picture overweight as being a choice rather than a chronic disease. However, we know that this condition is not a lifestyle choice, but is rather a complex interaction of environmental, genetic, biological and behavioural factors.

THIS KIND OF COMPORTEMENT IS MAKING ME MAD!



KEY TERMS & CONCEPTS

Bullying: Indicates a set of peer-to-peer behaviours within a group that relate to repeated and sustained psychological or physical oppression by one person who feels more powerful than another, perceived for some reason as weaker.

Different: from Lat. Diversus, which actually means facing in another direction, facing elsewhere, opposite [indicating alienation]. The term is used to describe an individual, not because he is not like another, but because he has “special characteristics” that make him stand out from the typical group member.

Discrimination: Treatment, consideration and/or discrimination against an individual based on a particular social group, class or category to which the person is perceived as belonging rather than based on their individual attributes. This includes the negative social treatment of an individual or a group, based on their actual or perceived membership within a given social category.

Prejudice: preconception and prior judgment. False opinion prior to judging before knowing the facts. Prejudice is a preconceived opinion of a fact or of a person perceived on the basis of common voices and opinions that are not true and proven.

Stereotype: in psychology, a preformed, generalised and simplistic opinion, which is not based on a personal assessment of individual cases but is mechanically repeated, about people or events and situations: to judge, stereotype, individual stereotyping, if it affects individuals, social stereotyping, if it affects social groups.

Stigma: In social psychology, attribution of a negative quality to a person or group of people, especially with regard to their social status and reputation: an individual, a group stigmatised for mental/physical racial, ethnic, religious reasons.

THE PSYCHOLOGICAL CONSEQUENCES OF DISCRIMINATION AGAINST OBESITY

“This flab haunts me... I am 16. I realised that if I can, and if it is not necessary, I avoid leaving the house. I still go to school, trying to remain at my desk as much as I can, especially during breaks, and when the bell rings at the end of classes, I quickly run to the bus stop. I try to avoid eye contact, put my headphones on, I turn the music on loud and I get onto the underground, hoping to reach my stop as quickly as possible. I feel like everybody’s eyes are on me, and despite the music I am aware of those whispers, murmurs, comments about me, about my clothes and, above all, about my flab. What did I do wrong to deserve this, to not be understood, and to feel constantly judged by those who don’t have the slightest idea!”...

(Giulia, 2003)

We need to be very careful and measured when discussing the psychological and social consequences of discrimination and bullying among people suffering from obesity, because **experience and negative emotions vary from person to person**. Certainly, teenagers who are the victims of this despicable behaviour are more likely to try avoiding school, sports activities and other occasions which consist in a gathering with their peers, thereby giving up important moments at school and missing social experiences.

Young victims of discrimination often feel that they cannot talk to anyone, including an adult. This is automatically created by fear of the recriminations of others and reinforces a feeling of guilt. People in this situation will therefore tend to feel **helpless and lonely**.





The silence and self-defence mechanism of these person will render the dream to be comparable to others even more inaccessible, thereby causing **serious psychological consequences** for their health.

Self-isolation is one of the biggest enemies of obese teenagers, preventing them from building open and healthy relationships with others, which can have serious consequences both at school and at work.

Paradoxically, this increases the risk of behaviours that facilitate weight gain (eating out of anger or loneliness because there is no one to talk to, etc.). This can be associated with very negative feelings such as low self-esteem, not feeling loved and/or wanted, loneliness, sadness, not accepting oneself and, in the most serious cases, a strong desire to die that can lead them to suicide.



EXAMPLES OF SENTENCES WHICH DISCRIMINATE AGAINST THE OBESE:

- . You're obese! You must lose weight...
- . It is a shame that you are fat, but your face is attractive.
- . But don't you realise how you are starting to look? You will soon no longer be able to pass through the door!
- . You are a slave who gives in to food.
- . The way you look is your fault.
- . Close that mouth, you only think about eating!
- . Be careful, the chair might collapse.
- . Unfortunately, this store does not suit your size.
- . You've fattened up like a cow.



HOW TO COMBAT DISCRIMINATION AGAINST OBESITY

We are all responsible for discrimination against obesity if we do not stop and denounce bullying behaviour.

In order to achieve this, we must remember to treat others as we would like to be treated, to defend a friend in difficulty, as we would like to be defended at a difficult time. When we refer to 'respect for others' we should keep in mind that we all have the same rights to be helped and listened to if we have something to say. Indeed, we are all equal, even if we have different personal and health problems.

Respect is an inalienable right of every human being; it symbolises the feeling of esteem and consideration for the dignity and worth of a person; it is due to each of us because being treated and stigmatised as people of little value is really hurtful.

Respect first of all means paying attention to the other person, giving them our time, really recognising their value as a person and instead of focusing on their weight or on the way they dress. This means that we do not pretend the person is not there, we do not ignore nor anyone as if they were worthless or invisible. On the contrary, we should try to identify with the discriminated person, thus **strengthening the bond between us by recognising each other's diversity.**

«About 12 years ago, I was with my mother at the supermarket and a boy was stuttering. Three of his peers deliberately asked him a question he could not answer as a way of making fun of him. I saw myself in the victim and approached the hard-nosed bullies: 'try that with me'. They left with their tails between their legs. A bully is in essence a coward: in fact, he tries to prevail against the weakest». (Stefano Fappiano – Quotidiano.net – 26.01.2019)

QUIZ

PERSONAL QUESTION

Have you ever been made fun of or alienated from your friends? Yes No

If YES, how did you feel and how did you react?



PERSONAL QUESTION

WE WOULD LIKE TO ASK YOU TO ANSWER THESE QUESTIONS IN ORDER TO REFLECT ON YOUR COMMITMENT WITH DIVERSITY. PLEASE ANSWER EACH QUESTION HONESTLY BASED ON YOUR EXPERIENCE:

1. Have you ever discriminated against someone?

Yes (2) Don't know (1) No (0)

2. Faced with discrimination, how would you react?

- You are amused and you encourage the person who is discriminating (2)
- You do nothing (1)
- You intervene to defend and help the victims (0)

3. When you are faced with mocking behaviour and/or alienation of a friend, how do you feel?

- Amused (2)
- Indifferent (1)
- Involved (0)

4. Do you think those who are discriminated against deserve it?

Yes (2) Don't know (1) No (0)

5. In your opinion, should those who are discriminated against be:

- Ignored (2) Helped and understood (0)
- Don't know (1)

6. What do you think of a person who makes fun of somebody because of the way they are or because of a disability?

- This is a strong person and a model to emulate (2)
- No opinion (1)
- This person wants to be the centre of attention and has no respect for others (0)

7. Is it important to respect opinions and behaviours other than yours?

No (2) Don't know (1) Yes (0)

8. Is respect for others important in your life?

No (2) Don't know (1) Yes (0)

9. In your opinion, is it fair to judge someone because of their weight?

Yes (2) Don't know (1) No (0)

FINAL SCORE

To obtain your final score, count the points for each answer you gave.

- **Score between 0 and 6:** You know what discrimination is and you are against it. You are an example to others.
- **Score between 7 and 11:** You still need to get a better idea of what discrimination means. Don't be insensitive! Get help from this booklet.
- **Score between 12 and 18:** Be careful! Try to follow our suggestions to defeat stigma and discrimination.



SECTION 5 – RISKS ASSOCIATED WITH DIETS AND THE DIFFERENT EATING DISORDERS

Introduction

When a person suffers from an eating disorder, they have an abnormal attitude towards food, which affects their life physically, psychologically and socially.

In this section we will deepen our knowledge about **anorexia, bulimia and orthorexia**. These are the most obvious and common eating disorders, which generally appear between the ages 12 and 25. In recent years, however, the age at which eating disorders appear has gradually reduced, to the point that 8 to 9-year-old girls have been affected, with much heavier effects on the body and mind. Such an early start can indeed cause major alterations and permanent damage due to malnutrition, especially on tissues that are not yet fully developed, such as bones and the central nervous system.

One can therefore easily understand how this affects not only those who are living this devastating experience, but also the whole family and the network of friends.

Eating disorders can take root in the early years of life and are often **the result of certain experiences, whether real or perceived**. Experience is subjective: the same situation can give rise to different reactions depending on the personality of those who are experiencing it. Therefore, it is extremely important to be able to open up and share this problem with people who are close to us and in whom we trust, whether they are family or friends.

GOALS OF THE SECTION

Understanding and recognising the main eating disorders and their onset, as well as the recommended actions that should be taken when necessary.



KEY TERMS & CONCEPTS

Anorexia: An eating disorder characterised by an abnormally low body weight, an intense fear of gaining weight and a distorted perception of weight.

Bulimia: An eating disorder consisting of the ingestion of an abnormally large amount of food in a short time period, followed by an attempt to avoid gaining weight by purging what was consumed.

Binge eating: The consumption of large quantities of food in a short period of time, typically as part of an eating disorder.

Orthorexia: An eating disorder which consists of having an obsession about “healthful” eating.

KEY KNOWLEDGE

ANOREXIA

Anorexia manifests itself as a **refusal of food** and an **obsessive control of calories**. People with anorexia have a distorted vision of themselves, as a consequence, they feel they do not have the right shapes or «fat», even in extreme cases where weight is much lower the normal BMI (body mass index, a way to measure the proportion between weight and height). This disorder predominantly affects girls, but the cases among boys are also increasing. The consequences are very serious: starting with the loss of the menstrual cycle, and over time it can lead to serious damage to the kidneys, osteoporosis, cardiovascular problems and the loss of hair and teeth. Anorexia can ultimately lead to death.



The **first signs** may be very **low food consumption and an obsession with sport**, which becomes so excessive that it can sometimes lead to fainting. If you have any friends or family members with these symptoms, approach them lovingly and try to establish a dialogue based on trust. Advise them to contact a specialist. If treated immediately, **anorexia can be cured**.

BULIMIA

Bulimia is an **exaggerated and voracious** consumption of food, as if to fill a void in the shortest possible time. Food is used to fill an inner void, even if only temporarily. The bulimic person can feel an irrepressible urge to eat and does it very quickly, going beyond the state of satiety. Subsequently, **guilt and fear of weight gain set in, triggering an urge to purge**, which can be done either by vomiting, by inflicting diarrhoea with laxatives, or fasting for a longer period afterwards, in order to get rid of the ingested food. It goes without saying that this is a **vicious cycle**, once the person has eliminated the



food, they go back in search of things to eat. The food is often consumed secretly, in many different hiding places and even at night, when those affected by this disorder feel safe from prying eyes. A person with bulimia nervosa constantly lives in an **obsessive relationship with food**, fearing to be discovered and living with shame both towards others and themselves.

The **consequences of bulimia are also devastating**: nail fragility, hair loss, heart failure, anaemia, throat ulcers and eroded enamel (due to acids caused by vomiting), dry skin, absence or irregularity of the menstrual cycle.

The signs can vary considerably: for example, going to the bathroom as soon as a meal is over, nosebleeds, dental erosion, excessive tooth decay, swelling of the cheeks or jaw due to frequent vomiting. If you suspect your friend or family member of being bulimic, do not hesitate to listen to them empathetically. **A coordinated intervention by a team of doctors, nutritionists and psychologists** is a useful tool for restoring balance.

ORTHOOREXIA

Orthorexia is a **pathological obsession with healthy eating**. The subjects are not worried about the quantity of food they intake but about its quality. The problem is not wanting to feel skinny, but “pure”, so these subjects show a pathological enthusiasm for healthy food and total rejection of treated foods. When buying food, orthorexic subjects are very careful to check that the product is organic, without added sugars, low in saturated fats, high in essential fats and, of course, packed in biodegradable cellulose.



BINGE EATING

Binge eating consists in **episodes of uncontrolled and excessive eating**, which usually occur out of sight of others, sometimes even immediately after a lunch or dinner. The person who suffers from this disorder takes excessive amounts of food without any control until becoming sick.

What differentiates this type of food disorder from bulimia is the **absence of compensatory actions**, such as self-induced vomiting, fasting or resorting to laxatives. Usually, those suffering from this eating disorder are **overweight or obese**, and could therefore suffer from cardiovascular problems in adulthood or be more vulne-

rable to oncological diseases, type 2 diabetes and metabolic syndrome (concomitant presence of at least 3 disorders of hypertension, high levels of triglycerides and glycemia and low levels of HDL cholesterol, the so-called «good cholesterol», in addition to fat located at the waistline level).

WHY DO THEY ARISE?



The reasons for eating disorders are neither limited nor completely known. There are several factors that contribute to an eating disorder, including a particular emotional state that favours the abstinence from food or binge eating followed by vomiting.

We can state that the main risk factors may be found in various areas.



Socio-cultural reasons

Eating disorders mainly affect the most developed countries compared to developing world. In these countries, culture tends to emphasise the myth of the thin and perfect woman with long legs. Magazines present thin and unrealistic versions of women. Beauty and success are therefore synonymous with slimness, which is not comparable to reality.

Most men would like to be lean and muscular, which typically represents the “ideal” male body

type. Exposure to the **unattainable images in the media** may lead to male body dissatisfaction.

It can have a real impact on a teenager, whose self-esteem is not well developed. Social media, like Facebook or Instagram, are filled with photos of perfect, beautiful young men and women, who become models to be copied. **This is fictional and the photos are often in no way realistic**, as they are either modified with Photoshop or images captured in unrealistic settings, alluding to a

utopic life; giving the illusion that such a body could make us happy.

True beauty and success are achieved through working towards your personal goals (which are not born out of comparison, but are rather suggested to us by our soul/inner voice).



Family reasons



The family environment can promote the development of risky behaviour. If someone in your family unit already suffers from a form of eating disorder or another harmful addiction (alcohol, drugs, etc.), it is easier to fall prey to one of these

disorders, as it would be an already existing pattern. Furthermore, teenagers and children **may also be under pressure from their parents** to remain in perfect shape, until the child focuses solely on that goal, even if it is not necessary.

Individual reasons

Eating disorders mainly arise during **adolescence**. As the body changes, the transition to an adult body may not always be accepted or recognised. A subsequent refusal of food or excessive control **could be an attempt to stop this passage**, in order to remain in an eternal limbo of childhood, where a person feels safe and protected.



