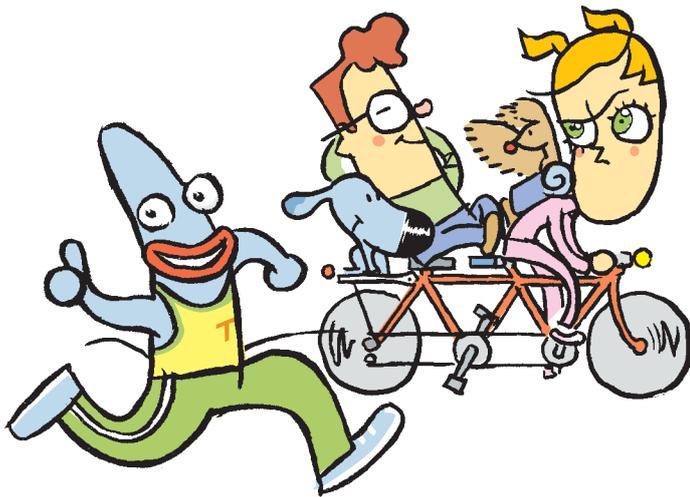


A Guide for Teachers

# Play, Eat and Have a Good Time with Tranqui

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A Guide for Teachers

# “Play, Eat and Have a Good Time with Tranqui”

<b>1. Presentation</b> .....	<b>6</b>
The prevention of Juvenile obesity .....	7
The purpose of this teacher's guide .....	8
Material included .....	8
The teaching approach used .....	9
How to assess the material .....	9
How to use this guide .....	9
<b>2. Relationship with the primary school curriculum within the area of physical education</b> .....	<b>10</b>
<b>3. Contents</b> .....	<b>12</b>
<b>A) Obesity and Health</b>	
What is obesity? .....	13
How can juvenile obesity be measured? .....	13
Why does a person gain weight? .....	14
Why is it important to prevent obesity in children? .....	14
What should an overweight person do? .....	14
<b>B) Obesity and Nutrition</b>	
Basic nutritional concepts .....	15
Estimating basal metabolism .....	15
Estimating activity energy expenditure .....	16
The characteristics of different nutrients .....	17
Does a child need to take vitamin-mineral supplements? .....	20
What is a varied and balanced diet?.....	20
What are the recommended daily requirements for children?.....	20
Eating behaviour and dietary advice for adequate nutrition .....	23
Focusing specifically on Eating Disorders.....	23

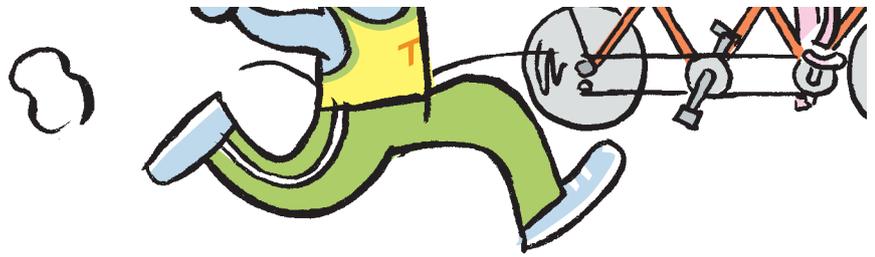
<b>C) Obesity and Physical Exercise</b>	
What is understood as physical exercise?.....	26
Why is it necessary to do exercise?.....	27
How to promote physical exercise in children? .....	27
Types of physical exercises recommended for children.....	28
How frequently and with what intensity should children exercise? .....	28
How should aerobic exercise be done to prevent obesity? .....	29
What other physical activities can be done to avoid obesity? .....	29
Which future objectives should be set to prevent juvenile obesity? .....	30
What can the child do to maintain a balanced energy expenditure? .....	30
Is it necessary for obese children to combine physical exercise with a low calorie diet?.....	30
<b>D) Recommendations for healthy physical exercise for overweight and obese people</b>	
<b>E) Advice for Physical Education classes</b>	
What does aerobic activity of moderate intensity consist of? .....	31
What does a strength-building exercise of moderate intensity consist of? .....	32
What type of sessions can the physical education teacher develop? .....	33

