



# **HEALTHY DIET FOR CHILDREN - CHILDHOOD OBESITY**

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# **Table of Contents**

## **1. Abstract**

## **2. Introduction**

## **3. Core contents**

**3.1 We talk to children about healthy diet**

**3.2. We talk to parents - how to help your children?**

**3.3. Childhood obesity in general**

## **4. Put into practice**

**4.1. Childhood obesity in general**

## **5. Further readings**

## **6. Bibliography**

# The Unity

<b>Title</b>	<b>HEALTHY DIET FOR CHILDREN- CHILDHOOD OBESITY</b>
<b>Area</b>	Healthy nutrition
<b>Main Target Audience</b>	<p>The end users of the module are:</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Adult training centers</li> <li>➤ Parents of minors and pregnant women</li> <li>➤ Pupils</li> </ul>
<b>Description of the module and general aims</b>	<p>This module allows the participant to understand:</p> <ul style="list-style-type: none"> <li>- The 10 secrets of healthy diet</li> <li>- How we eat</li> <li>- Physical activity and health</li> <li>- Principles of a balanced diet – Recommendations</li> <li>- General tips for the enhancement of proper child nutrition</li> <li>- Behavior-techniques of the parents to change children's dietary habits</li> <li>- How to motivate a child to exercise?</li> <li>- Childhood obesity – how it appears</li> <li>- When the child needs to lose weight and how much</li> </ul>
<b>Learning Time and Duration</b>	<p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours</p> <p>24 hours theoretical training</p>
<b>Learning Objectives</b>	<p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.</p> <p>Once you have completed this course you will be able to:</p> <ul style="list-style-type: none"> <li>- Understand the importance of affecting the dietary habits for a healthy life during childhood</li> <li>- Understand how to speak and guide children for a balanced diet</li> <li>- Teach children about what and where we eat</li> <li>- Understand the importance of physical activity</li> <li>- Understand the importance of paradigm</li> <li>- Be careful in order to prevent children to face the danger of obesity</li> </ul>
<b>Competences achieved</b>	<p>Specific competences related to the project theme</p> <ul style="list-style-type: none"> <li>- Knowledge of the nutritional needs of children</li> <li>- Knowledge of how to guide children towards healthy nutritional habits</li> <li>- How to be careful about the danger of obesity and how to face it if it happens</li> </ul>
<b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b>	<p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>- Face to face teaching</li> <li>- Online learning</li> <li>- Suggestion of additional websources and bibliograpy</li> </ul>

## 1. Abstract

This unit is structured into two main sections: (1) addressed to children and is more simply written and (2) addressed to parents and refers specifically to childhood obesity. In the first section stresses on understand the importance of affecting the dietary habits for a healthy life during childhood. It teaches children about what and where we eat. The second section consists on factors to prevent children to face the danger of obesity.

**Key words:** food groups, breakfast, complete meals, regular and steady meals, snacks, food quantity, water, servings, physical activity, exercise, child nutrition, balanced diet, childhood obesity, overweight

## 2. Introduction

It is obvious that the dietary habits acquired by children follow them for the rest of their lives as adolescents and adults. It is also known that at younger ages parents have greater power to influence children in all aspects of their behavior and therefore to those related to their diet.

But in order to guide children to the direction of healthy nutrition (nutrition that ensures health) parents should believe that proper nutrition ensures health for themselves and for their children. The role of the family to the formation of habits of nutrition and exercise for proper development and to the regulation of the child's body weight is crucial. The proper informing of the parents and the practices they follow are the best supplies for the children to be healthy and to adopt good lifestyle habits.

Concerning the regulation of children's weight, regarding the diet, the emphasis is given to the variety of food choices in moderation, to the reduction of the quantity of food, to the increase of consumption of fruits and vegetables, to the limitation of sweets and soft drinks and also to the improvement of the conditions of the meals (how we eat).

Regarding the exercise, it is recommended that the children are more physically active every day, either in the form of organized activity (eg sports) either in a game or daily activities (works, walking).

At the same time is recommended the reduction of the time of involvement with the "screens"(eg TV, video games). We note that where we mention advice for "parents", they might concern people within or outside the family involved in the children's diet.

In recent years, obesity has taken on epidemic proportions, as described by the World Health Organization. The increasing rates of childhood obesity are worrying and our country has one of the highest in Europe. Obesity is caused by many factors, with diet and exercise to be particularly important and for this reason they constitute the main goal of change to address the problem. The need for prevention and treatment of childhood obesity is high due to the negative impact on children's health, the high probability of obese children to become obese adults, and also because the efforts of treating obesity in adults do not have good results. The treatment of obesity is more successful in children than in adults because children grow (tall), so they do not necessarily need to lose weight to improve the height-weight ratio, they are more flexible in changing wrong dietary habits and they have more opportunities for physical activity compared to adults.

## Section I

### 3. Core contents

#### 3.1. We talk to children about healthy diet

In order to be healthy to regulate your weight, to have energy for playing and reading, it is important to obtain good dietary habits and proper physical activity habits (eg exercise, play, dance, sports, walking). Let's see them one by one. Concerning the dietary habits, what is important is **what** you eat, **how much** you eat but also **how** you eat!

##### 3.1.1. The 10 “secrets” of proper diet

###### 1. I have variety - I eat from all food groups

Foods are divided into groups according to their common characteristics. In order to be healthy, hale and strong, we need to eat foods from all groups, that is to have **variety**, as they offer us different substances such as vitamins, minerals, proteins, fats and more. Unfortunately no food contains all the nutrients we need. This means that it is good to choose foods from all groups and different foods from each group. Also, all the food is not needed in the same quantities, so we should eat of all in **moderation**. Therefore, when we eat of everything and in the right quantity we achieve **balance**. Food groups are usually divided as follows:

###### *Cereals: the group of energy!*

In this group belong bread, rice, pasta, potatoes, corn, breakfast cereals and all grains and their products. These foods give us energy that is they are like gasoline for our body, so we need to eat them every day to have energy for reading, sports and endurance to play. It is good to prefer whole grains, such as brown bread, whole meal pasta and brown rice.