Even **trauma can promote these disorders**, as to compensate and/or «anesthetise» feelings with food, or with the rejection of it.

Low self-esteem, a perfectionist and/or an over-controlling personality are other risk factors: never feeling «enough» (beautiful, thin, intelligent, etc.). The perfectionist wants to give their best: through their studies and in other areas, they have a constant need to excel. Often this behaviour hides low self-esteem and a sense of inferiority toward themselves and others. Eventually, this kind of behaviour can prove unsustainable and may then lead to different types of addiction, including food addiction.

HELP AND SUPPORT



In conclusion, we must focus on the possibility of finding an answer to these problems. Often, the person uses this disease as a mechanism to deal with personal problems and **becoming aware of this is the first step towards recovery.**



As previously mentioned, **noticing symptomatic behaviour of these disorders** in friends or family members should lead us to approach them and establish a dialogue. The recommendation is not to force, nor to make judgments, but to gain trust and then **be available to listen.** This of course, this is not enough, it is advisable to suggest a treatment in a centre specialised in eating disorders, so that the person can be supported and accompanied in the healing process.



Support groups can be very helpful, such as the **Overeaters Anonymous (OA)** groups. In these non-profit groups, everyone can freely participate, speak about their own experience, support each other and receive a sponsor. The sponsor will be a person who has solved their

problems with food and who is now ready to help others. Dietary instructions are not given, the meetings are instead based on everyone's commitment to overcoming food disorders. This takes place in **regular meetings, which promote openness, trust and mutual support.** These meetings follow steps, 'the twelve steps', which aim to gradually make people aware of their condition, forgive themselves and apologise to those who have suffered due to their self-harming behaviour. In the end, as a result of these steps, a spiritual awakening is achieved, which allows them to help others in the future, by sharing the gained knowledge and then putting these principles into practice in all areas of their life.

As we read from their website:

"Our primary purpose is to abstain from compulsive eating and compulsive behaviour with food and to share the Twelve Steps plan to recovery of OA to those who still suffer."



THINGS TO REMEMBER & TIPS

ADDITIONAL INFORMATION



Anorexia and bulimia have a lot in common: both have similar devastating physical consequences related to malnutrition (including an electrolyte imbalance resulting in arrhythmias and cardiovascular collapse).

Anorexia manifests itself as a refusal of food and obsessive calorie control and has dramatic consequences. Over time it can lead to the development of serious damage to the kidneys, bones with the appearance of osteoporosis, cardiovascular problems, loss of hair and teeth. It can even lead to death.

Bulimia on the other hand is an exaggerated and voracious intake of food, followed by vomiting, and sometimes even by the intake of diuretics or laxatives. The consequences of bulimia are also devastating: nail fragility, hair loss, heart failure, anaemia, throat ulcers and eroded enamel (due to acids caused by vomiting), dry skin, absence or irregularity of the menstrual cycle.

People suffering from **binge eating ingest excessive amounts of food until they are sick.** What differentiates this type of food disorder from bulimia, is the complete **absence of reparatory actions,** such as self-induced vomiting, fasting, or resorting to laxatives.

There can be **multiple reasons for these disorders:** sociocultural, family, individual. There is a cure, but it is important to rely on centres specialised in eating disorders, so that the person can be supported and accompanied in the healing process.

CHAPTER III : TIPS & GOOD PRACTICES HEALTHIER HABITS FOR A HEALTHIER LIFESTYLE

SECTION 1 – NUTRITION REQUIREMENTS FOR AN ADOLESCENT

Introduction

Taking care of our health can be a simple task and **preparing delicious and well-balanced meals is the first component of a healthy body.** Knowing how to prepare healthy meals will provide you with a preventative tool that can be used every day for yourself, your family and friends.

It is important to know that preparing healthy meals can be easy and very fun too.

Thinking about our health means choosing to prevent diseases and overweight by **selecting food that our body really needs to feel good.**

No special cooking skills are required to prepare healthy meals. Let's simply try following these tips with a bit of imagination and enjoy taking care of our health!



GOALS OF THE SECTION

This section is intended to guide you towards preventive culinary choices with easy tips and tasty dishes, as well as healthy and nutritious combinations.

Learning some simple, quick, cheap and healthy recipes, starting with breakfast, is a basic requirement of an educational programme focusing on tackling bad eating habits.

Understanding what to look for on nutritional labels is also a major objective as it can help choose from different food products the healthier ones.

KEY TERMS & CONCEPTS

Empty calories: Contained in certain types of food that provide calories but are low in nutrients, such as sweets and fast food.

Healthy eating choices: Food choices, which are good for our health, such as vegetables, whole cereals, nuts, legumes, fruit.

Nutritional labels: Tables listing nutrient amounts per 100g or per serving, which can be found on food packaging.

Nutritionally well-balanced meals: Combinations of food, which provide macro- and micronutrients, as well as fibres and protective substances.

Preventive tool: A food choice which can help your body to stay healthy.



KEY KNOWLEDGE

Before entering the kitchen....

Recipes may vary a lot in terms of ingredients, required preparation time, the level of difficulty and taste. This is why we always need to give them a try before deciding whether they are good for us or not. When choosing which recipes may be more suitable for you, there are some tips you may benefit from:

 First, **read all the ingredients** of the recipe first and make a shopping list of them, then go to the store and buy them. Online shopping can also be very useful. You can also talk to your parents to decide which option is the best.



 Read nutritional labels when deciding which product suits your dietary choices the best. Go for food products which have a nutritional label that **indicates a higher protein and fibre content** and a lower fat and sugar content. Foods with these characteristics are usually classified as nutrient-dense foods. On the contrary, there are energy-dense foods, such as refined cereals, sweets, hot-dogs, fried food, animal/trans-fat containing foods, which are generally associated with overweight, obesity and chronic diseases. They will provide us with **“empty calories”**, which means that **their nutritional value is very poor**. The consumption of energy-dense foods, such as fast food, should be limited as much as possible, as frequent unbalanced meals may have serious consequences on our health.

 Choose a recipe that shows ingredients you like and **find substitutes for those you dislike**. For example, if you do not like almonds, choose peanuts instead; if you do not like oatmeal, choose millet flakes and so on. But do not give up preparing a recipe just because one or more ingredients are not among your favourites. Just try to be positive towards innovation in your kitchen and on your plate.

 Try to keep a **positive approach** when dealing with new recipes, you may discover delicious tastes and fulfilling meals.....give them a try!



Finally, the following recipes are just small ideas to bring innovation in your daily diet, so when planning your own new dishes, remember the following:

- **Raw vegetables** are much more nutritious than cooked vegetables, as most vitamins are easily damaged by heat.

- **Vegetable juices** are an easy and quick way to increase your daily intake of green, red, orange or white vegetables.... opt for a fresh, coloured juice made from raw vegetables, to have plenty of vitamins and minerals. You can drink it 30 minutes before your meal (to improve nutrient absorption) or whenever you can!



- As mentioned above, **vitamin C is essential for the absorption of iron from plant-based foods**. A good source of vitamin C is lemon juice, do not forget to add

it to your salads, cooked vegetables, pulses, legumes and raw juices.

- Food colours indicate the presence of **important bioactive components**, such as phytochemicals, which we can obtain when eating certain types of food. Look for green, red, purple, yellow and white fruits and vegetables to have more of these components.

- **Legumes** can provide a special type of iron called phytoferritin, which is safer for your gut than heme-iron and easier to absorb than nonheme-iron.

- **Protein sources** should always be included in our meals. Please read Chapter 1, sections 1 and 2 carefully, to find out which foods can provide with the daily protein intake.

- **Fibre** is essential to our health, therefore, do not forget to add

healthy, high-fibre foods to your meals, such as whole cereals, coloured raw salads, steamed vegetables, pulses, nuts and seeds.



- **Healthy fats** are essential to our health too, so do not forget to add plenty of nuts, (pistachios, almonds, walnuts, Brazilian nuts) and seeds, (sunflower, pumpkin, and dehulled hemp) to your recipes. There are some seeds, such as sesame, chia, flaxseed, poppy seed, that work better if you crush them before eating them, in order to release their nutrients, otherwise the external cuticles will not allow an efficient absorption of nutrients.

ENJOY
COOKING
FOR YOUR
HEALTH



2 SERVINGS

- 200g baby spinach or kale or collard greens
- medium cucumbers, finely sliced
- lemon or 1 small orange, peeled
- 2 sliced bananas
- 400ml almond milk, unsweetened
- 2 tsps. fructose, agave nectar or stevia/erythritol
- 4 tbsps. hemp protein



SMOOTH SMOOTHIE

DIRECTIONS

Put all ingredients in the blender. Mix until a very smooth mixture is obtained, adding water if necessary. During summer, store vegetables, fruit and milk in the fridge overnight before mixing, or add some ice cubes to your smoothie.

For a quick but nutritious breakfast or snack, even after sports.

2 SERVINGS

- 2 tsps. cashew butter,
- 2 tsps. organic lemon juice
- 2 tsps. berry jam or ½ papaya
- 400 ml soy milk, unsweetened
- 2 tsps. cocoa powder, unsweetened
- 2 tsps. erythritol,
- 2 slices whole grain bread, toasted



TASTY BREAKFAST

DIRECTIONS

In a bowl, mix cashew butter, lemon juice, papaya or jam until a smooth and homogeneous mixture is obtained (add water if necessary). Spread it on your slice of bread and enjoy it with 200 ml of soy milk, adding a teaspoon of cocoa powder and a teaspoon of erythritol.

During summer, store the fruit in the fridge overnight before consuming.

THE “ALWAYS GOOD” SNACK

SAVOURY VERSION

- 1 big cucumber, peeled and diced into very small cubes
- 6 small capers, finely chopped
- 2 tsps. shoyu (soy sauce),
- 2 tsps. hemp seeds, dehulled
- 2 tsps. fresh basil, finely chopped
- 15g pine nuts, finely chopped
- 300g white yoghurt (organic soy/goat), unsweetened



2 SERVINGS

SWEET VERSION

- 2 dried apricots (or other dried fruit), chopped into small pieces
- 150g raspberries or other berries (blueberries, strawberries, blackberries)
- 4 Brazil nuts, finely chopped
- 300g white yoghurt (organic soy/goat), unsweetened
- 2 tsps. coconut nectar or agave nectar
- 1 tsp. vanilla extract

DIRECTIONS

In a bowl or large jar, mix all the ingredients of the chosen version and enjoy at coffee/tea time, or, even better, after sports.



YUMMY POTATO SALAD

2 SERVINGS



- 4 medium-sized cold, cooked and sliced potatoes
- 2 tsps. organic lemon juice
- 4 free range organic eggs, boiled and sliced or 200g fish (cod or mackerel)
- 200g fresh sliced tomatoes
- 1 avocado, diced
- 3 tbsps. olive oil
- 2 tsps. fresh mint leaves, chopped
- 2 tsps. pumpkin seeds
- optional: 2 tsps. ground almonds

DIRECTIONS

Steamed potatoes (with skin). Once cooked, remove the skin and cut them into small cubes. While cooking the potatoes, also boil the eggs until they are firm inside (10 minutes boiling, then peel and slice them) or steam the fish. Wash the tomatoes and mint leaves and chop them together. Put all ingredients in a bowl, mix them thoroughly and add some ground almonds.

A colourful salad for a meal rich in fibres, phytochemicals, protein and iron.

2 SERVINGS

THE QUICKEST LUNCH

- 2 tbsps. olive oil
- 1/2 tsp. mustard seeds
- 1 medium onion, diced
2 medium carrots, chopped
- 400ml water
- 1 pinch of Himalayan sea salt
- 1 clove garlic, finely chopped,
- 200g dried red lentils, rinsed and drained
- 200g millet (20 minute-cooking)
- 1/2 tsp. ground ginger/cumin,
- 2 bay leaves
- 1/2 tsp. dried rosemary, freshly grated orange peel (1 small orange)
- 2 tbsps. sunflower seeds



DIRECTIONS

In a large soup pot, pour in the olive oil, add the mustard seeds and heat until the seeds start to skip, then add onion, garlic, carrots, millet, lentils and water.

Bring to a boil and cook for 15 minutes, stirring occasionally, then add the bay leaves, rosemary, salt and ginger/cumin. Stir and cook for another 10 minutes, adding water if necessary.

In the meantime, toast sunflower seeds on a warm, dry pan and, when the millet and lentils are ready, pour them onto a plate, add the seeds and grated orange zest on top. Add 1 tbsp. of raw olive oil, if you wish, and enjoy your quickest lunch, hot or warm.

Serve this with a salad made up of a variety of colourful and varied vegetables, full of antioxidants to keep you healthy.

2 SERVINGS

THE QUICKEST DINNER

- 500g chickpeas or other legumes, cooked (buy ready-to-eat organic legumes in glass jars)
- 10 sun-dried tomatoes, without salt, chopped
- 1 tbsp. tahini
- 1 tsp. shoyu
- 1 medium lemon, freshly squeezed juice
- 4 toasted whole-grain rye bread slices
- 400g pumpkin, washed and diced
- 50g whole grain spelt flour
- 2 pinches of Himalayan sea salt
- 1/2 tsp. dried rosemary
- 2 handfuls of mixed salad with olive oil and chopped walnuts



DIRECTIONS

Preheat the oven at 200° C. Put chickpeas or other legumes, sun-dried tomatoes, tahini, shoyu and lemon juice in a blender to obtain a hummus. Stir until the mixture is very smooth and add water if necessary.

Serve the hummus on toasted bread, adding some raw olive oil and dehulled hemp seeds on top. Prepare the pumpkin cubes by rolling them in flour with olive oil and rosemary and put it in the preheated oven, for 15-20 minutes or until they are crunchy. Serve with a mixed salad with chopped walnuts and olive oil to fill your meal with minerals, vitamins and fibre.