## 4. Teaching proposals: A practical application of the contents ..... 34

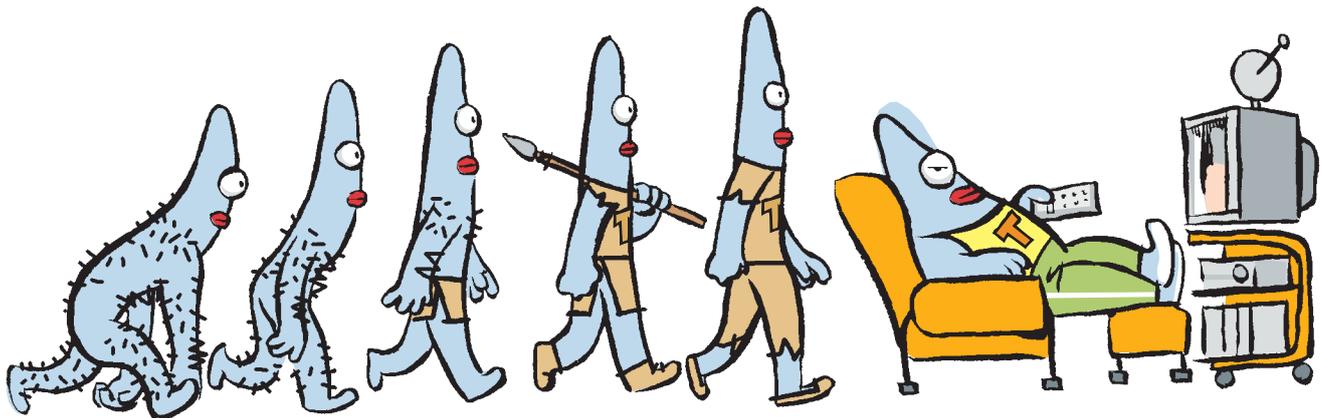
<b>1. Dietary sessions:</b>	
1 A - "Design your diet: daily food" .....	36
1 B - "Design your diet: occasional food" .....	37
1 C - "Test your knowledge of healthy food" .....	38
<b>II. Physical exercise sessions:</b>	
II A - "Is physical exercise important?" .....	39
II B - "Who does physical exercise?" .....	40
II C - "How do I use my free time?" .....	41
<b>III. Physical education sessions:</b>	
III A - "I increase my stamina" .....	42
III B - "Strength is necessary for..." .....	43
III C - "The 10 session" .....	44

## 5. Bibliography and student's dictionary ..... 46

# 1. Presentation



“Play, eat and have a good time with Tranqui” is teaching material which aims to help teaching staff at primary school level. It also attempts to foment healthy habits associated with the **prevention** of obesity by “**promoting**” a healthy diet and daily physical exercise. With this aim in mind, this manual has been designed for teachers, counsellors, and professionals in the field of health who work within the school environment. The material used has been devised mainly for children from ages 6 to 9 since their stage of maturity allows for an easier implementation of such objectives.



## Preventing juvenile obesity

Today, health education is given great relevance by society. For educational institutions it is a transversal subject that because of its nature must be taught to students at a very young age in order for them to live a healthier lifestyle in the future.

Heart disease and type II diabetes associated with obesity are a major concern in society today and for this reason the recent revision of educational standards in Spain has featured these diseases within the subject matter taught in Health Education. It is now known that there are two fundamental pillars in the prevention of obesity: a healthy diet and daily physical exercise.

**A healthy diet** is a subject most primary school children fail to pass. There is no doubt that in order to prevent obesity children must know about the food they are eating. Yet children today are eating the wrong food: fewer vegetables, fruit or potatoes, and more processed and greasy food. As a result, the percentage of obese children has increased at an alarming rate.

It has been scientifically proven that a sedentary lifestyle is a determining factor in the development of several diseases like obesity whereas **a physically active lifestyle** has positive repercussions on both physical and mental performance levels along with overall health. Spain is one of the European countries whose children have the lowest levels of physical exercise. They prefer to spend less time doing exercise and more watching television or playing with computer or video games.

Several studies indicate that a lack of physical exercise is the main cause of obesity in children and adolescents. Those who watch more than five hours of television daily have five times the possibility of becoming obese than those who watch it fewer hours. **It is crucial to reduce the number of hours spent in front of the television set.** Such prolonged behaviour only discourages physical activity while it encourages the eating of specific food advertised. It is a known fact that implementing behaviour modifications in terms of television viewing at these ages leads to more positive results in the fight against obesity.