### ***Fruits and vegetables: the multicolored group!***

Fruits and vegetables are very important in our diet because they offer us a lot of vitamins, minerals, trace elements and fiber, substances necessary for most functions of our organism. To this group belong all fresh, cooked and baked fruits and vegetables as well as dried fruits and juices. Prefer the fruits than juices because they will sate you better. Every day we need about 5 servings of fruits and vegetables. To achieve this, it is good to eat:



- Fruit as snacks (brunch, afternoon meal) and
- Vegetables with main meals (at lunch and dinner) either as a salad or cooked (eg beans, peas, briam (Greek mixed roasted vegetables), greens).

To remember easily the 5 servings, 5 are the primary colors of fruits and vegetables (red, green, yellow, orange and purple). It is good to eat a variety of fruits and vegetables of all colors!

*1 serving of fruit = 1 cup \* of fresh fruit or fresh juice = ½ cup of dried fruit*

*1 serving of vegetables = 1 cup \* of fresh or cooked vegetables or vegetable juice = 2 cups of green leafy vegetables*

*\* where we refer to cup, we mean cup of tea*

### ***Dairy: the group that strengthens bones and teeth!***

In this group belong the milk and dairy products that is cheese and yogurt and also desserts based on milk such as frozen yogurt and creams. It is a very important group for children because these foods are



rich in calcium, which is essential for their development and for to have strong bones and teeth. You need 2-3 servings of dairy a day.

*1 serving of dairy = 1 cup of milk = 1 cup of yogurt = 1 small piece (45 g.) of cheese = 1 cup of frozen yogurt or ice cream*

### ***Meat and meat products, fish, eggs, legumes***

This group is often called the "protein" group because the foods that belong to it are rich in protein and iron. Proteins are important components of foods that help us to "build" our bodies, to grow and to be strong. Iron is a mineral that is necessary for oxygen transport in the body. To this group belong the various types of meat, fish, seafood, eggs and legumes.

The types of meat are divided into "red" and "white."  
As "red" we mean beef, goat, pork whereas as "white" chicken, turkey, rabbit, fish and seafood.

In legumes they belong lentils, beans, chickpeas, butter beans and fava bean. In addition to the above ingredients, they are rich in fiber, which helps the intestine to function better.



You do not need to eat daily the foods of this group, but few times per week each one. More often it is best to eat fish (1-2 times / week) which help to have strong bones, healthy eyes and protect our heart, legumes (1-2 times / week) and poultry while less red meat and even less its products (sausages, ham, parizer meat etc.).

### **Fats and oils**

In this group belong the different types of oils and also foods consisting mainly of fat. That is all the oils (such as olive oil, corn oil), margarine, butter, mayonnaise and sauce based on mayonnaise, olives, nuts and bacon. We use them in cooking, salads and also in sweets. As in other food groups, all foods in this group do not have the same quality in our country. Olive oil is more beneficial, abundant and in excellent quality. However, because the oil and fat provide a lot of energy, caution is needed in their quantity.

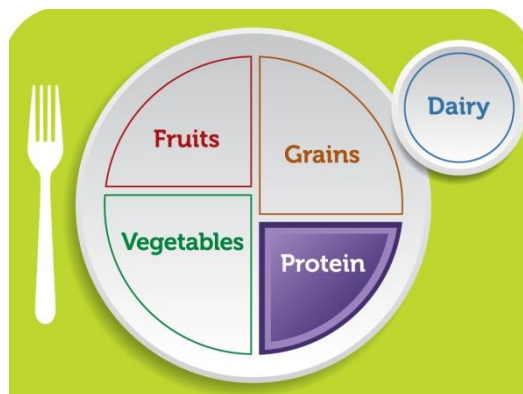


### ***Sweets, soft drinks and salty snacks***

In this group belong mainly some sweets and snacks like biscuits, croissants, cakes, pastries, chips, crisps, soft drinks or juices with sugar. They have nice taste and they are normally consumed as snacks, delicacies and treats. These foods are rich in sugar and fat (usually of bad quality) while on the contrary low in vitamins. It is good then to eat them in moderation for both your health and the health of your teeth and for the regulation of your weight. As a snack, it is better to prefer first a food from the group of fruit and less often some sweet (up to 2-3 times / week)



### **How to put the food groups on my plate?**



**Image1.1. Food groups on my plate.**

**Source:** United States Department of Agriculture (USDA), ChooseMyPlate.gov

- ✓ The plate in this image helps you see the advice for food groups all together.
- ✓ One healthy plate contains foods from all groups.
- ✓ Half plate is good to consist of vegetables and fruit
- ✓ Prefer whole grain cereals (starchy foods) (eg bread, whole meal pasta, brown rice).
- ✓ Remove the skin from the chicken and the fat from the meat.
- ✓ The quantities vary from child to child according to age, gender, growth and how active the child is.

## **2. I start my day with breakfast**

Breakfast is the first meal of the day and it has great significance. You may wonder: " *For what reason should I eat breakfast?*"



<b>Why should I eat breakfast?</b>
<b>To "fill batteries" after the night fast (due to sleep) and to have energy</b>
<b>Better concentration and alertness</b>
<b>Better performance in school</b>
<b>Better regulation of appetite and weight control</b>
<b>Opportunity for the family to be together</b>
<b>It is a long-term healthy habit</b>
<b>Ideas for breakfast</b>
<b>Milk and wholegrain breakfast cereals</b>
<b>Yogurt with fruit and honey</b>
<b>Milk and whole grain bread with honey or jam</b>
<b>Fresh juice and toast (cheese-turkey-tomato) with whole grain bread</b>

Therefore it is good to spend even five minutes for breakfast at home before you leave for school.

### 3. Complete meals

It is important for the health and proper development of the child, the main meals of the day (breakfast, lunch, dinner) to be "complete." This means that they should contain foods from three basic food groups: the group of cereals, protein (meat, fish, eggs, legumes, dairy) and fruit and vegetables. It is good with lunch and dinner to have salad always (or cooked vegetables eg beans). Each of these groups contributes in its way to the good function of the organism. The groups which constitute a "complete meal" are vividly sketched in the following image (1.2):



**Image1.2.** Complete meal= 1 + 2 + 3

Examples of **complete meals**:

- ☉ Breakfast: milk + cereal + fruit
- ☉ Lunch: chicken + potatoes + salad
- ☉ Dinner: Eggs + bread + salad

#### **4. Regular and steady meals**

By the apportionment of food at regular meals, you can avoid eating large quantity, something that usually happens when six or more hours have passed from the previous meal. You could eat 4-5 meals a day, 2-3 larger (main meals) and 1-2 smaller (snacks, brunch at school and afternoon meal). Also, if these meals are steady (not omitted, approximately the same hours) they help to meet the nutritional needs and to avoid snacking.