NUTRICIOUS-DELICIOUS MATCH

2 SERVINGS

- 300g white organic tofu or organic chicken (choose only one of the 2)
- 400g broccoli
- 2 tsps. chives
- 1 clove garlic, finely chopped
- 300g fennel, sliced
- 16 black olives
- 1 medium orange, peeled and diced
- 2 tsps. dried oregano
- 2 tsps. shoyu (soy sauce)
- 2 pinches of Himalayan sea salt
- 4 tbsps. olive oil
- 2 tsps. fresh ginger, grated



DIRECTIONS

Cut the tofu/chicken into strips and put them into a large frying pan. Add one tablespoon of olive oil, chives, garlic and cover. When it starts to stick, add shoyu, stir cook until edges are opaque for about 10 minutes. Flip it to the other side, then cover the pan, lower the heat and cook for another 10 minutes (if it is tofu, just let it cook until it has a crunchy side). Once ready, add freshly grated ginger and stir.

While the tofu/chicken is cooking, wash and chop the broccoli and put it in a large saucepan, with salt and olive oil, cover and let it cook until tender (add water if necessary).

In the meantime, wash and slice the fennels, put them in a large bowl, add the olives, oregano, orange pieces, salt and olive oil. Stir well and serve with tofu/chicken and broccoli.

Why broccoli? Broccoli is rich in vitamin K and calcium, which contribute to bone health and it contains many phytochemicals, which give a valuable boost to your health.

THINGS TO REMEMBER & TIPS



■ **Whole organic food is healthier** as it helps our body to be stronger, our intestines to function properly on a daily basis and helps our immune system to improve its performance.

■ Our meals can be healthy, if they are **rich in fibre, vegetable fat and protein**, colourful and freshly prepared. Whenever possible, choose whole plant-based foods, as they are considered healthier and more preventive.

■ Some fats can be quite unfriendly to our body, therefore, remember to choose olive oil and **other vegetable oils** flaxseeds, hemp, walnuts and high-oleic sunflower varieties. Avoid TFAs, saturated fats and other cholesterol sources.

■ Use as many **different spices** as you like, since most of them are classified as preventive foods (turmeric, saffron, cinnamon). You can also add some **fresh and dried herbs**, which are rich in iron and calcium, that help to meet the daily nutrient targets: sage, mint, rosemary, thyme, oregano, and chives.

■ **Prepare your own meals** as often as possible, carefully choosing high quality ingredients and the right combinations.

■ **Check nutritional labels** for: sugar, salt, protein, fibre, cholesterol, trans and saturated fat content.

■ Always prepare a **detailed shopping list** and have fun buying your healthy ingredients!



SECTION 2 – READING AND UNDERSTANDING FOOD LABELS

Introduction

Food packaging has many different functions. It ensures the safety of our food by preventing it from coming into contact with germs. It provides us with the name of the product, information on how it was produced and what it is supposed to look like. On food packaging, you can also find **food labels** – including tables that tell us which ingredients the product is made of, how much sugar, fat and calories it contains, and which nutrients we can get from it. Food packaging, and more particularly the labels that can be found on a product's packaging are therefore a **practical tool to better understand what we are buying**.

But food packaging also serves as a space where food companies can advertise their products to consumers in the most appealing way. While it is understandable that companies put a lot of effort into selling their products to a large audience, it is also important to realise that there are marketing strategies to encourage consumers to buy a product, sometimes with little or no consideration for their diet or health.

As a consumer, it is therefore crucial to learn how to read and understand food labels in order to make informed choices. We can all become smarter consumers if we know the full meaning of the words and images displayed on food packaging. Let us remember that when **there is information, there is choice**.

GOALS OF THE SECTION

In this section, we will identify useful information on the packaging and labels of everyday food products and provide tips to help identify healthier options.

Building on the previous chapters and the now solidified knowledge of nutrition and healthy foods, this section should help us to:

- **Identify healthy foods in supermarkets, stores, cupboards and fridges by learning how to interpret the information provided by food packaging.** Understanding the ingredients and composition of food products enables you to make healthier choices and generally contributes to a healthier lifestyle.
- **Be an educated consumer.** Is a product really as healthy, natural and beneficial as it claims? Understanding food labels is not only useful to preserve your health, but also helps you avoid being misled and influenced by food packaging.

KEY TERMS & CONCEPTS

FOOD PACKAGING:

Packaging provides protection and special features to keep food in the state in which it is intended to be consumed. It may include nutritional information as well as visual content (advertisement, serving suggestions, etc.).

FOOD LABELS:

Which contain a variety of information about the nutritional value of a food product. There are many pieces of information on most food labels, such as the serving size, calories content, grams of fat, nutrients and a list of ingredients. Food labels contain important information about the food origin, its safety, allergy risks and its nutritional value.

NUTRIENTS:

Substances found in food and drinks which are used by the body for growth, reproduction and good health. There are two categories of nutrients: Macronutrients, which include proteins, carbohydrates, fats and fatty acids, and Micronutrients such as vitamins and minerals, which are essential to body processes.



DON'T
CONFUSE
FOOD LABELS
AND FOOD
PACKAGING!



GENERAL INFORMATION: WHAT ARE FOOD LABELS AND WHY DO WE NEED THEM?

For food producers in the European Union, it is a **legal requirement to provide nutritional information to consumers**. This requirement is based on EU law, namely Regulation (EU) No 1169/2011 on the provision of food information to consumers, which entered into force on 13 December 2014.

Specifically, nutritional information on food labels must include:

- The product's energy value (in kcal and kJ)
- The amount of fat, carbohydrates, sugars, protein and salt.

In addition, producers can choose to also indicate the amounts of:

- Mono-unsaturated fat
- Polyunsaturated fat
- Polyols
- Starch
- Fibre
- Different vitamins and minerals

Producers of certain food products are required to inform the consumer about the ingredients and constituents of that product. All of this information is included on the food label. Food labels are, in the first place, a tool that protects consumers by preventing producers from secretly using ingredients without mentioning them.

However, it can be really difficult to read and understand food labelling. What are all these numbers? What does RI mean? How much sugar does this product really contain? In other words: is the food I eat healthy? In this section, we aim at increasing your understanding of the meaning of the various sections of food labelling and, therefore, to help you choose your food as informed citizens and consumers.



INFORMATION PROVIDED ON FOOD LABELS AND HOW TO DECIPHER IT

COMPOSITION

nutritional information	100 g	Serving	% *
energy	kJ / kcal	kJ / kcal	%
fat	g	g	%
saturated fatty acids	g	g	%
carbohydrates	g	g	%
sugars	g	g	%
dietary fiber	g	g	%
protein	g	g	%
salt	g	g	%

* Daily recommended intakes for an adult

INGREDIENTS

LIST OF INGREDIENTS

The list of ingredients indicates, as its name suggests, the different components that make up a product. As a general rule, it could be said that **the longer the list, the more the product is processed**. In other words, if a food product contains a long list of ingredients, it is more likely to be far from natural.

On food labels, **ingredients must be listed in order of predominance**, which means that ingredients are ranked from the most important to the least important in terms of quantity. Ingredients used in the greatest amount are mentioned first. This means that the first

ingredients give important indications regarding the quality of a product. Ideally, the first ingredients should never be sugar, high fructose corn syrup or fructose

In addition, food manufacturers must disclose **information regarding any allergens** that may be found in their product. This provides additional information for people with allergies/sensitivities and for people who do not want to eat certain foods due to religious, moral or cultural reasons. In particular, producers must mention the presence of common allergens such as milk, eggs and some cereals and nuts.

ADDITIVES, COLOURINGS AND FLAVOURING SUBSTANCES

The constituents of a food product can include both real food (such as an apple) and additives. Additives are substances used to alter and/or **enhance flavours and texture, or to prevent a product from rapidly perishing**. Thus, some additives are harmless while others are highly processed, industrially produced and dange-

rous, or even carcinogenic.

Additives are classified by the European Food Safety Authority (EFSA). They carry a specific designation, consisting of the letter 'E' (for 'Europe') and three numbers. Here is a brief list of the most dangerous authorised additives that we should avoid as much as possible:

E950 (Acesulfame K), used in chewing gum, cakes, drinks.

E951 (Aspartame), used in several low-calorie foods and beverages ('low' or 'zero sugar' products).

E621 (Monosodium glutamate, or MSG), used in foods such as soups, chips, low calorie products, Chinese dishes.

E251 (Sodium nitrate), used in processed meats such as sausage and bacon.

E310 (Propyl gallate), used in oily substances.

E320 (Butylated hydroxyanisole, BHA), used in edible oils, chewing gum, fats, margarine, nuts, instant potato products.

E321 (Butylated hydroxytoluene, BHT), found in vegetable oils, shortening, lard, fat, margarine, carbonated drinks, cheese spreads, chewing gum, ice cream, dry breakfast cereal.

E133 (Brilliant blue FCF), a green colouring found in canned processed peas, dairy products, sweets and drinks.

E127 (Erythrosine), a red colouring found in canned fruit, custard mixes, sweets, pastries, snacks, cookies, chocolate, seasoned crab, garlic sausage, salmon spread, pâté, scotch eggs, stuffed olives.

E110 (Sunset Yellow FCF, Orange Yellow S), a yellow colouring found in orange squash, orange jelly, marzipan, Swiss roll, apricot jam, citrus marmalade, lemon curd, sweets, hot chocolate mixture and packet soups, breadcrumbs, cheese sauce, ice cream, canned fish.

E102 (Tartrazine), a yellow colouring found in fruit squash, fruit cordial, coloured soft drinks, instant puddings, cake mixes, custard powder, soups, sauces, ice cream, ice pops, sweets, chewing gum, marzipan, jam, jelly, marmalade, mustard, yoghurt and many prepared foods with glycerine, lemon and honey products.

E104 (Quinoline Yellow), a yellow colouring found in ice creams, scotch eggs and smoked haddock.

E120 (Cochineal), a red colouring found in alcoholic drinks, pastries, toppings, cookies, desserts, drinks, icings, pie fillings, cheddar cheese, sauces and sweets.

E123 (Amaranth), a purple colouring found in ice creams, gravy granules, jams, jelly, canned fruit pie fillings, soups and trifles.

E131 (Patent Blue V), a violet colouring found in Scotch eggs.

Ingredients with cryptic and unpronounceable names are often extremely processed and industrially produced. The less highly processed food and ingredients you consume, the better you will feel!

NUTRIENTS

Another section of the food label contains information on the nutritional value of the product. This information **concerns the energy value of the product (in kcal and kJ) as well as its sugar, fat, protein, fibre, salt, etc.** content. Sometimes, you can even find information regarding micronutrients, such as vitamins and minerals in the product.

Nutrient labelling allows us to learn more about the exact nutritional value of a product and its ingredients. If we want to have a healthier diet, nutrition information can help determining which products can have a negative impact on our health. At the same time, nutrient labelling can be useful to ensure a adequate intake of essential and beneficial nutrients.

PORTIONS

Nutrient information is generally provided according to a specific weight/volume. In other words, most nutrient labels indicate the total amount of the relevant nutrient per 100g or 100ml, as well as the amount of the nutrient per serving.

For example, a portion is equal to 1 yoghurt (150 g).

SUGAR CONTENTS

It is particularly important to take into account the amount of sugar in a product. When looking for a particular product, choose the one with the least sugar possible. Sugar is highly addictive and is also the main cause of abnormal/unhealthy weight gain.

To estimate the amount of “bad” added sugar in a product, look for the line “of which sugars” under “carbohydrate” in the nutrient list. 4g of sugar is approximately equivalent to one teaspoon of sugar.

For example, 1 yoghurt contains 20g of sugar, equal to approximately 5 teaspoons of sugar. To give you an element of comparison, an adult’s recommended daily sugar intake is 12 teaspoons (48g).



REFERENCE INTAKE

Another column that can be found on the nutrient label is the Reference Intake. The European Union (EU) has set daily reference intakes (RI) for adults for overall energy (kcal/kJ), as well as for nutrients (except vitamins and minerals). Although the following levels are suggested by EU legislation as daily intakes for an average adult and are therefore used on food packaging, it is important to be aware that daily RIs should preferably be lower to maintain a healthy diet:

Energy: 8400 kJ/2000 kcal

Total fat: 70g

Saturated fat: 20g

Carbohydrates: 260g

These reference intakes can be useful for both to mini-

mise and maximise the amount of certain nutrients. The intake of nutrients such as added sugar and salt, for example, should be as low as possible. At the same time, when it comes to other nutrients such as protein or individual vitamins, it is important to make sure that we get enough of them every day.

In order to help consumers estimate the amount of a nutrient contained in a product, in terms of daily intake, nutrient labels include the percentage of the daily reference intake for each nutrient.

For example, eating 1 yoghurt is equal to eating 9% of an adult's daily reference intake (RI) for energy; but 1 yoghurt is also equal to eating 22% of an adult's RI for sugars. Be sure to take all nutrients into account!

CLAIMS AND SYMBOLS

Other elements we can pay attention to when assessing a product are official claims, labels and logos.

SYMBOLS

Certain symbols are official and have been approved by the national authority of our countries or by the EU for all EU countries. The presence of such symbols provides a certain guarantee regarding factors such as product safety, sustainability, food origin and animal welfare. In general, it is always better to choose organic and local products, which have not been treated with chemicals substances.

In the picture, "b." represents the official certification for organic agriculture of the EU.



NUTRITION CLAIMS

Furthermore, some nutrition claims can sometimes appear on products. These claims **highlight the particular nutritional benefit(s) of a product** in terms of the energy value it provides (or does not provide), or the specific substances it contains (or does not contain).

In the picture, "a." represents a "Gluten-free" nutrition claim.

The use of nutrition claims is, again, **regulated by the EU**. Examples of claims that producers are allowed to use are "low fat", "fat-free", "sugar-free", "no added sugars". An exhaustive list of EU authorised and regulated claims can be found on the European Commission's website.





False nutrition claims. However, it is important to bear in mind that not all claims and symbols you may find on **food packaging are official and trustworthy.** As mentioned in the introduction to this section, food packaging is an important space for producers to place advertisements and images and claims that will encourage consumers to choose their product over other products. Accordingly, the use of these marketing claims and images can be highly misleading to consumers if they do not know that this type of information is not official and unregulated.