Presentation

## What is the objective of this educational guide?

This guide attempts to act as an **aide** for the teacher. With the objective of **preventing** juvenile obesity it uses simple interventions aimed at **1)** modifying or acquiring healthy eating habits **2)** fomenting greater daily physical activities.

Its contents are geared towards **improving student health** from an early age, including that of their families in order to enjoy a better quality of life in the future.

The **general objectives** pursued are the following:

**a)** To carry out a general change in behaviour patterns which involves parents, the surrounding environment and the children themselves in order **to optimize prevention** as the best treatment for obesity. Such a makeover in lifestyle implies healthy eating behaviour and more daily physical activities.

**b)** To reduce **risk factors** at ages when it has been demonstrated that heart disease develops (children who do a lot of exercise and who weigh within healthy weight ranges do not run this risk).

**c)** To provide **basic information** on nutrition and physical activity for school children in general and those children who suffer the problems associated with being overweight or obese.

### Other Teaching Objectives:

- Differentiating between eating and feeding oneself in a balanced way.
- Making students aware of the negative effects of an inadequate diet on health.
- Analyzing the main risk factors associated with obesity so that students with the help of their families can later intervene with specific strategies.
- Differentiating between a sedentary lifestyle and physical activity.
- Making students aware of the negative repercussions of a sedentary lifestyle.
- Analyzing the patterns of physical activity in daily behaviour to better equip them to the minimum levels of physical exercise recommended.
- Contributing to the education of today's youth so capable of self-reflection and criticism.

## What material is included?

The material is organized into three sections:

**1.** An **educational guide** for teachers where the theory behind all the behavioural practice recommended for students in these age ranges is explained.

**2.** A **teaching unit** that includes **nine practice sessions** included in the teachers guide and prepared for classroom use. The length of each session has been estimated to last 55 minutes.

Content has been organized into **three levels** (A, B, and C) reflecting the age range grouped together at primary school. The material in level A, therefore, has been created for children aged 6-8, level B for 9-10 and level C for those ranging from 10-12.

**3.** A **short story** for children aged 6-8 that can be worked on both at school and at home which features the themes seen previously in the teacher's guide. The main characters, **"Tranqui" and his friends** experience a series of events in which obesity becomes a detriment and must be dealt with by using diverse strategies. The entertaining cartoons and simple dialogues are easy to follow even for the youngest of kids. At the end of the short story there are a series of activities and advice meant to be examined by both parents and children

To sum up, this teaching guide (I), the teaching unit (II) and children's short story (III) are meant for **primary school children**, but those teachers who feel that this same guide could be used at secondary level can do so selectively, as is the case with the practical sessions in levels B and C.

## What methodology will be used?

The proposal “**Play, eat, and enjoy yourself with Tranqui**” is based on **active** student participation since learning to decide is only possible when the student is actively involved in practicing the theory. It is hoped that the student will take responsible decisions thus adopting a reasonably critical attitude aimed at preventing obesity and its associated diseases throughout life.

If we assume that **health** is something that does not usually concern most children and adolescents then it is obvious that focusing only on theory will not be much of a success. The collaboration of **family with educators**, however, does contribute to a higher success rate in changing attitudes. Following-up the school's technical presentations which involve classroom work and short story reading with practical back-up support in the home environment becomes crucial. In this manner the effect of the teaching guide's content is tripled and the student's awareness in terms of habits and behaviour is complete.

## How to use this guide?

- **Questionnaires and assessment files:** the percentage of correct answers and the student's subsequent progress is evaluated at the end of each teaching unit.
- **Work completed:** the use of this material (guide and short story) along with the reading it involves is another tool for reflection.
- **Student attitude:** The student's level of involvement in terms of participation and collaboration is graded and the teacher can also optionally assess the student's capacity to reflect upon and respect different points of view.

These last two points may be evaluated optionally by the teacher.

## How to use this guide?

The implementation of this educational guide is meant to establish a **theoretical background** on “obesity, nutrition, and physical activity”. In its practical part, **sessions** are implemented that allow for both practice and play with the sole purpose of offering guidelines and strategies for proper eating and exercise as recommended by international associations for the prevention of obesity and the promotion of healthy exercise.

**For Example:** Sessions concentrate on learning about the main nutrients while other sessions concentrate on the types of physical activities practiced daily (aerobics, strength etc.) so that there is a working knowledge of what is adequate or not in the prevention of obesity.