#### **5. Snacks**

Snacks are small meals (at school, afternoon meal) we eat between main meals (breakfast, lunch, dinner) to give us energy and not feel weakness, fatigue and intense hunger. Snacks are very important as the day of a child is very tiring because of school, reading, activities and sports. Unfortunately the favorite snacks of children are often various pastries (eg biscuits, croissants), chips, crisps and soft drinks. All this is not prohibited, but because they have too much fat, sugar and salt should be consumed in moderation (up to 2-3 times / week and in small quantities). Some good options for snacks at school and at home are:

<b>At school...</b>	<b>At home...</b>
Fruit (bananas, apples, mandarins, apricots, grapes which do not need peeling or it is easy with the hand)	Fruits or vegetables
Cut vegetables (cucumbers, carrots)	Yogurt with fruit or honey
Toast (cheese, turkey) and whole grain bread	Milk with whole grains
Cereal bars	Nuts
Dried fruits	Fruit salad
Bagel with sesame seeds	Crackers with cheese and turkey
Homemade cheese pie or spinach pie	Rice pudding
Homemade cake or cookies	Milk shake with yogurt, fruit, honey

#### **6. Food away from home**

It seems that when children consume food outside the home, and especially overweight children they eventually eat more during the day. Usually, food options away from home are fast food type (pizza, various ready flaky pastries eg cheese pie, ham and cheese pie) or packaged foods like chips, crisps, croissants, biscuits, chocolates, either from the canteen either from corner shops or bakeries. These, as we mentioned above, are rich in fat and sugar and among other things, their frequent consumption does not help in weight regulation.

To avoid such temptations it would be good to get some snack (food or fruits) from home with you to school or in the tutorial at the afternoon or at your walk, from the above good options.

#### **7. When I'm thirsty I drink...water!**

The human body is composed mainly of water (more than half of our weight!), which is essential for life. A sign that we need water is thirst, but thirst is often delayed, so we need to drink enough water even if not thirsty. We need more water in hot weather or when exercising or doing some other physical activity and we sweat. Almost exclusively of water consist and all liquid foods (e.g., juice, milk, *soft* drinks), as well as fruits and vegetables, so when drinking or eating them we get water. However, plenty of liquids such as soft drinks and some juices contain sugar and it is good to avoid them and do not drink them to quench your thirst. Our first choice when we are thirsty should be water!



#### **8. Sweets are allowed ...in moderation!**

The pastries and various desserts, as mentioned in food groups, contain a lot of sugar and often a lot of fat, and for this reason they are delicious! In the effort to regulate your weight and to stay healthy in general, they are good to be eaten in moderation, in small amounts (up to 2 times / week) and not at the expense of other foods such as fruits, which offer important and beneficial ingredients for the organism. Of course, not all the candy are the same, there are some healthier options you can prefer, also in moderation, such as:

- ☺ The rice pudding
- ☺ The pasteli (sesame honey candy)
- ☺ The jelly
- ☺ The ice lolly
- ☺ The preserve sweets
- ☺ Yogurt with honey or preserve sweet
- ☺ The frozen yogurt
- ☺ The dark chocolate

## 9. Food quantity- I eat as hungry

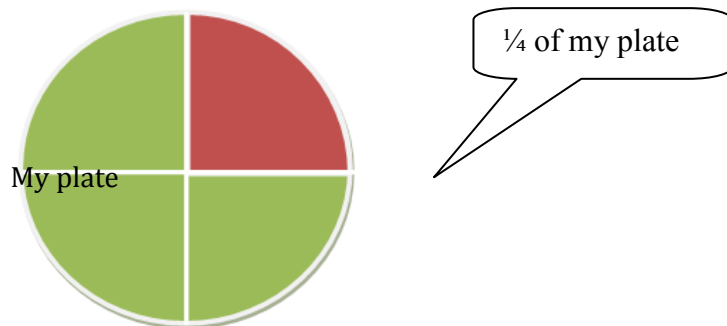
Among the most important factors in weight control is the control of the quantity of food. As we saw on the scale above, if you eat more than what you need, your weight will increase.

The quantity of food should be such as to sate you and not be hungry, without feeling stomach ache (bloating) when you finish eating. To better control the quantity of food, it is good to start eating with the salad and eat calmly, slowly and chewing food thoroughly. At the same time you should follow the rules that you will see in the next section "how we eat."

## 10. Servings

Apart from eating as hungry you can control the quantity of food also from serving size. Did you know that children over 4-5 years, the bigger their serving is the more they eat? So if you put from the beginning less on your plate, you are likely to eat less. The reduction in the quantity should be small, for example reduced by one fourth (as shown in image 1.3) and not from the group of fruits and vegetables.

You can remove it from the beginning by placing less or leave food on the plate. If you eat it and you are still hungry, then you can put back some food.



**Image 1.3.** Reduction of the quantity of food by  $\frac{1}{4}$ .

Apart from the serving size of the food, it is good to choose smaller servings when eating out and smaller packages of food or beverages. In this effort, you could ask your parents or those who serve you for help.

### 3.1.2. How do we eat?

Did you know that the way and the place we eat can affect the quantity and the type of food? For better control of meals, it would be better that the following conditions are met:

#### 1. I eat seated

It may be considered obvious but unlikely it often happens to eat lying in bed or on the couch or even standing (in haste). So I eat sitting on the chair and:

- @ Not standing
- @ Not in a haste
- @ Not walking / playing / dancing



## 2. I eat in an appropriate area

Each area of the house has its own role and not everyone is appropriate to eat. We eat at places we consider as appropriate like the kitchen or the dining room both meals and snacks and we avoid eating at places like the bedroom, the sofa in the living room, etc. So:

### @ *Where do we eat?*

In the kitchen / dining room, → eating area

On the table (kitchen / dining room) → dining room furniture

**NOT** in the bedroom, living room, bathroom

**NOT** on the couch, bed, desk

### @ *For what reasons?*

- In the appropriate area we have our attention on food and we eat in peace.
- We enjoy the food and we give it the attention needed. The other areas cover other needs.