As mentioned above, the EU actively regulates the use of a various nutrition claims. Terms such as “low fat” cannot be used freely without fulfilling the corresponding conditions. However, there is **still a wide variety of claims which are not included in the official list.** Companies therefore tend to misuse expressions such as “healthy” or “high vitamin D content – helps strengthen bone structure” on their packaging.

As consumers, it is important to be extremely careful when assessing those claims. Even regulated claims such as “low fat” must be considered with caution: while a “**low fat**” product may indeed contain a very low level of fat, **it may at the same time have a very high sugar content.** Likewise, the claim “high vitamin D content – helps strengthen bone structure” might give consumers the impression that the product is healthy while it might actually be high in fat, sugar or salt.

Normally, following Regulation (EC) No 1924/2006 on nutrition and health claims, products using health claims should comply with a nutrient profile which limits the overall sugar, fat and salt content. However, this nutrient profile has not yet been created by the EU, which means that products with a very high sugar, fat or salt content can still use health claims if they fulfil the conditions for one of the other regulated nutrition claims.

As consumers, it is important to be extremely careful when assessing those claims. Even regulated claims such as “low fat” must be considered with caution: while a “**low fat**” product may indeed contain a very low level of fat, **it may at the same time have a very high sugar content.** Likewise, the claim “high vitamin D content – helps strengthen bone structure” might give consumers the impression that the product is healthy while it might actually be high in fat, sugar or salt.



Misleading Quality Claims. Many companies use expressions such as “**natural**”, “**fresh**”, “**home-made**” or “**authentic**” to describe their products. The use of such

claims can be very misleading for consumers

Many people tend to make the assumption that expressions such as “natural” or “authentic” mean healthy. However, in reality, some of these “natural” products are extremely high in saturated fat, sugar or salt.

These terms are not regulated or legally defined by the EU. This is of course very convenient for producers: companies can use terms such as “natural” or “homemade” as they wish, which enables them to present their products in a positive light.



Misleading Images and Symbols. Another aspect that must be considered when assessing food products is the images and symbols on the packaging.

Many products showing **illustrations or photos of healthy foods** such as fruit and vegetables on their packaging actually have a **very low fruit or vegetable content.** The EU legislation forbids displaying ingredients on the packaging which are not present in the product. However, **as soon as an ingredient is present in a product, it can be displayed on its packaging,** regardless of its percentage. The quantity of this ingredient must be indicated; however, in most cases, this information is only indicated at the back of the packaging, usually in small print. As a result, it is quite common to find products with misleading packaging showing large images of fruits or vegetables, while the ingredient list on the back indicates that they contain only 0.5% of them.

Example: this product is displaying cherries on its packaging to make it look healthy. But it barely contains fruit: 4.5% cherries!

COMPOSITION

Cherry yogurt: Lean fresh cheese (41%), skimmed milk (31.6%), sugar and liquid sugar (sucrose: 11.9%), cream (milk (1%), **CHERRY (4.5%)**, milk protein (3.6 %), glucosefructose syrup (3.2 %), gelatin (1.5%), thickeners (1.5%), flavour (0.2%)

CHERRY YOGURT

It is also important to bear in mind that, **even if a product actually contains a lot of fruit and vegetables, this does not necessarily mean that this product is healthy.** Fruit juices are a good example: they contain large quantities of fruit, but they also have a very high sugar content and are not as healthy as ‘whole’ fruits.

As in the cases mentioned above, there is no official law that requires companies to use only images of actual ingredients, or to correctly display the proportion of ingredients on the images they use. Furthermore, you will find a lot of different symbols and logos on food packages. Thus, it is **important to remember that not all of these symbols are official** (such as the organic agriculture symbol showed above). On the contrary, many of these symbols are completely arbitrary. Keep in mind that mentions such as “elected best product of the year” are not a true indication of the quality of a product.

CONCLUSION

In this section, we learned to better understand labels, identify healthy and unhealthy products and compare them. This allows us to make better choices when buying food and to shape your diet according to your needs and beliefs.

Remember that being able to read food and nutrition labels is not solely about avoiding fat, sugar or salt altogether; it is perfectly fine to occasionally eat some chocolate or chips. The main advantage of reading labels is to be able to make our own choices as informed consumers without being mistaken by misleading packaging.



THINGS TO REMEMBER & TIPS



STEP 1: LOOK AT THE LIST OF INGREDIENTS

How long is it? The more ingredients there are, the more likely the product is to be highly processed.

What are the main ingredients? Ingredients are listed according to the quantity they represent in the product. The first few ingredients are the main components of a product.

Is it healthy? Ingredient lists can contain unhealthy ingredients, sometimes with long names (additives, colouring, numbers preceded by the letter “E”, etc.).



STEP 2: LOOK AT THE NUTRIENT CONTENT

especially sugar and fats content. Be aware that low-fat food products can in fact be very unhealthy due to their high sugar content.

STEP 3: EXAMINE THE CLAIMS AND LOGOS ON FOOD PACKAGING

Are there any official logos of your country or the EU? Other logos may be pure visual merchandising with little or no objective value.

BEWARE OF

Misleading claims about a food’s nutrients and/or quality (“low-fat”, “home-made”, etc.)

Misleading images on packaging



SECTION 3 – PRACTICING PHYSICAL ACTIVITY

INTRODUCTION

Altogether, with eating habits, **physical activity is one of the main strategies available for the prevention of non-communicable disease** such as overweight, obesity, type 2 diabetes and other cardio-metabolic diseases. Not only will regular physical activity and an active lifestyle prevent the development of such chronic diseases from the youngest age, they will also **promote familial and psychological fulfilment, improve our physical fitness, motor skills and cognitive abilities, as well as favour academic achievement and social integration**. Despite numerous evidences that should encourage us (as well as our parents and peers), to engage in regular physical activity, **only a few of us reach the recommendations**. Moreover, not only do we really need today to promote and encourage regular activity, but we are also **spending a large part of our time in sedentary activities**. This is particularly important since both physical activity and sedentary behaviours have been shown to independently impact our current as well as our future lifestyle and health, as illustrated in Figure

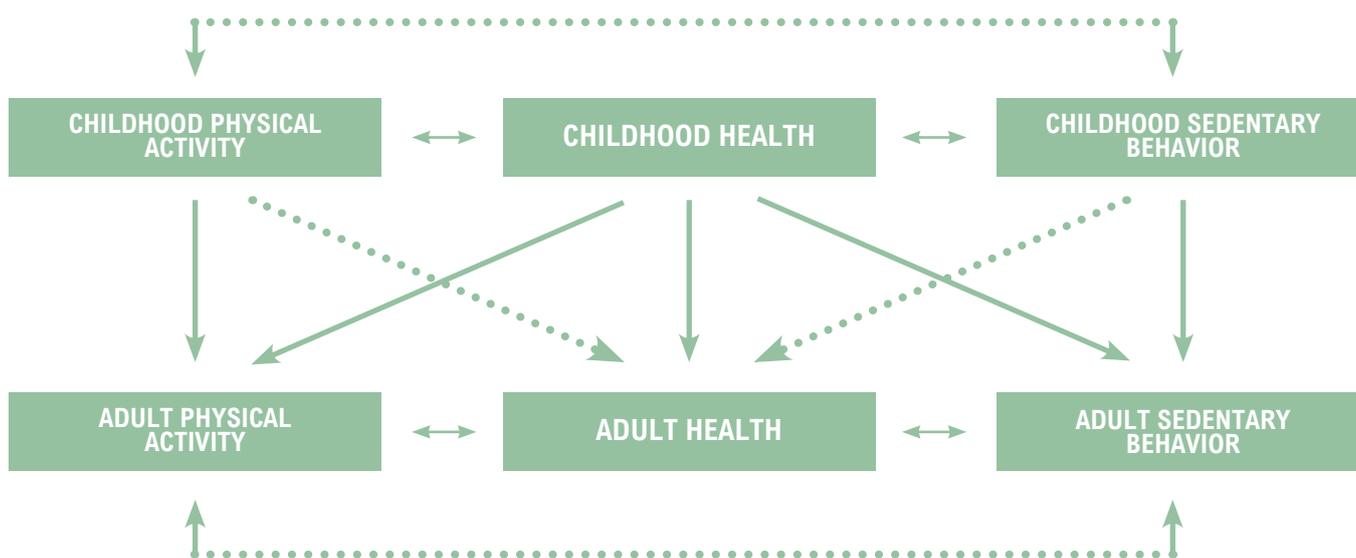


Figure 1. Model linking childhood physical activity and sedentary time to childhood and adulthood health and lifestyle (Thivel, Chaput & Duclos, 2018).

GOALS OF THE SECTION

While today there is a clear need to develop and implement effective strategies both to promote regular daily physical activity and to reduce sedentary time in our daily lives, we must have clear definitions of some key concepts. You will find here some definitions of the main concepts: **physical activity, inactivity, sedentary behaviours and physical fitness**. We will also provide you with the main recommendations related to these concepts and with good practices and daily tips to improve your health.



The terms **active**, **inactive**, and **sedentary** are most of the time used in a confusing manner. Misuse of these adjectives often leads to biased messages and conclusions.

For the last couple of years, researchers in the fields of physical activity and sedentary behaviours, particularly members of the Sedentary Behaviour Research Network (SBRN), have worked together to clarify the definitions related to physical activity, inactivity, and sedentary behaviours (Table 1 presents the main definitions). They finally came up with a new terminology consensus in 2017:

Physical activity is defined as **any body movement generated by the contraction of your muscles that raises your energy expenditure** above your resting one. It is characterised by its modality, frequency, intensity, duration and context of practice. *Exercise* is considered as a subcategory of physical activity that is planned, structured, repetitive, and that favours physical fitness maintenance or development.



Physical activity is commonly confused with sport. This confusion definitely needs to be clarified since people might think that the promotion of physical activity requires their engagement with classical sports, while this is not the case. You don't have to play soccer for a club every day to increase your physical activity level. **Sport is part of the physical activity spectrum and corresponds to any institutionalised and organised practice**, based on specific competition rules. Accordingly, one of the purposes to do sports is to compete against each other or to improve your performances. **This distinction is important since some people may fear the term "sport" in its competitive - narrow - sense.** However, a higher or regular amount of physical activity participation is required for our health.

Beside physical activity, as an independent factor affecting health, sedentary behaviours also need to be properly defined.



Sedentary behaviours are any waking behaviours characterised by a very low energy expenditure (≤ 1.5 METs, 1 MET being the equivalent of resting energy expenditure) while in a sitting, reclining or lying posture. Screen time and sitting time are usually the two main indicators used to quantify the time we spend being sedentary. **Watching TV, reading, playing video games, spending time in front of tablets or mobile phone screens are then sedentary behaviours.** However, motorised transportations (buses, train, car etc.) and staying seated at school are also sedentary behaviours in which we spend a large majority of our time. At 14 years old for instance, we spend about 30 hours seated at school and up to seven or eight hours doing homework at home every week. Moreover, most of us (more than 40% of secondary and high school students) admit spending our after-school time seated in front of screens. **As a result, our current lifestyle gives place to a huge amount of sedentary time.**

"An important reminder, physical activity and sedentary behaviours are not the opposite of each other. Being physically active does not prevent us from devoting a significant part of our time to sedentary behaviours! In other words, we can be classified as both active and sedentary"

Usually misused, **physical inactivity** is not a synonym of sedentary behaviours but is used to qualify individuals who do not reach age-specific physical activity guidelines.



The following table lists all these definitions.

PHYSICAL ACTIVITY :

Any body movement generated by the contraction of skeletal muscles that raises energy expenditure above resting metabolic rate. It is characterised by its modality, frequency, intensity, duration and context practice.

PHYSICAL INACTIVITY :

Represents the non-achievement of physical activity guidelines.

EXERCISE:

Subcategory of physical activity that is planned and corresponds to any institutionalised and organised practices, reined over specific rules.

SEDENTARY BEHAVIORS:

Any waking behaviours characterised by an energy expenditure ≤ 1.5 METs, while in a sitting, reclining or lying posture

Although it is really important to clearly understand each of these definitions, their adoption rests on our voluntary behaviours. **Being physically active and avoiding too much sedentary time depends, today, on our choice. The adoption of an active lifestyle will improve and maintain our physical fitness**, which relies on our ability to perform daily activities such as climbing stairs or carry bags without excessive fatigue.

Accordingly, **physical fitness** is a result or a prerequisite of physical activity. In itself, the term physical fitness combines “**a set of attributes that we have or achieve to complete our daily activities**” and “**is the ability to perform muscular work.**”



KEY KNOWLEDGE

What are the guidelines? In order to maintain and/or improve our mental, social and motor development, public health institutions and scientific societies propose **age-specific recommendations**. Today there is a consensus that **kids under six years of age should engage in at least three hours of physical activity per day**, consisting of active play. **From 6 to 18 years old, children and adolescents should engage in at least 60 minutes of moderate to vigorous physical activity on a daily basis.**

Importantly, these activity guidelines should be combined with the sedentary ones. During waking hours, **children under 6 years old should sit not more than 15 min per hour** continuously (making it less than three hours over the day) and **should not spend more than one hour per day (h/d) in front of a screen. Kids above 5 should spend less than two hours continuously seated and/or in front of screens.** Furthermore, children should reach **sufficient and good quality sleep time**, with 12 to 17 h/d under one year, around 10 to 14 h/d one to five years old, nine to 12 h/d when being in primary school (5 to 10 years), and 8 to 11 h/d when 10 years and older. The European Childhood Obesity Group recently proposed physical activity recommendations in its e-book as presented in the following table.