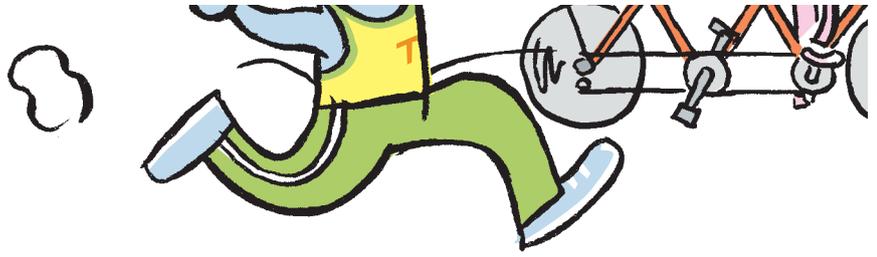
The easiest way to use this material is to adapt it to the initial stage of knowledge of the students involved. Because of the variation that is bound to be encountered, sessions should be structured around **three levels of difficulty**:

- **Level A** = basic session
- **Level B** = intermediate session
- **Level C** = advanced session

As a general rule, it is recommended that at least the basic stage, Level A and its corresponding sessions (IA, IIA, and IIIA) be worked on in the early grades of primary school. When students are older then the sessions should correspond to level C (IC, IIC, and IIIC) but teachers can revert to material from levels A and B if needed to refresh student memory.

Finally, it must be stressed that classroom work must encourage a **reflective process** in the student when the sessions call for this. Reflecting upon experiences and sharing this information with other students will help in the learning process making it all more significant.

# 2. Relationship with the primary school curriculum within the area of physical education



In primary education the subject area of Physical Education (R.D. 830/2003) is divided into three sections, two of them very geared towards health education: "The body and health", and "Movement and Health". This division reinforces the importance of health promotion in the subject known as Physical Education.

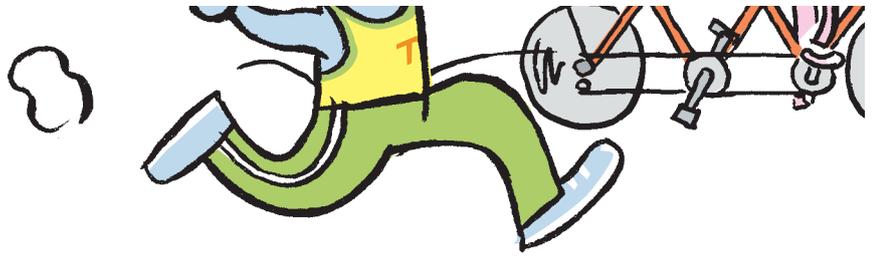
In the official Spanish Ministry of Education's course description given for the subject of Physical Education there are three notions that must be stressed:

- 1)** The world of Physical Education must be offered as an alternative lifestyle to the sedentary one so familiar today.
- 2)** The teaching of Physical Education must promote and facilitate students' knowledge of their bodies and the different sports and exercises that can improve their health when necessary in the future or at present.
- 3)** At the same time, as a subject it should teach students values that foment mutual respect and social interrelation skills. Conflict must be resolved through dialogue which reflects a respect that surpasses any rivalry or aggressive behaviour derived from competitive sports. The very nature of this subject requires that it stress teamwork and responsibility.

Much of the work done to prevent juvenile obesity in other European countries has taken place in schools. It inevitably involved changes in the school classroom's curriculum, the physical education classes given, and the food served in the school's cafeteria. The results obtained have been very positive and can be observed in the marked increase in the levels of physical activity and eating patterns.

Changes in the physical education classes basically consisted of substituting the standard sessions for ones that were greater in intensity and duration. More motivating activities were incorporated into the sessions like aerobics or popular dances which all served to improve cardiovascular endurance. It was observed, however, that only increasing the frequency and duration of classes (without modifying their intensity) did not produce changes in physical condition or body composition (makeup).

# 3. Contents



## A) Obesity and Health

### What is obesity?

Obesity is defined as an excess of body fat. In 1977, The World Health Organization (WHO) officially classified it as a disease which was rapidly becoming an epidemic. Obesity is usually associated with other diseases like:

- Diabetes.
- Hypertension.
- Hypercholesterolemia.
- Some types of cancer...