## 3. I eat from and by appropriate utensils.

With this condition you avoid eating from the pot, the platter or large packages without control.

@ ***From where?***

Suitable utensils: dish (to eat), glass, bowl for liquids / sweet / yogurt / pudding / fruits

**NOT** from the pot, sheet pan, platter, package (eg bag, box)

@ ***With what?***

Suitable utensils: fork, knife, spoon

**NOT** with your hands, cooking spoons and forks



@ ***For what reasons?***

- We control better what and how much we have eaten, by having the right quantity on our plates.
- We avoid snacking.

**4. I eat without doing something else at the same time**

Dinner time is important. You concentrate on your food; you eat calmly and enjoy it. You avoid to do other activities such as watching TV, playing computer games, running / dancing / walking, reading, listening to music and more.



***For what reasons?***

1. Because we do not think of the food but our attention is on the activity we do. So we may eat more or without being hungry.

2. Each time we do the one thing, we want to do the other as well (eg when watching TV, wanting to eat). The two actions "*go together*" in our minds.

### 5. I eat when I'm hungry

It is one of the most important conditions! Hunger is a signal from our organism that we need energy, that is food, as the car needs fuel - gas. So if we eat without being hungry, it means that the food we ate was unnecessary and our body will store it for later use as "fuel". Think that every time you eat without being hungry may increase your weight. There are many reasons for which we eat (except when hungry) and lead us to eat without being hungry, as shown in the following image (1.4):



**Image 1.4.** Reasons we eat for.

Seek yourself the reasons for which you eat, which may also be different from the above and think about how often you can eat without being hungry.

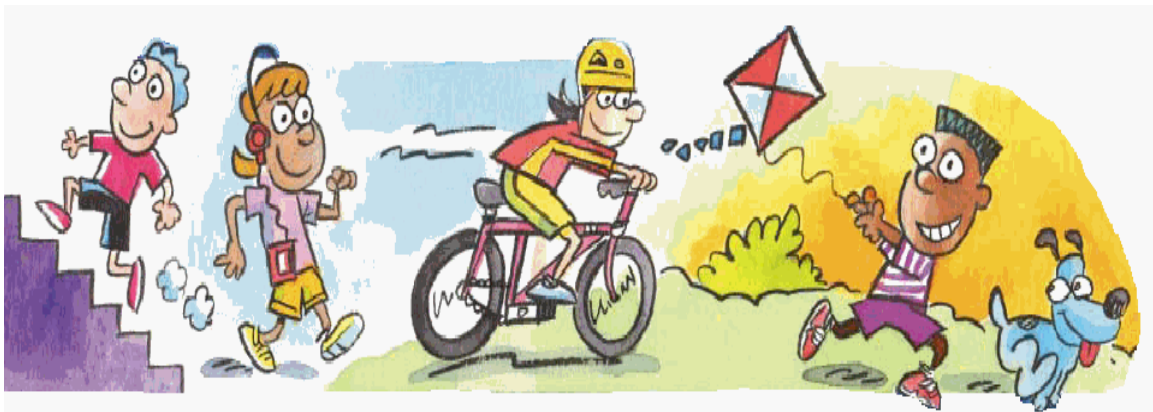


### 3.1.3. Physical activity

For the regulation of body weight, but also for overall good health and wellbeing, a balanced diet should be accompanied by daily physical activity. The term "physical activity" means all kinds of movement and exercise, such as walking, games that involve action and sports. Regular physical activity offers many benefits for physical and mental health of children and it seems that children who are physically active have better performance in school.

#### 1. Why should I exercise?

- In order to have healthy bones, muscles and joints.
- To strengthen the function of the heart and lungs.
- To increase my strength and my muscle strength.
- To have better reflexes, better motor control and synchronization.
- To maintain a healthy body weight.
- People who exercise generally follow a healthier lifestyle.
- It offers me psychological benefits such as reduction of stress and avoidance of depression.
- It helps me to increase my confidence and to be more social.
- To have fun and nice time with other children or with my parents.



#### 2. Increase of physical activity

According to the World Health Organization and other international organizations, it is recommended that children exercise at least 60 minutes (1 hour) per day in moderate or vigorous intensity (sweating a bit). Even if you lose some time from your homework, daily exercise is very important for the reasons mentioned above. This can include everyday



activities such as walking to and from school, walk with the dog, walking up and down the stairs, bike and organized activities such as sports and recreational games. It is important to be active also at school (fitness class, breaks, free time in the all-day school). It is best to choose something that you enjoy in order to have nice time during exercise and to do it for a long time!

Did you know that you also exercise when you do household chores such as:

- Work in the garden (gardening)
- Washing and arranging dishes
- Cleaning and tidying of a room
- Arranging and tidying toys
- Car wash

Apart from work, there are many other activities to choose from:

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**Individual or team sports ( eg. basketball, football, tennis)**

**Swimming**

**Dance (with music at home or outside the home)**

**Bicycle**

**Walking from or to school or tutorial or shopping**

**Stairs instead of elevator**

**Running**

**Walk with the dog or family**

**Participation in gym class at school**

**Play at the break in the schoolyard or in the evenings or weekend in the park, at the playground or in the house garden**

**Classic childhood games like hide and seek, chase, jump rope, thieves and robbers etc.**

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### **3. Reduction of sedentary activities**

In addition to the increase of physical activity it is also very important the limitation of time involvement with the "sedentary activities," which often "steal" time from motor activities. Sedentary usually include time the child spends in activities in front of a "screen" such as TV, video games, computer, mobile phone and tablets. For children older than 2 years, it is recommended a reduction in sedentary activities in to two hours time a day and their replacement with motor activities.