AGE	TYPE	FREQUENCY	BENEFITS
< 12 months	Supervised floor-based play in safe environments (e.g. tummy time, games with parents and siblings to encourage reaching, grasping, pulling and pushing).	Daily for 5-15-minute play sessions.	<ul style="list-style-type: none"> • Support brain development. • Strengthen bones and muscles. • Improve movement and co-ordination skills. • Promote social skills through interactions with people.
1-5 years	Supervised games with parents and other children which promote reaching, stretching, crawling, running, kicking, throwing and catching.	Daily for at least three hours (short bouts of 10-20 minutes spread throughout the day)	<ul style="list-style-type: none"> • Strengthen heart, bones and muscles. • Improve balance and co-ordination skills. • Help achieve and maintain a healthy weight. • Encourage self-confidence and independence.
5-12 years	Moderate to vigorous intensity physical activity** including high impact activities to promote bone health (e.g. skipping, jumping, running & dancing).	At least 60 minutes per day. On at least three days per week, children should engage in high impact activity.	<ul style="list-style-type: none"> • Support concentration and learning • Strengthen bones and muscles. • Improve movement and coordination skills. • Improve balance and coordination skills. • Help achieve and maintain a healthy weight. • Encourage self-confidence and independence. • Help make new friends and develop social skills.
13-17 years	Moderate to vigorous intensity physical activity** including high impact activities to promote bone health (e.g. skipping, jumping, running & dancing); active transportation, organised and non-organised sports, games, physical education and other activities at home, school, work, and in the community.	At least 60 minutes per day. On at least three days per week, children should engage in high impact activity.	<ul style="list-style-type: none"> • Support concentration and learning • Strengthen bones and muscles. • Improve balance and coordination skills. • Help achieve and maintain a healthy weight. • Encourage self-confidence and independence. • Help make new friends and develop social skills. • Improve cardiometabolic health. • Enhance mental health and wellbeing. • Support cardiorespiratory fitness.

** (activities that cause the child to get warm, go red and start to sweat)



THINGS TO REMEMBER & TIPS

Here are some tips and everyday advice for children and adolescents, but also teachers, parents and caregivers that should/could be used in order to create an active lifestyle:

- Integrating time spots for active play not only in between classes but also during classes at school, without affecting the academic achievement and success (some schools adopt cycling desks with success).
- Introducing small body motion time at regular intervals (walking a couple of minutes every hour, for instance) during classes and homework.
- Introducing open room concepts for learning, where numeracy and literacy are learned by measuring walls in the room or by active play with a small ball.
- Introducing the possibility to stand up during learning hours in school, when the students want to do that, and offer high-tables.
- Avoiding using elevators when stairs are available.
- Favouring active transportation instead of car and buses when possible.
- Favouring active play and outdoor play instead of screen time and video games.



SECTION 4 – SPEAKING AND EXCHANGING FREELY

IN THE PREVIOUS CHAPTERS WE HAVE LEARNED A LOT ABOUT NUTRITION.

Good fats, bad fats. Vitamins, minerals, and everything related to nutrition.

But also health problems that can arise from being overweight.

Of course, when you're young, you may not feel the problems. And somehow it is not that interesting to learn about.

Maybe a little story will help, which we would like to tell you shortly. A true story. It's about Judith. Judith lives in Germany and has been overweight since early childhood. She loved her dog and her aunt's horses above all else. Unfortunately, she also loved chocolate, chips and soda.



At the age of 12, she weighed almost 90 kg. She was about 1.50m tall at the time. She was ashamed of her weight but did not know what she should do.

She barely had any friends at school, she was teased and annoyed every day for her weight. She had to listen to insults like 'German tanks roll again', walrus, fat cow, and much more. Nobody wanted to associate with her. Out of sheer frustration, she ate. When she received bad grades at school, she ate. Whenever she had stress, she ate.

That's how it went for many years and Judith became quieter. She did not tell her parents about it. She began to eat secretly. Most of all, of course ... chocolate and chips. Her parents were worrying about Judith. But she did not want to talk about what led to quarrels. Judith thought her parents did not understand her. And her parents did not understand that Judith did not want to talk about it.

It should be mentioned that her parents have had partly the same experience of overweight that Judith had, but they dealt with the topic of nutrition very cautiously. However, it did not help. Who cares what the parents say?

So, it continued and at 15 years old, Judith was 1.75m tall and weighed 130 kg.



A pretty girl with long red curls and freckles. Only her weight caused her troubles. It even got worse at school with the insults and bullying since all the classmates had smartphones and Facebook. The bullying had left deep wounds on Judith. She had almost no self-confidence, bad grades at school, and she did not want to go out at all.

Now, after all these years and troubles, she decided to ask her parents for help and they together thought about what to do. After long discussions, the family realised that more help was needed. The parents went to school, talked to the teachers and students. They were supported by social workers from the school and the police, which has special counsellors against bullying.



Judith started a therapy with a psychologist and a nutritionist. She did sports with her parents at least twice a week. After about 8 months, Judith lost more than 50 kg. Her grades got better, she laughed again and even had friends.

Today she is 20 years old and still has to be very careful not to slip back into old ways of behaviour as well as not to eat uncontrollably when faced with stress and anger. This does not always succeed. But she is much more self-confident and can defend herself against the people who only downgrade her. This helps her learn not only that a person's value is not limited to appearance or weight alone, but also that overweight is dangerous for her health.

Is Judith living with her lover in a castle until the end of her life? Who knows?



So, what can we learn from this story?

Overweight and Obesity often caused by overeating and/or unbalanced eating. The question here is why do we do that?

For Judith, one of the causes was the bullying and exclusion she has experienced. Even though she knew it was wrong, she had no other way out of the situation.

Only when she opened up to her parents, asking for and receiving help did her life become better.

So, our advice is, if something like that happens to you, look for helps from someone you trust, who is able and willing to help you. They can be your parents, your teachers, friends or someone else in the family. Openly handle it and do not avoid talking about the problem. Do not let yourself be downgraded because of your appearance. You are much more than that.

What should we pay attention to?

Sometimes we also eat out of boredom, in front of the TV or laptop. You should try to pay attention to when you grab sweets or food. Often this happens unconsciously. Maybe you can substitute these sweets with other alternatives. Or do you remember the possibilities that you have already read about in the previous chapters?



Would you like to change your diet at home? Talk to your parents, tell them what motivates you. Parents are often not as bad as you think. Tell them why you want to give up certain foods and show them how you know about it.

And a little tip, sport and exercise are not bad, it is only a bit exhausting at the beginning. Nobody expects you to do a triathlon. But you can start with little things like using stairs instead of elevator or taking a short walk. You do not have to use the car for short distances.

Find out which exercise or sport you enjoy doing. Not everyone likes jogging. Not everyone wants to do team sports. If you are already overweight, we recommend you try swimming which protects the joints. Just try it out.

Pay attention to your health and your body. They cannot be bought on the internet. Take care of yourself.



ANNEXES : FOLLOW-UP/TRACKING/MONITORING TOOLS

ANNEX 1 – MINDFUL EATING DIETARY INTAKE JOURNAL



The idea of the *Mindful eating journal* is to compare the result of our daily intake with and without applying the mindful eating method. The objective is to observe if mindful eating can have an impact on our eating habits.

According to the Centre for Mindful Eating (TCME), healthy eating is eating enjoyable food that meets nutritional needs. It utilises the **practice of mindfulness by intentionally bringing awareness to the internal and external environment while eating**. The internal means being aware of the **feedback from the body (e.g. how food is linked to health, the impact of pleasure when eating)**, while the external dimension consists of knowing the **best available scientific evidence related to nutrition and individual health concerns**. The blend of pleasure and nutrition is important for consistency in eating healthfully as well as to optimise the digestion, absorption and metabolism of nutrients.

TCME supports flexibility concerning food choices, including eating food that is appropriate to the occasion. TCME recognises that individual choices are affected by factors that may limit food choices such as economic constraints, religious choices, geography, lifespan, and individual preferences. Developing a healthy relationship with food that considers individual circumstances helps foster overall well-being.

It is the position of the Centre for Mindful Eating (TCME) that mindful eating supports health and well-being. The practice of mindful eating develops awareness of and honours our internal wisdom that can guide our food choices and support eating in the perspective of our well-being. Mindful eating cultivates connection with physical, psychological and environmental cues that can affect our food decisions.

The intention of mindful eating is to focus on the present moment by promoting acceptance, nonjudgment, and curiosity about an individual's direct experience. It is not outcome-based and does not promote any specific body shape or size. Based on scientific research, TCME expresses caution and concern about engaging in mindful eating exercises for weight loss. A weight focus and related stigmatisation may exacerbate psychological issues such as guilt and shame and may keep individuals caught in an unbalanced eating cycle.



EATING A MINDFUL MEAL OR SNACK: EATING EXERCISE

Before eating, bring awareness to your body and breathing

- Let your belly relax and be full.
- Take three full deep breaths – let the breath relax you and make you aware of the present moment.
- Start by checking how hungry you are on a scale of 1 to 10 – explore what hunger feels like in the belly, noticing its pleasant and unpleasant qualities, noticing the sensations in the mouth and belly at the thought of eating.
 - If you haven't chosen what to eat yet, check with yourself what food would taste good now – can you get a feeling of what your body needs or what taste would feel pleasing to you.
 - Once you have your food in front of you, take some time to assess it - how it looks, in which colour or shape, where it comes from, how nourishing you think it is, what it smells like. Acknowledge the importance of the food for your health.
 - When you eat, take your time. You can slow down by chewing your food thoroughly and by putting down your cutlery between each bite. Watch any distractions or thoughts, let them come and go, keep coming back to the sensations involved in eating and tasting.
 - As you eat, notice whether you are enjoying the food or not. Focus on the sensations of taste: sweet, sour, or salty. Keep coming back to the taste of your food
 - If you don't enjoy it, ask yourself if you can stop eating. If you enjoy it ask yourself how present you are for the pleasure of the experience.
 - Savour your food.
 - Throughout your meal, notice how your hunger level changes as you eat. Particularly half-way through, stop and assess your hunger level. If you still feel hungry, continue eating. But if you're noticing a sense of satisfaction, stop.
 - Notice if it is difficult to stop at this point, and enquire why.
 - Give yourself permission to stop even if there is some food left on the plate.
 - If you usually eat more, notice what it feels like to stop eating before complete fullness. Exploring the pleasant and unpleasant aspects of this.
 - Remind yourself that you can always have more later.
 - What thoughts and feelings are present as you eat and as you decide to stop? What beliefs and stories do you tell yourself about food and eating?
 - Be present for the last bite as you were present for the first bite.
 - If you feel you've eaten more than enough or feel too full, do not feel that you failed, just be aware of this fullness. It takes time to learn new ways of eating and stopping, every time that you eat is a time to practice again. Practice while being kind to yourself and being curious.



To deepen this experience, you can ask yourself the following questions:

- What did you notice?
- Which of the basics are more difficult for you?
- Which are the easiest?
- How is this different from the way you usually eat?
- How will it change the way you eat in the future?
- Awareness of your current habits is the first step towards mindful eating

Afterwards, here are some advantages of mindful eating you might feel:

- Allows to reconnect with sensations and to be conscious of our relation to food, how and why we eat.
- Experience our food consumption in a new way in a society where eating has become automatic.
- Be conscious of our emotional relationship with food and feeling full.

Why?

- To reconnect to our feelings and emotions
- Re-discover our balance
- Stop diets
- Re-discover the pleasure associated with food

TAKE CARE OF
YOURSELF!



EMERGENCES

WHAT YOU WILL LEARN FROM MINDFUL EATING

1. **To single-task:** learn to focus on your meal only rather than on multiple distractions.
2. **Awareness:** learn to be aware of your feelings, emotions, thoughts, physical sensations to be able to identify and change your behavioural patterns.
3. **Objectivity:** learn to be aware of and observe your thoughts, feelings and physical sensations without interfering, from an objective point of view rather than a subjective one.
4. **Neutrality:** learn to consider your eating behaviour in a non-judgmental and accepting way.
5. **Letting go:** learn to let go of your old eating habits and of dietary obligations
6. **Listening to your body:** learn to understand and recognise your body messages for hunger and satiety.

3 IMPORTANT ASPECTS OF MINDFULNESS:



1.
Focused
attention

2.
in the present
moment

3.
with kindness and
without judge-
ment

MINDFUL EATING MEANS FOCUSING THE ATTENTION IN A KIND, NON-JUDGMENTAL MANNER ON:

- physical sensations
- associated thoughts and feelings.

“where, when, how and why” rather than “what”



MINDFUL EATING PRINCIPLES:

Be aware of ways to feed your body while you are cooking and listen to your inner wisdom.

- Choose food that is both pleasurable and nutrient-dense. Savour and taste with all your senses and take the time you need.
 - void automatic reactions towards food (like, dislike or neutrality) without judgement or criticism.
 - Listen your body signals for hunger and satiety as clues to start or stop eating – trust your body.
 - Be aware of the relationship between humans, animals, the earth, and the impact of our food choices on this system. Appreciate, be grateful and caring.



EAT MINDFULLY AT LEAST ONCE A DAY (A SNACK, A DRINK, PART OF A MEAL OR AN ENTIRE MEAL) AND WRITE YOUR OBSERVATIONS IN THE JOURNAL;

At least once a day, assess your hunger before, during, and after eating or drinking and write down your observations – **how hungry did you feel, how much was enough to feel satisfied, did you stop then, was it easy or difficult/why couldn't you stop?**

.....

WHAT IS HUNGER ?

Satiety hormones only start to be freed 20 minutes after we start to eat, when we eat too fast our body doesn't have time to judge if we are full and we overeat.

Slowing down means increasing our capacity to feel satiety, becoming more aware of what hunger feels like – allowing us to differentiate it from other physical sensations-, but also pleasure: more time to enjoy the experience.

Avoid impulsive behaviour: even if you see tasty food you are not obliged to immediately eat it – this will allow you to recognise what is truly good for you.

WHAT CAN LEAD YOU TO BAD EATING HABITS ?

1. GREED: FOLLOWING A PLEASURABLE FEELING AS YOU EAT

- a. As a distraction
- b. As a reward
- c. To feel full

2. OUTLET: EATING BECAUSE OF STRONG EMOTIONS

- a. For comfort against sadness, negative thoughts or physical sensations
- b. As a stress, irritation, tension relief
- c. To avoid unpleasant tasks
- d. As a punishment

3. RESTLESSNESS: EAT TO FILL IN A GAP

- a. Out of boredom
- b. Out of fear of emptiness, of having nothing to do

4. PRACTICALITY: READY-TO-EAT, FAST-FOOD

- a. Too tired or busy to make healthy decisions and cook at home

5. DOUBT: NOT BEING ABLE TO DIFFERENTIATE THE PHYSICAL SENSATION OF HUNGER FROM THE PSYCHOLOGICAL ONE

- a. Are you really hungry or do you think you «should be hungry» ?
- b. Do I follow rules about eating or what my body tells me ?

All these are habits that were created over the years and have become automatisms, nonetheless, once you become conscious of them you can very much adjust them through mindful eating.



ADVANTAGES OF MINDFUL EATING:

1. FEELING OF CALM AND BALANCE PRIOR, DURING AND AFTER EATING.
2. AWARENESS ABOUT PHYSICAL SENSATIONS (FEELING OF HUNGER, FULLNESS, WHAT YOUR BODY WANTS IN TERMS OF FOOD).
3. AWARENESS ABOUT YOUR THOUGHTS AND FEELINGS LINKED TO FOOD, WITHOUT JUDGING THEM, JUST ACCEPTING THEM.
4. AN OPEN-MIND WHICH LEADS TO FEELINGS OF ACCEPTANCE AND DIGNITY.



EXERCISE

- AT LEAST ONCE A DAY, PUT DOWN YOUR CUTLERY BETWEEN EACH BITE. WAIT UNTIL YOU HAVE SAVOURED AND SWALLOWED YOUR MOUTHFUL, TAKE A COUPLE OF BREATHS BEFORE PICKING UP YOUR FORK FOR THE NEXT BITE. WRITE DOWN YOUR EXPERIENCE IN YOUR JOURNAL.
- WRITE DOWN EXAMPLES OF WHERE/WHEN YOU EAT MINDLESSLY (WATCHING TV, SMARTPHONE, ON THE GO ETC.). WHAT IS THE NATURE OF YOUR EATING HABITS, WHERE ARE THEY MOVING TOWARDS?

FOOD HABITS

OUR FOOD HABITS ARE A RESULT OF CULTURE, FAMILY HABITS, ADVERTISEMENT AND PEER PRESSURE, AND MANY ARE UNCONSCIOUS.

DIFFERENT TYPES OF FEELINGS ASSOCIATED WITH FOOD:

- . ANGER: WHEN THE FOOD IS NOT READY OR THROWN AWAY.
- . UNSTOPPABLE DESIRE: "ADDICTION" WHEN FOOD IS "NEEDED" IN DIFFICULT SITUATIONS.
- . AUTOMATIC ACTION: FORGET YOUR FEELINGS.

-> ASK FAMILY MEMBERS WHAT THEY RECALL FROM YOUR EATING HABITS AS A KID.

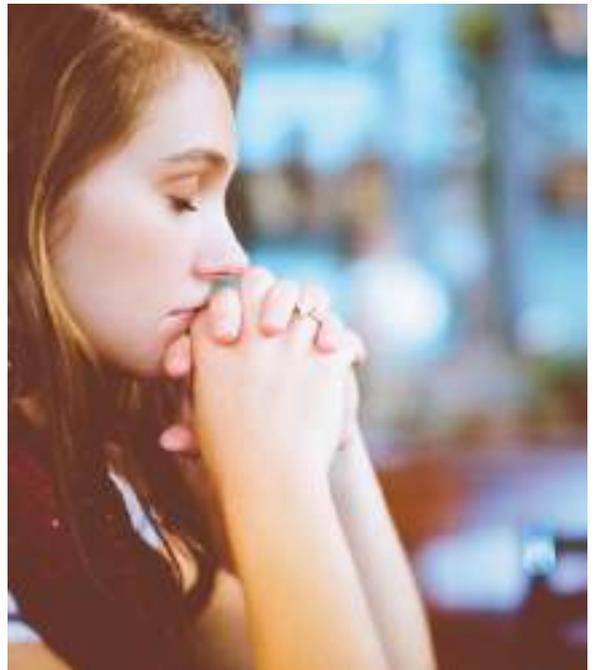


SATIETY AND SATISFACTION

HOW DO YOU KNOW WHEN YOU'RE HUNGRY? FEELINGS OF HUNGER CAN ALSO BE SIMILAR TO OTHER FEELINGS (E.G. STRESS, ANXIETY, TIREDNESS, ETC.).

CELLULAR HUNGER ALSO EXISTS: THE BODY ASKS FOR FOOD THAT IS NUTRIENT-DENSE.

- YOU SHOULD DETERMINE WHAT YOU WANT – TAKE A MOMENT AND LISTEN TO WHAT YOUR BODY TELLS YOU, DOES IT WANT PROTEINS, CARBOHYDRATES, LIPIDS, VEGETABLES OR FRUITS?
- YOU SHOULD DETERMINE YOUR PORTION SIZE – IT ALWAYS DEPENDS ON YOUR PHYSICAL NEEDS AT THAT PRECISE MOMENT.



SATIETY: HOW TO KNOW

IDEAL SATIETY MEANS THAT YOU STOP WHEN YOU ARE NEARLY FULL – 20-25% OF SPACE SHOULD BE LEFT, MEANING THAT YOU ARE NOT HUNGRY ANYMORE BUT THERE IS STILL SPACE TO RELAX AND BREATHE, YOUR CLOTHES DO NOT BOTHER YOU, AND YOU FEEL ENERGISED AND COMFORTABLE RATHER THAN HEAVY AND SLEEPY.



WHY DO YOU EAT TOO MUCH?

- Loss of control due to a long restriction
- Overeating to stop negative feelings
- Taste: cannot stop because of your taste buds want more
 - Empty plate: fill your plate too much and feel you must finish your plate
 - Ignored satiety feelings too often – brain sends less satiety hormones

TOOLS TO LIMIT OVEREATING:

- Smaller portions: use smaller plates or do not entirely fill your plate
- Slow down: eat more slowly – your body needs 20 min to realise you've eaten
 - Leave a piece of food on your plate at every meal – it will break the habit of “having to finish your plate”
- Find the balance between enjoying and satiety.

EXERCISE:

WHEN YOU EAT, ASSESS YOUR SATIETY LEVEL BEFORE, DURING, AND AFTER YOUR MEAL. MIDWAY THROUGH THE MEAL DECIDE HOW MUCH YOU WILL STILL EAT BASED ON HOW FULL YOU FEEL. AIM TO BE 75% FULL AND DRINK A LARGE GLASS OF WATER AFTERWARDS. REASSESS YOUR HUNGER AFTER 20 MIN.



WHY DO YOU EAT? – BE CONSCIOUS OF WHAT PUSHES YOU TOWARDS TOO MUCH OR NOT ENOUGH FOOD

EMOTIONS:

- Difficulty, frustration, irritation
- Sadness, disappointment
- Restlessness, annoyance, agitation
- Anxiety, doubt, uncertainty
- Happiness, joy
- Loneliness, feeling of incomprehension, lack of something, “emptiness”
- Guilt, shame
- Disgust, aversion
- Worrying about calories, health, etc.

SOCIAL BEHAVIOURS:

- Eating because people around you eat more
- Because you can’t say no
- To stay longer
- Because you feel uneasy



SITUATION:

- Eating when the chance arises – walk in front of a restaurant, bakery, while watching tv, at the cinema, etc.

Before you start eating, assess why you are eating: what is your current emotion – what lead you to eat? Does it impact what/ how much/ how you eat?

FUNDAMENTALS OF MINDFUL EATING:

- The aim is not to get rid of feelings or to empty your head – there will always be things that comfort or stress you.
 - Do not let feelings that direct your eating behaviour drown you. Examine and assess your feelings, be aware of them and keep a healthy distance.
 - Give your feelings and thoughts the required space to be brought up and disappear. You are more than a negative feeling or a food craving.
 - Mindful eating is about “AND” not “OR”, it’s about being aware of your eating behaviour and controlling them AND allowing yourself to be unhealthy once in a while, rather than having total control OR no control at all.

EXERCISE:

- Pin point 3 times during the week where you craved something. Write down the thoughts, emotions, physical sensations and the behaviour that resulted.
- Identify what trick of mindful eating you used/didn’t use and whether you could use it next time.



DIARY MINDFUL EATING JOURNAL

WHAT I ATE :

TIME :

HUNGER SCALE :

1 2 3 4 5 6 7 8 9
NOT HUNGRY STARVING

I ATE BECAUSE :

- CRAVING
- BORED
- STARVING
- SCHEDULE
- SOCIAL
- NEED FUEL

MOOD :



FEELINGS POST MEAL :

- STRONG
- FOCUSED
- BLOATING
- DIGESTIVE
- GASSY
- CRAVING
- ENERGETIC
- SLUGGISH
- FOGGY MIND
- OTHER :

WHAT I ATE :

TIME :

HUNGER SCALE :

1 2 3 4 5 6 7 8 9
NOT HUNGRY STARVING

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- FOCUSED
- BLOATING
- DIGESTIVE
- GASSY
- CRAVING
- ENERGETIC
- SLUGGISH
- FOGGY MIND
- OTHER :

ANNEX 2 – DAILY INTAKES SUMMARY TABLE

DAILY INTAKES SUMMARY TABLE

SOURCE: REFERENCE VALUES GERMAN SOCIETY FOR NUTRITION
LINK : [HTTPS://WWW.DGE.DE/WISSENSCHAFT/REFERENZWERTE/](https://www.dge.de/wissenschaft/referenzwerte/)

Guide Value for ...

... the energy supply in kcal / day

	Activity Level 1,4 sitting, hardly any physical activity		Activity Level 1,6 mostly sitting, walking and standing (most Students)		Activity Level 1,8 mainly standing and walking	
	male	female	male	female	male	female
13 to under 15 years	2300	1900	2600	2200	2900	2500
15 to under 19 years	2600	2000	3000	2300	3400	2600

... the carbohydrates in % of kcal / day

	Activity Level 1,4 sitting, hardly any physical activity		Activity Level 1,6 mostly sitting, walking and standing (most Students)		Activity Level 1,8 mainly standing and walking	
	male	female	male	female	male	female
13 to under 15 years	50	50	50	50	50	50
15 to under 19 years	50	50	50	50	50	50

FOODS THAT CONTAIN A LOT OF DIETARY FIBER ARE SALSIFY, BEANS, LENTILS, WHOLEMEAL PASTA, FLAXSEED, CHIA SEEDS, GRATED COCONUT, APRICOT (DRIED), PLUM (DRIED), GRAPE SEED FLOUR



... the dietary fiber in grams / day

	Activity Level 1,4 sitting, hardly any physical activity		Activity Level 1,6 mostly sitting, walking and standing (most Students)		Activity Level 1,8 mainly standing and walking	
	male	female	male	female	male	female
13 to under 15 years	23	19	26	22	29	25
15 to under 19 years	26	20	30	23	34	26

... the dietary fiber in grams / day

	Grams per kg of body weight		Grams per Day	
	male	female	male	female
13 to under 15 years	0,9 GRAMS	0,9 GRAMS	50 GRAMS	49 GRAMS
15 to under 19 years	0,9 GRAMS	0,8 GRAMS	62 GRAMS	48 GRAMS

... the daily minerals in milligram

	13 to under 15 years		15 to under 19 years		Foodstuffs for example
	male	female	male	female	
Vitamin A / Beta-carotene	1,10	1,00	1,10	0,90	Liver (calf), Carrots, Liver sausage (coarse), Savoy, Palm Oil, Peppers (red), Spinach
Vitamin D	20	20	20	20	Eel, herring, salmon, lamb's liver, Chicken egg, chanterelle (raw) the Sun
Vitamin E	14	12	15	12	Wheat germ oil, sunflower oil, tomato paste (salted), chicken egg yolk, wholegrain biscuit, rye
Vitamin K	50	50	70	60	Cauliflower, broccoli, Chinese cabbage, avocado, strawberries, spinach, quark 40% fat, Emmentaler 45% fat i.Tr., chicken liver, calf's liver, pumpkin seeds, rapeseed oil, grapeseed oil
Vitamin B6	1,4	1,4	1,6	1,2	Walnut kernels, salmon, goose, chickpeas, peanut kernels, poppy seeds
Vitamin B12	4	4	4	4	Camembert, Edam, Emmentaler, herring, tuna, oysters, liver,
Vitamin C	85	85	105	90	Paprika, Sorrel, Broccoli, Cauliflower, Acerola, Papaya, Lemon, Kiwi, Orange,
Calcium	1200	1200	1200	1200	Emmentaler, Parmesan, Gouda, milk, spinach, buttermilk, yoghurt (natural), hazelnuts, Brazil nuts
Magnesium	310	310	400	350	Sunflower seeds, flaxseed, rice, oatmeal, kohlrabi, bananas, saithe, zander, chicken, salami, tilsiter, dark chocolate
Iron	12	15	12	15	Wholegrain bread, oatmeal, peas, beans (white), chickpeas, lentils, lima beans, salsify, spinach, cocoa powder, greens
Jod	200	150	200	150	Table salt (iodised), mushrooms, broccoli, peanuts, spinach, pumpkin seeds
Zinc	9,5	7,0	10,0	7,0	Oysters (cooked), Calf's liver, Pork liver, Beef (cooked), Edam, Gouda, Wheat bran, Pumpkin seeds, Linseed, Pulses,



GOALS OF THE SECTION

After reading this section you will understand how and why growth charts are used. Additionally, we explain how to mark the centiles values of your height, weight and BMI. Thanks to this you will be able to check whether you are growing at the correct rate or not.



KEY TERMS & CONCEPTS

Centile lines: The centile lines on the chart show the expected range of heights, weights and BMI; each describes the number of individuals expected to be below that line, e.g. 15% below the 15th, 97% below the 97th.

Pubertal growth spurt: Adolescent growth spurt is intense increase in the rate of growth in height and weight. This growth practically occurs in all of the long bones and most other skeletal elements. During this period, significant changes in appearance, needs, behaviour and interests are observed. The pubertal growth spurt begins on average at 10-12 years for girls, and 13-15 for boys, however there is considerable variation between individuals and populations.