#### **4. Why to reduce time spent in front of the screen?**

- Because it reduces my time available for physical activity.
- Because it can increase food consumption. Especially television, it appears to affect the increase of the food and particularly of various snacks (such as soft drinks, potato chips, candy), in two ways:

- When we watch TV while eating, we are not thinking about the food, but our attention is on what we watch.
- Through food advertisements, which are usually of low nutritional value.

Therefore, it is good to choose what to watch on TV (eg your favorite series or movie) and what game you will play on the computer / tablet so that not to exceed 2 hours per day. If you already exceed the 2 hours by far you can decrease them gradually by setting a target along with your parents about how and what to see or play.

### **3.2. We talk to parents - how to help your children?**

#### **3.2.1. Principles of a balanced diet – Recommendations**

Dietary recommendations for children are similar to those for adults and are summarized in the following (according to the American Heart Association):

- ☺ For the maintenance of normal growth, there should be a balance between energy intake (food consumption) and energy expenditure (how much energy "spends" the organism for its basic functions and physical activity).
- ☺ Prefer vegetable oils and margarines and limit the consumption of animal fats such as butter, creams, mayonnaise, cold cuts, full-fat cheese and red meat.
- ☺ Remove visible fat from meat and skin from poultry.
- ☺ Prefer olive oil as the main source of fat in cooking and salads.
- ☺ Eat daily at least five servings of fruits and vegetables (restricted juice consumption).
- ☺ Eat daily 2-3 servings of dairy products, preferably low in fat.
- ☺ Prefer cereals and whole grain products such as breakfast cereals, whole meal

pasta and bread and brown rice.

- ☞ Limit the consumption of foods and drinks containing sugar such as sweets, soft drinks, fruit drinks and nectars in less than 3 per week.

- ☞ Eat salt wisely, including standardized - processed foods like salts, pickles, canned foods, salty snacks (eg crisps), cold meats, most cheeses, which contain a lot of salt (sodium). Keep in mind that salt is 'hidden' in our most common foods such as bread.

- ☞ In line with the recommendations of the Mediterranean diet, concerning weekly frequency of food, the child it is recommended to consume 2 times a week fish, 2-3 times legumes and foods in olive oil, 1-2 times per week poultry and 1 time per week red meat (beef, lamb, pork).



### **3.2.2. General tips for the enhancement of proper child nutrition**

- ☞ It is important to eat a variety of foods from all groups and to experiment with different recipes until you find the favorite of your children.

- ☞ When you want your child to try a new food, you can combine it with an already beloved. It is very likely that the child will not accept it from the beginning, so you need to have a lot of patience and try several times until finally the child tries it.

- ☞ Avoid making “special” food for children, that is different from yours. To eat the same food as you help to the formation of better dietary habits.

- ☞ Help the child to achieve the goals mentioned in the section "Child-what can I change?". For example, if you have prepared something for breakfast, it is more likely that the child will eat breakfast at home before leaving for school. Also, if you are away at mealtimes, it's nice to have food cooked and chopped salad. Similarly, you can prepare a nutritious snack for school or for afternoon so that the child avoids snacking.

- ☞ The control of the portion and the quantity of food is very important in weight regulation. If you serve the food to the child, you can reduce the quantity and put supplement only if the child is still hungry.

② Limit the purchase of various standardized snacks, sweets and soft drinks at home while you have available in a visible spot with easy access healthier choices such as fruits and vegetables.

② The change of dietary habits but also physical activity habits is difficult and takes time, so move on step by step, making small changes each time.



### **3.2.3. Behavior-techniques of the parents to change children's dietary habits**

#### **1. Check of the availability of foods**

The basic precondition for the consumption of a food is to be available. In the home environment the parent is responsible of foods supply and the provision of “healthy” choices. For example, if there are no fruits and vegetables available at home the children will not consume them. On the contrary, if there are available sweets, crisps, biscuits and especially if they are in a visible spot with easy access then there is a risk of overconsumption.

#### **2. Frequent exposure of children to the desired foods**

Even if food is available, it does not necessarily mean that the child will consume it. A key prerequisite is that the child is exposed to this food several times. Repeated exposure makes the food familiar to the child and appears to be the most effective technique for the child to accept some food and then consume it. It increases the liking and consumption of a food more than other techniques such as rewards or information (how good is this food) or the non-application of a technique. Exposure to food concerns the visual contact with the food and the taste (trial) as well. If the child rejects some foods (e.g. vegetables, legumes), then the parent may help by exposing these foods on a daily basis or even, if possible several times a day. The exposure should not be accompanied by encouragement or pressure of the parent for consumption. It is good to have patience and not to be discouraged since the acceptance of a food is learned slowly. It seems that more than 10-

15 times repeated testing is needed to be more effective and for the child to learn liking a food that initially did not like.

### **3. Presentation of food**

Children are affected by the appearance, presentation and also cooking of the food more than adults. They like more foods that are tender and juicy, crispy and colorful and do not prefer the hard and dry foods. Also, they usually prefer food to be separated on the plate and not mixed (eg separate the meat from the pasta or rice). In addition, children are more sensitive to the taste so it is likely not to like strong flavors like food with a lot of spices, herbs and salt and do not want to consume them. You can try to cut fruits and vegetables (for which there is often difficulty in consumption) in different figures, shapes or faces to be more attractive to children.



### **4. Yes to reward but not with food**

The reward is generally a tactic that encourages and urges further effort or the adoption of a behavior. The child is happy and feels good about its choice so there is an increased possibility of a repeat. However, the reward should be used with caution in order to have good results, as far it concerns the feeding of children:

- Parents often reward right dietary choices of children with another food, ultimately causing confusion in children. For example, if the parent insists that the child eats the lentils (which the child tries to avoid) and as a "gift" he uses ice cream ("If you eat lentils, after you will eat ice cream"), then in the eyes of the child the ice cream appears as the "good" -tasty food since it is offered as a gift and lentils as the "evil" - not tasty food since the child is offered a gift to eat it. So ultimately, parents achieve the opposite effect, that is they increase the desire for the "gift"-food (ice cream) and the dislike for "target"-food (lentils).
- Therefore, it is good to avoid using a food reward. Similarly, avoid the punishment also through food eg "If you don't turn off the TV, you will not eat chocolate."

- To avoid the above expressions, try to put a priority or a series on how to eat them that is for example, "food first, then sweet."
- If the reward is used, it is preferable to be verbal and not material, eg "Bravo, you did it!".
- Also, it is better to be small and not big, so it does not constitute the child's only motivation to eat.
- The reward should concern the quality rather than the quantity of behavior. If the child tries, even little of the lentils, this is a success ,it is not necessary to finish the whole dish from the first time!



## 5. Become a "model" for your child

Children have the characteristic of imitation to a great degree and also the need to function based on models, such as parents, teachers, their favorite heroes, persons of television and also peers-friends. The parents are the strongest influence factor, especially in young children. It seems that it is ***not enough that the parents simply inform*** the children on what food is nutritious and its importance but its ***consumption by the model-parent*** himself is required. Parents can be a "good example" to children by eating themselves the same foods they would like their children to eat, even bringing up how delicious they are. If the parents do not eat fruits and vegetables, for example, how do they expect their children to eat them? Children adopt the dietary habits of parents concerning the food they eat but also the overall eating behavior and attitude towards food. However, as children grow, the impact-imitation of peers grows as well. Nevertheless, parents can play a key role to the formation of the eating behavior of their children and also their involvement with the exercise.

### **Practical tips for parents:**

- Sit the whole family together at the table to eat as often as you can.
- Eat some food as snack (eg fruit) saying how delicious it is.
- Avoid the consumption of food and drinks in front of the TV (especially snacks like crisps, sweets, soft drinks).

- Always have salad with your meal.
- Play with the kids while exercising or exercise yourselves.

## **6. No pressure to eat**

The pressure on food consumption by the parents or grandparents is very common. The pressure concerns both foods children refuse to eat (eg, legumes, vegetables, fruits, milk) and the quantity of the food, like "Eat all of your food or otherwise you will not get up from the table", "Eat it for not to be wasted, it is a pity", "Come on, finish the last bite" and many others. It seems that the pressure for consumption usually brings negative results because:

- When children are forced to eat some food, they mainly express negative comments and feelings about it than positive.
- The result ultimately is the reduction of consumption of the food instead of increase and often repulsion.

However, the increase of the consumption of a food after pressure is observed only in children who were not familiar with the pressure for consumption by parents.

As in other matters so in food pressure is not a good tool for the modification of children's dietary choices. It would be better to try to use other techniques to help the child.



## **7. No to the restriction - yes to the limits**

Another common practice of parents is the restriction of consumption of certain foods such as crisps, chocolate and sweets as well as the quantity of food in an attempt to control the diet and often the weight of their children. Such a practice makes food more attractive in the eyes of children resulting in increased liking for them and their consumption even without being hungry, and especially in the absence of parents. Consequently, this may result in weight gain in children. It seems, indeed, that the greater the restriction the greater the consumption of food and various snacks and therefore it should be avoided. It is good that the parents have in mind that there are no "good" and "bad" foods, but foods that should be consumed more (eg fruit-vegetables) or less frequently (eg sweets). Therefore, for this reason, the sweets ARE NOT prohibited but the child could consume 1-2 sweets a week.



To avoid such a practice, you can give the child the freedom of choice within certain limits, helping your child to set a goal, eg how many portions of sweets the child may consume a week or by how many portions the child can reduce the consumption of such foods compared with last week. The targets set by the child should be realistic, achievable and small (one step at a time) but also provocative *in a way* (a difference must be made). Also, you can use milder expressions such as “less” or “more” than the “all or nothing”.

## **8. Family meals**

Nowadays, due to the working conditions of parents, children consume more and more meals alone. Even eating one meal a day with family is associated with better dietary habits of children. Parents can influence what and how much will be consumed by what they will serve and the atmosphere of the meal. It is good to care about having a calm and pleasant environment with the TV turned off and with discussion about issues that are not related to food (eg no negative comments about the child's weight or the quantity and the way he eats).



### **3.2.4. How to motivate my child to exercise?**

As we mentioned above, the family plays a key role in the formation of the character and habits of children. Parents should initiate their children from an early age in physical activity through games and activities in which it is good to be involved themselves, showing that with the exercise they have fun all together. The aim is to develop an active lifestyle through group or individual activities that are fun, creative and non-competitive. Also, as in the diet, they should be models of healthy lifestyles and exercise for their children, exercise with them, exercise themselves, motivate them to exercise by themselves and slowly teach them the importance of exercise for their health and also the quality of their life.



## Section II

### 4.1. Childhood obesity in general

#### 4.1.1. Definition - What does obesity mean?

According to the World Health Organization (WHO), obesity is defined as the increase in body weight beyond the normal as a result of excessive accumulation of fat in the body to an extent that affects the health of the individual.

Fetal age, age 4-6 years and adolescence are the most critical periods for the development of obesity.

Childhood obesity, according to WHO, is one of the most serious public health problems of the 21st century. In 2010, in the 27 members of the European Union, 20% of school children were overweight or obese (World Obesity Policy and Prevention). Greece has one of the highest rates of childhood obesity in Europe. In Greece, in the decade 2001-2010, 1 in 10 children, aged 1-12 years were obese and 3 out of 10 were overweight. Also, according to a recent study in children aged 6-12 years, 23.9% were overweight and 7.3% obese. The ever increasing rates are alarming and the need for intervention and lifestyle change is imperative.

#### 4.1.2. How does the obesity appear?

Think of obesity as a puzzle consisting of several pieces which all together play a role in its appearance. The most important of these pieces are the family, our genes (heredity), diet and exercise, as shown in image 1.