WHO Growth charts: The WHO growth charts are international standards that show how healthy children and adolescents should grow. These standards were developed using data collected in the WHO Multicentre Growth Reference Study and other curves obtained in some countries. The charts indicate a subject's size compared with age-mates of the same gender who have shown normal growth. Measuring individual growth and plotting on growth charts is quick and easy. Growth charts are not a diagnostic tool, but rather contribute to forming an overall clinical impression of the subject being measured.

WHO – World Health Organisation: WHO is the directing and coordinating authority on international public health within the United Nations system. WHO was established on 7 April 1948, and is headquartered in Geneva, Switzerland. The WHO currently has 194 Member States. Its current priorities include communicable diseases (in particular HIV/AIDS, Ebola, malaria and tuberculosis); prevention and control of the non-communicable diseases; nutrition, food security and healthy eating; substance abuse; and driving the development of reporting, publications, and networking.

KEY KNOWLEDGE

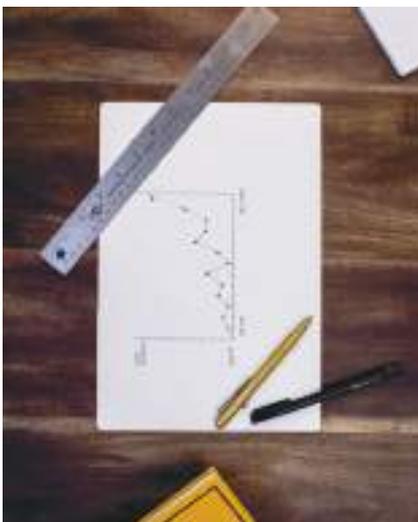


• WHAT ARE GROWTH CHARTS

They are graphs based on global statistical data. The growth chart is one of the methods of objective evaluation of the physical development of subjects aged 1 to 18. The most frequently assessed are: body height, body weight and BMI of a particular subject in relation to a particular population (usually the residents of a particular country). Data on growth charts is shown on two axes: the horizontal axis – the subject's age and the vertical axis – the parameter being evaluated

• WHAT ARE THE COLOURED LINES IN THE CHART? WHAT ARE CENTILES?

Five curves run through the chart: the 3rd and 97th percentiles are marked in red; the 15th and 85th in orange colour, and the 50th percentile is in green.





PERCENTILE CLASSIFICATION BMI-FOR-AGE (INTERPRETATION):

GROWTH STATUS	PERCENTILES (5) 19 YEARS)
Underweight	< 3rd
Healthy weight	3-85th
Overweight	> 85th
Obesity	> 97th

The 97th percentile line is the highest – this means that 97% of subjects from the particular population have a value below that.

The centile is a value that indicates the 'position' of the examined subject among their peers. For example, if the subject's weight is around the 50th percentile, this means that he/she ranks half way among his/her peers. If, on the other hand, the parameters in the growth chart indicate the 97th percentile, this means that 97% of the subject's peers is leaner, and 3% is heavier. Values below the 3rd and above the 97th percentiles are considered alarming, requiring medical supervision and probably intervention.

• HOW TO USE THE BODY WEIGHT PERCENTILE CHART (WEIGHT-FOR-AGE)

Choose the weight-for-age chart for your gender (for girls or boys). Find a point on the horizontal axis corresponding to your age (in years and months), and on the vertical axis the corresponding to your current body weight (in kilograms). Follow a vertical line up from the first and across from the second of these points. The intersection where the lines meet is called the centile position. It should be within the limits of the appropriate range defined by the lines running through the growth chart.

Important! Weight is influenced not only by age, but also by height. Thus, weight-for-age reference data are only available up to the age of 10, because after this age, many girls go through the pubertal growth spurt (a fast and intense increase in the rate of growth in height and weight that occurs during adolescence; in girls this usually starts at the age of 10-12, in boys 13-15). During this period, the weight-for-age index is not a suitable method of weight assessment, because it may seem to show that the subject has excessive body weight, whereas in reality he/she is simply tall. An example of reading a weight percentile value is shown below.

Example:

The weight of a girl aged 9 years and 3 months is 35 kg. The centile of her body weight is 75. This means that her body weight is greater than 75%, and less than 25%, of girls at her age.

HOW TO USE THE BMI GROWTH CHART (BMI-FOR-AGE)

Body mass index (BMI) is a factor created by dividing the body mass in kilograms by the square of the body height given in meters:

$$BMI = \frac{BODYMASS \times KG}{(BODYHEIGHT \times M)^2}$$

$$BMI = \frac{58KG}{(1.66M)^2} = \frac{21.0KG}{(M)^2}$$

Height affects weight and therefore tall subjects can be categorised as being overweight or obese when they are not. For mathematical reasons, raising the height to the square reduces the influence of height on the weight and gives a more precise idea on the nutritional status of the subject. Measuring the body mass index is important in the assessment of the risk of diseases related to being overweight or obese, e.g. diabetes, ischemic heart disease, atherosclerosis. An increased BMI value is associated with an increased risk of these diseases.

Example

The body weight of a boy aged 15 years and 9 months is 58 kg, and his height is 166 cm. We should first determine the boy's BMI. Next, on the BMI growth chart for boys, one should find on the horizontal axis the point corresponding to the age of the boy and, on the vertical axis, the corresponding BMI. This point is between the 50th and 85th percentiles. This means that that boy has a weight appropriate for his height.

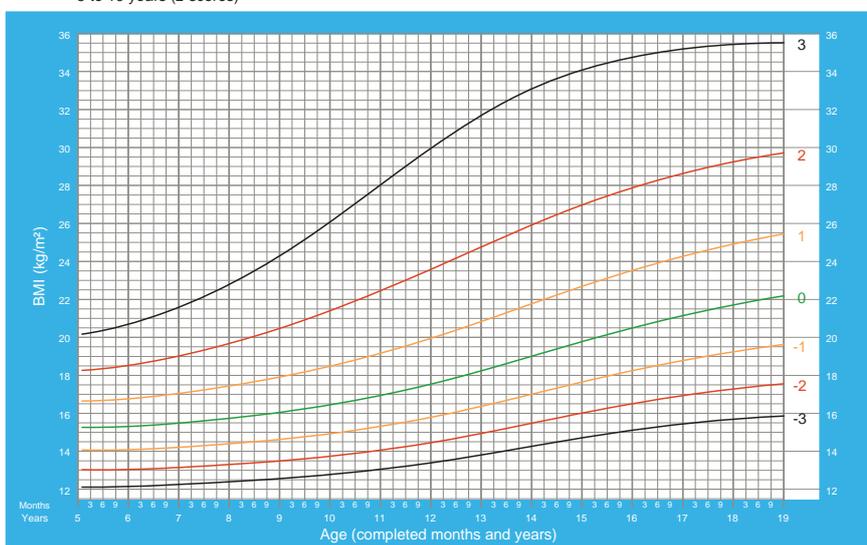
This annex presents growth reference data for children and adolescents from 5 to 19 years of age. Below, reference charts and tables by indicator are presented:

- BMI-for-age (5-19 years)
- Height-for-age (5-19 years)
- Weight-for-age (5-10 years)

What is important to understand is that there is no single perfect value of height or weight, but that there is a range in which different weights and different heights are perfectly normal. Beauty means being oneself and not being all the same.

BMI-for-age BOYS

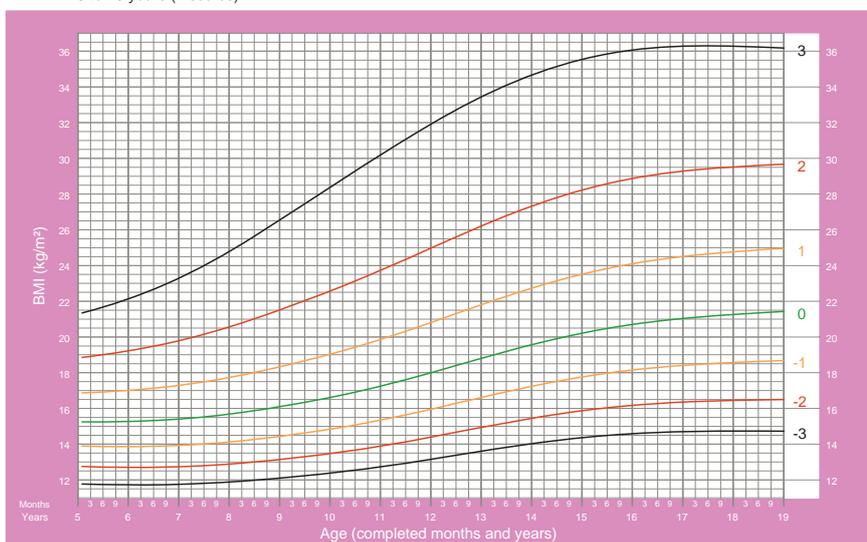
5 to 19 years (z-scores)



2007 WHO Reference

BMI-for-age GIRLS

5 to 19 years (z-scores)

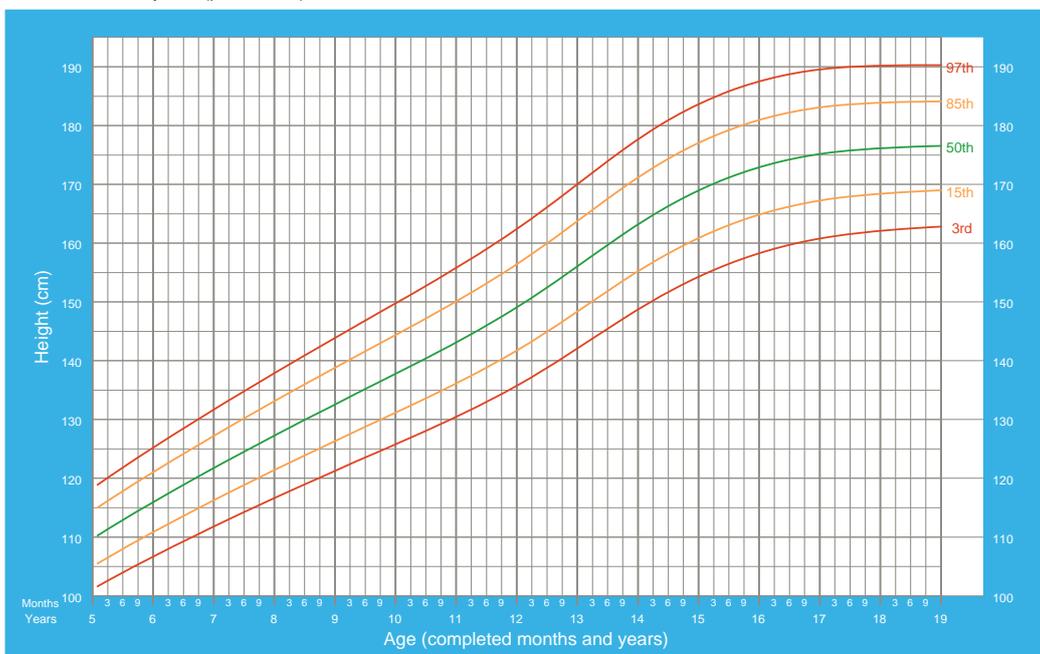


2007 WHO Reference



Height-for-age BOYS

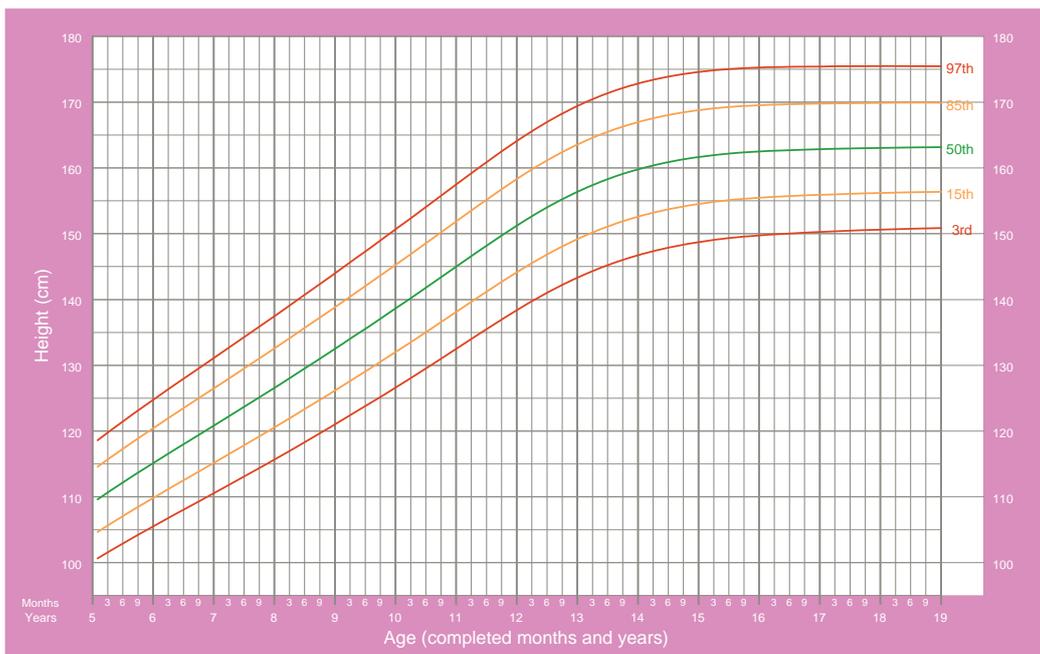
5 to 19 years (percentiles)



2007 WHO Reference

Height-for-age GIRLS

5 to 19 years (percentiles)