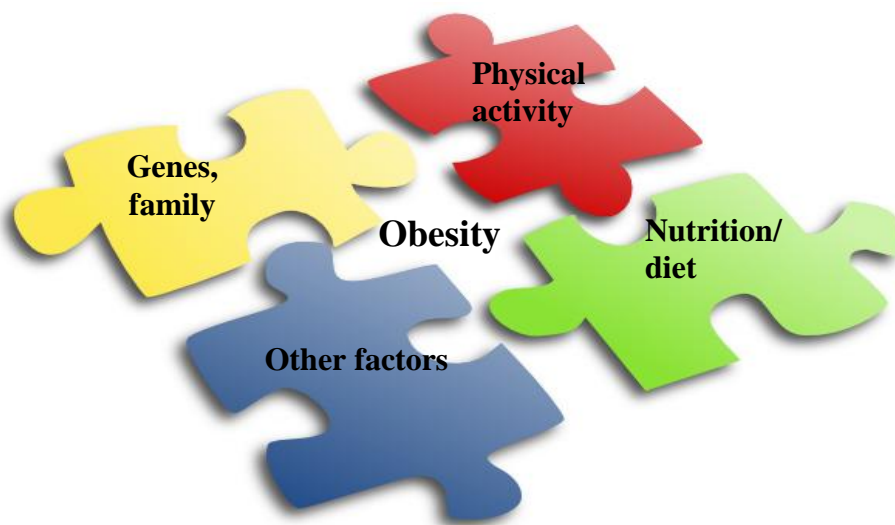


Image 3.1. Factors contributing to the appearance of obesity

Of the above factors, the dietary and physical activity habits are those that we can mainly change and which will ultimately determine the weight of a child. How, then, is happening the accumulation of fat mentioned above that results to obesity? Think of one scale. On one side of the scale is the energy that we give our organism with food (how much we eat) and on the other side of the scale the energy the organism "spends" for its various functions, movements and exercise. How much we eat and how much we spend form our weight. That is, depending to which way the scale tilts, the weight increases (tilts to the left), reduces (tilts to the right) or remains stable (the scale is balanced), as shown in image 3.2. When we eat more than what we "spend" mainly through exercise, then fat is concentrated in the body and weight increases.

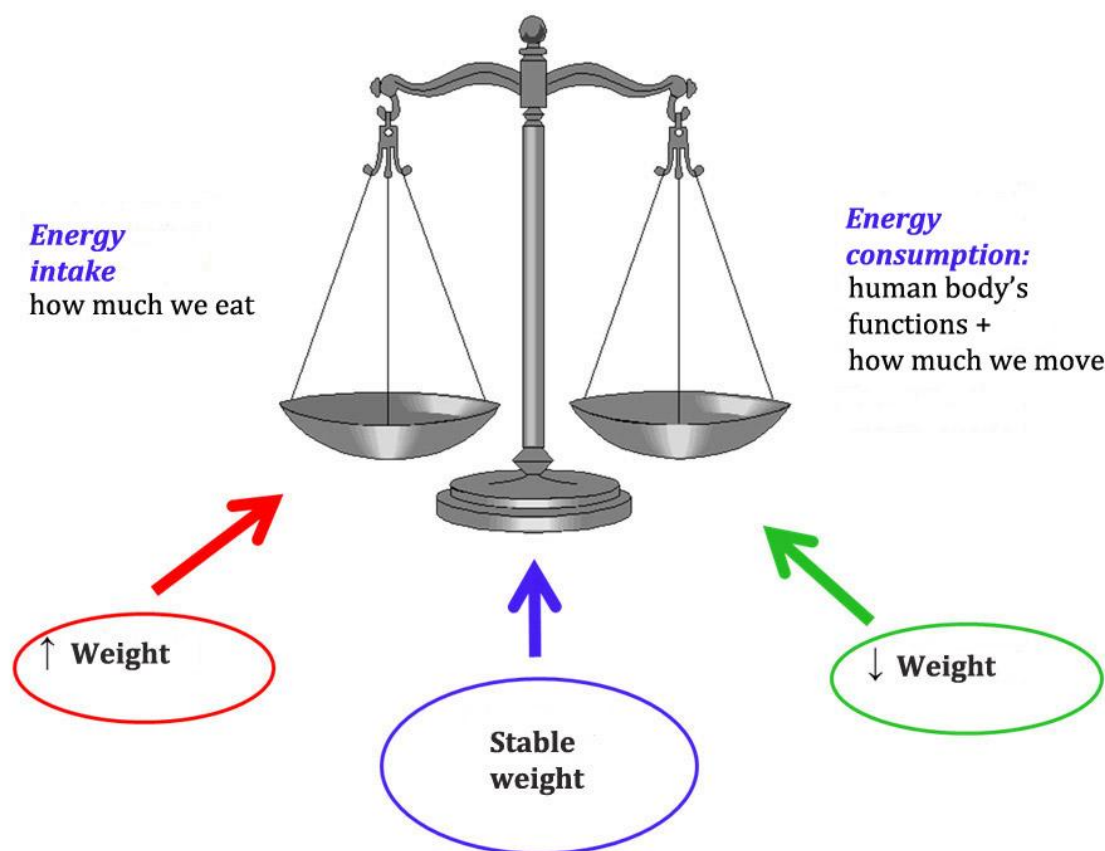


Image3.2. When the scale balances, the weight remains stable. Depending to where it tilts, it can increase or decrease.

#### 4.1.3. What problems can obesity cause to the child?

Childhood obesity can affect almost all body systems. Summarily, the effects are shown in the following table:

Basic problems of childhood obesity
Greater potential for obesity as adults
Health problems
Respiratory (apnea, asthma)
Metabolic (diabetes type 2, precocious puberty)
Cardiovascular (hypertension, dyslipidemia)
Musculoskeletal (osteoarthritis)
Behavioral problems (anxiety, isolation, eating disorders)
Psychological problems (depression, low self-esteem)

#### 4.1.4. Is my child overweight?

In order to evaluate the weight of children we usually use the growth curves (Image 1.3) for Body Mass Index (BMI). On these curves, which are different by gender, is illustrated the BMI and age. BMI shows the relation between weight and height and is calculated by a division, as follows:

**BMI= Weight (in kilos, kg)**

**Height x Height (in meters, m)**

For each age, BMI values that lie between the two blue (boys) or red (girls) lines correspond to the "overweight" (heavier than healthy) and the values which are above the highest blue or red line correspond to "obesity" (much heavier than healthy). For example, for a girl 9 years old, with weight 42 kilograms (kg) and height of 1.33 meters (m), BMI is calculated  $42 / 1.33 * 1.33$ , that is equal to 23,7 kg / m<sup>2</sup>. From the curves it appears that this number corresponds to the range of "overweight", between the two red lines.