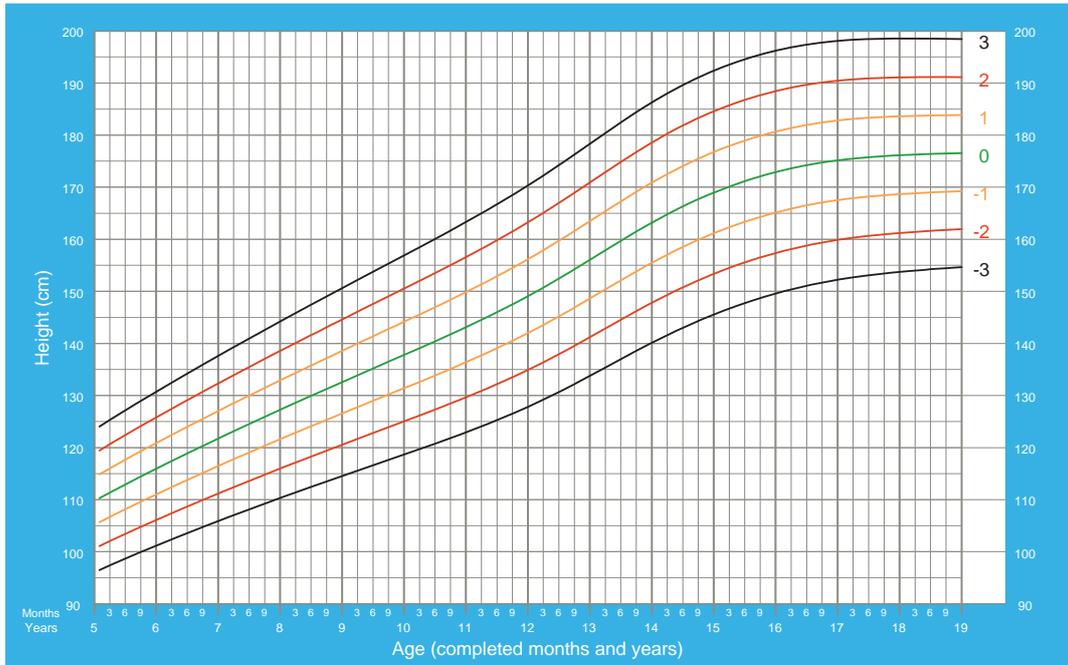


2007 WHO Reference



Height-for-age BOYS

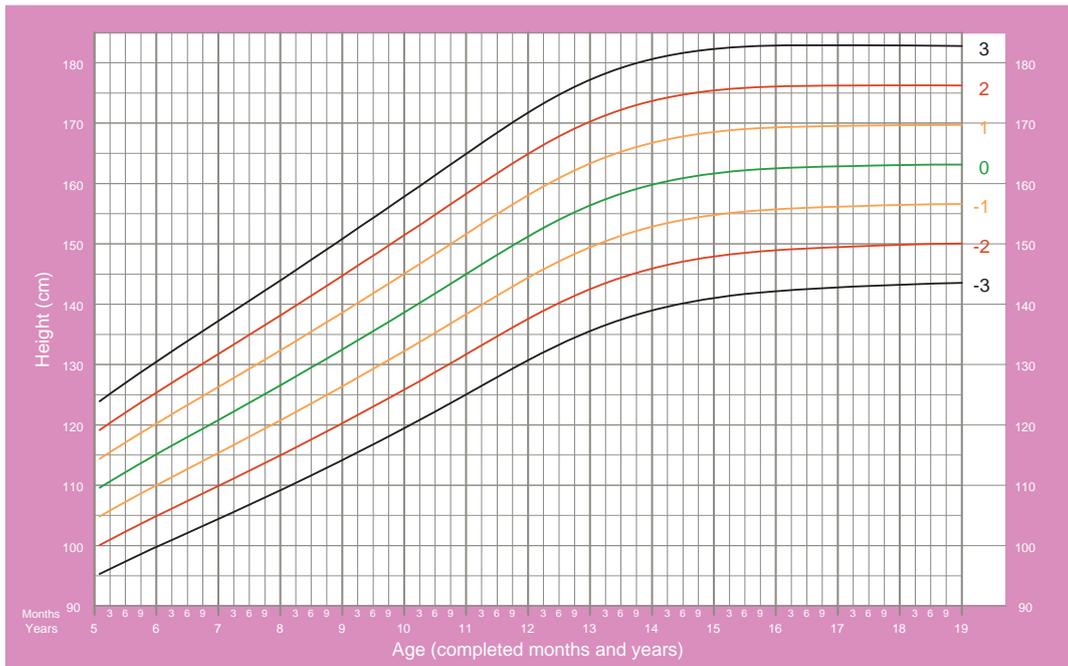
5 to 19 years (z-scores)



2007 WHO Reference

Height-for-age GIRLS

5 to 19 years (z-scores)

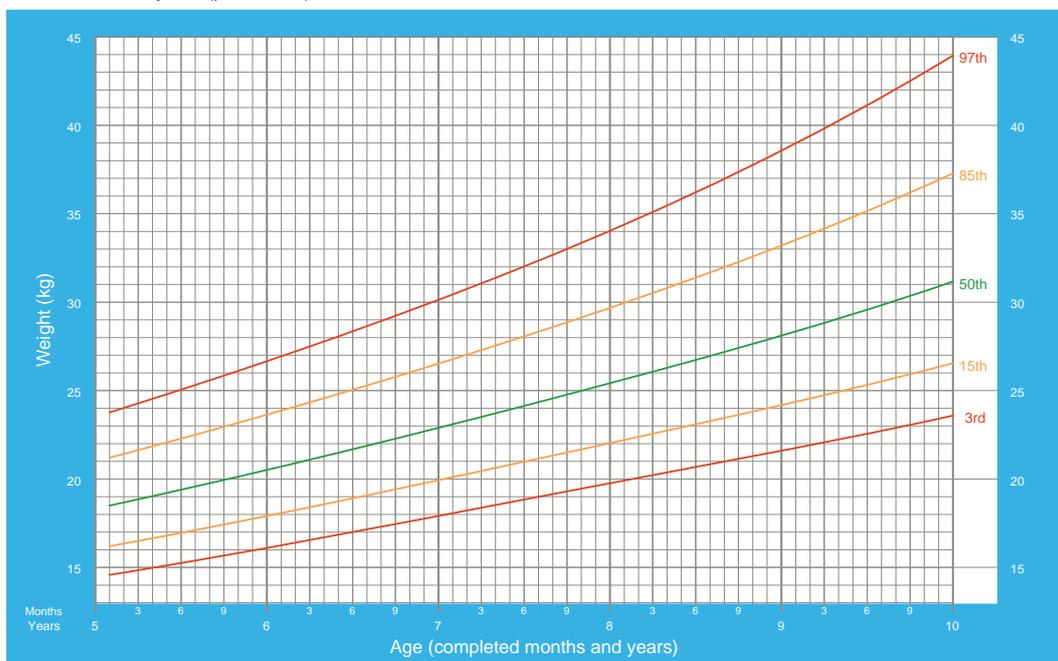


2007 WHO Reference



Weight-for-age BOYS

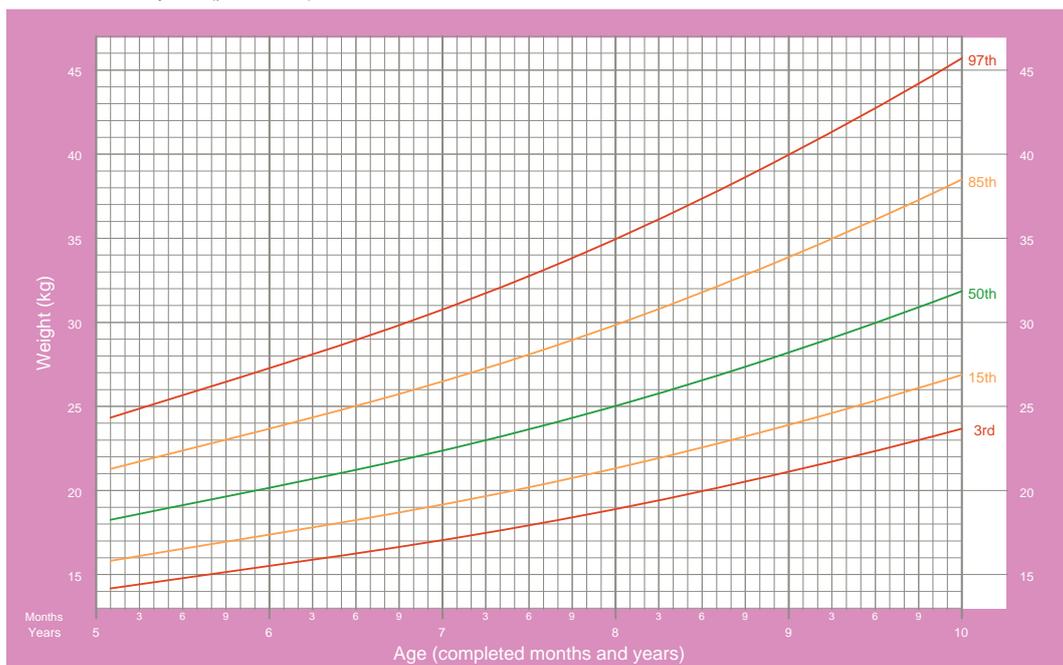
5 to 10 years (percentiles)



2007 WHO Reference

Weight-for-age GIRLS

5 to 10 years (percentiles)

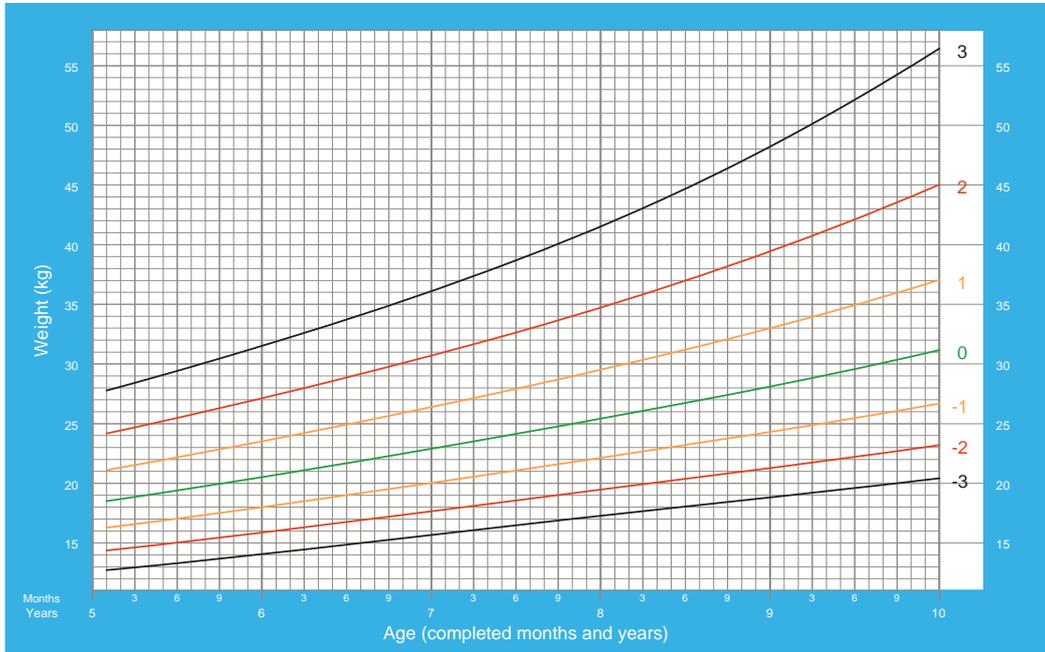


2007 WHO Reference



Weight-for-age BOYS

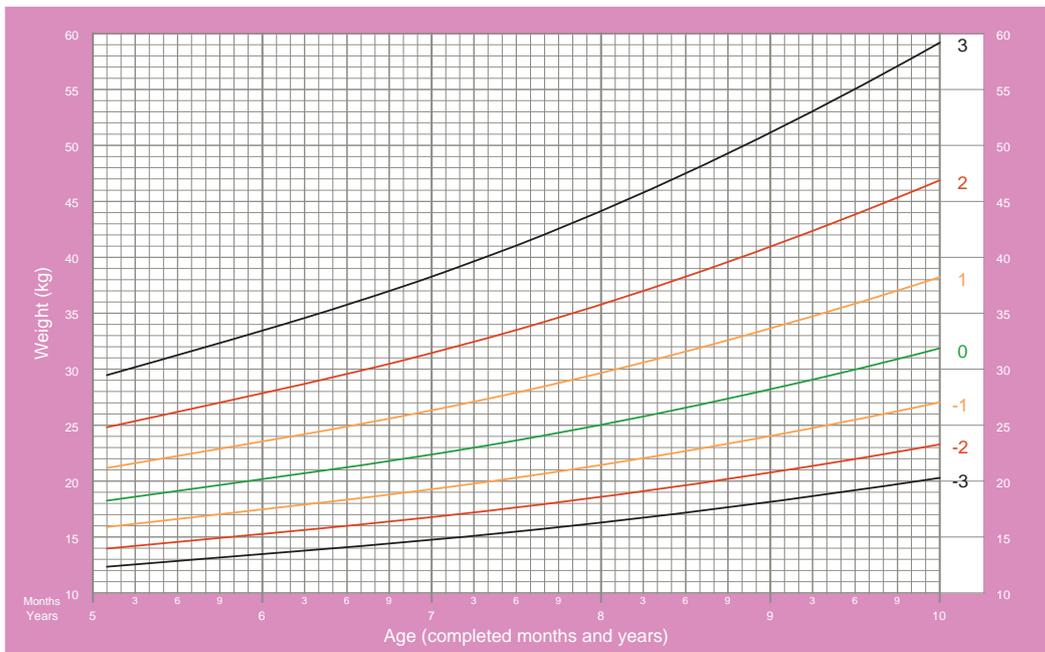
5 to 10 years (z-scores)



2007 WHO Reference

Weight-for-age GIRLS

5 to 10 years (z-scores)



2007 WHO Reference

AND THIS IS THE END OF THE ADVENTURE GUYS! I HOPE YOU'VE LEARNED A TON OF USEFUL THINGS TO HELP YOU TO A HEALTHIER LIFESTYLE!

To continue the adventure, visit our website [HTTPS://MEET-TAO.EU/](https://meet-tao.eu/) and follow us on Instagram and Facebook with **#MeetTao**



WE HAVE A LOT OF PEOPLE FROM ALL OVER THE WORLD TO THANK FOR MAKING THIS POSSIBLE!





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