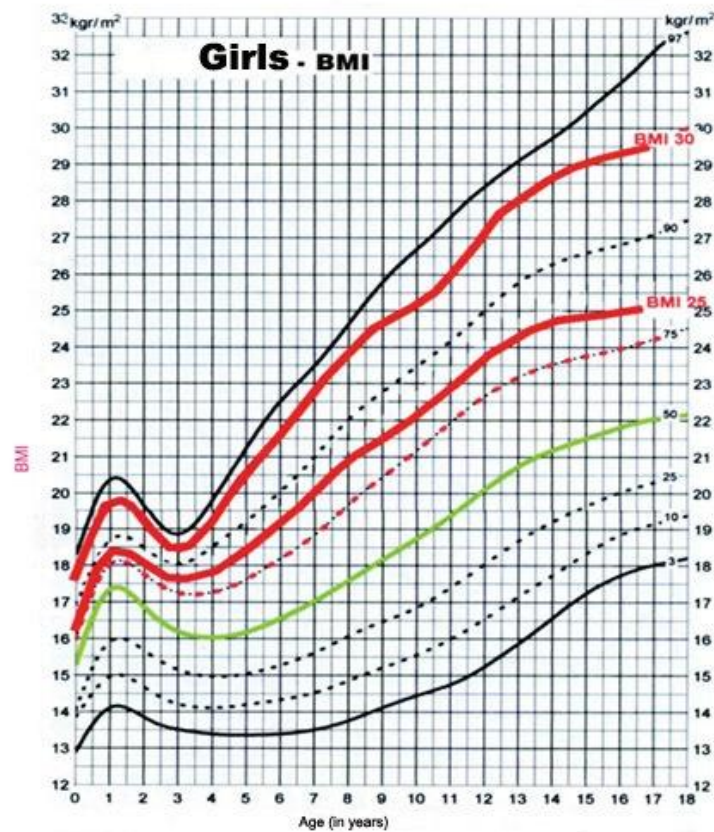
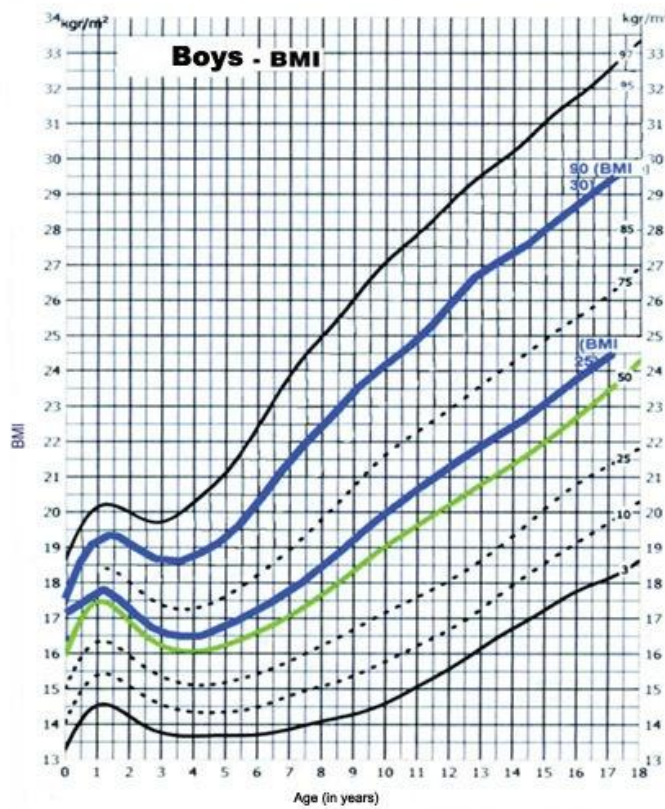


Image3.3. Growth curves for BMI by gender and age

Source: Child Health Booklet

#### 4.1.5. When the child needs to lose weight and how much?

The weight regulation in children needs special attention as they are in the stage of development and they need all the necessary nutrients. The main objective is not to reduce weight and is not always recommended. The primary objective is to ensure the good health and development of children and also the change of wrong attitudes concerning nutrition and exercise that caused the weight gain.

The advantage of children compared to adults is that they still tall. This means they do not necessarily need to lose weight but the **maintenance of body weight** while the height is increasing improves gradually the relation of weight to height (BMI reduces) and the weight is normalized. More specifically:

- For children who are *overweight*, the goal is **weight maintenance** or a mild loss rate (if there are coexisting health problems in children over 7 years old) so that with the gradual increase in height, the weight is normalized.
- For children who are *very overweight* (obesity) and / or *health problems* coexist (such as diabetes, hypertension, elevated triglycerides, etc.) then **weight loss** is recommended. The weight loss depends on the age, the degree of overweight and generally the severity of the situation and may range from 0.5-4 kg per month.

## Questions

1. Why is it essential to have variety in our diet?
2. Which are the 5 primary colours of fruits and vegetables?
3. For what reason should I eat breakfast?
4. What is meant by a "complete" meal?
5. Why should we avoid eating and doing something else at the same time?
6. How much time is recommended to spend children in front of a "screen" such as TV, video, games and computer?
7. What could we do if you want your child to try a new food?
8. What is meant by "exposure to food"?
9. Which behaviour-techniques of the parents have a positive and which have a negative effect to change children's dietary habits?
10. How can we find out if a child is overweight?

## Are you interested?

### 5. Further readings

- World Health Organization (WHO):  
<http://www.who.int/dietphysicalactivity/childhood/en/>
- World Obesity Policy and Prevention:  
<http://www.worldobesity.org/iotf/obesity/obesitytheglobalepidemic/>
- US Department of Health and Human Services: [www.dietaryguidelines.gov](http://www.dietaryguidelines.gov)
- US Department of Agriculture (USDA): [www.choosemyplate.gov](http://www.choosemyplate.gov)
- British Dietetic Association: [www.bda.uk.org](http://www.bda.uk.org)
- Academy of Nutrition and Dietetics (website for kids and teens): [www.kidseatright.org](http://www.kidseatright.org)
- EYZIN (National Health Action for the life of young): <http://eyzin.minedu.gov.gr/>

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