Prevention programs thus become extremely important when implemented at a primary school level because they contribute to healthier adults with fewer of these diseases and healthier and longer lives.

### How can juvenile obesity be measured?

The simplest method is through the Body Mass Index (BMI) which is the result of dividing weight in kilos by height in square metres and comparing it with the data on the reference chart curves provided by the enKid study.

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

FIGURE 1 / BMI Percentiles / Age in men ages 2 to 25

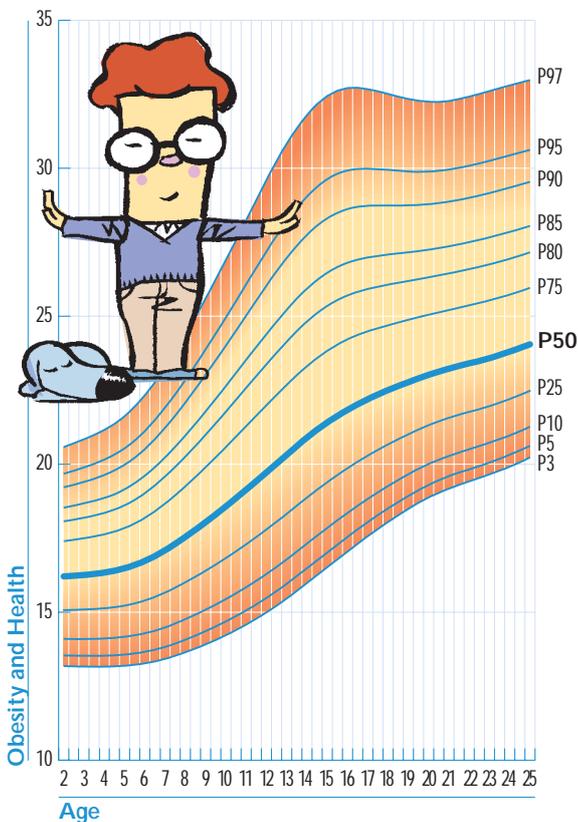
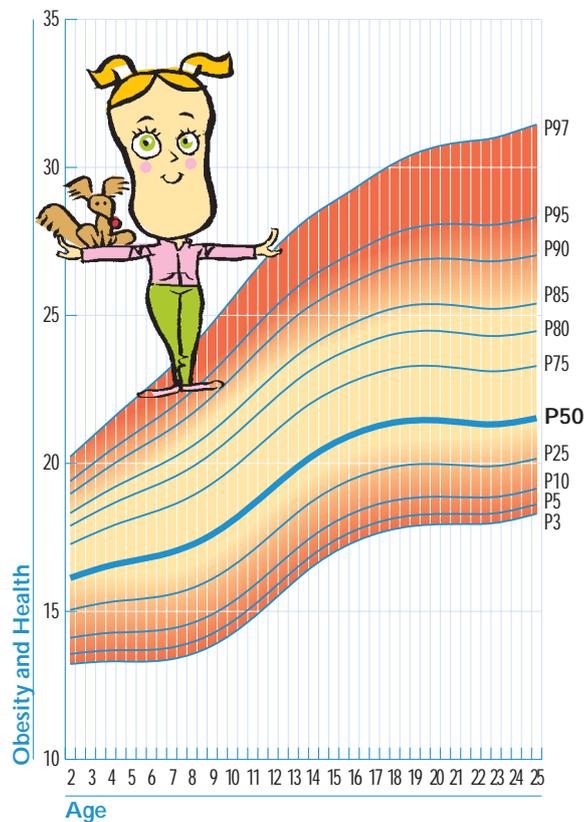


FIGURE 2 / BMI Percentiles / Age in Women ages 2-25



Figures 1 and 2. Reference curves for population age group 2-25 (enKid study)

## Why does a person gain weight?

The factors involved in the development and maintenance of a problem like obesity are many but it seems that two are of extreme relevance.

- An elevated caloric input: a great deal of today's diet is characterized by its high-fat content as occurs with fast food, processed bakery food and junk food. Excess intake of these inevitably leads to an increase in body weight.
- The lack of physical activity: children today have decreased their physical activity because of the influence of television, videogames and computers.

These two factors contribute to children having a positive energetic balance; in other words, they consume more calories than they burn which is translated into weight increase.

## Why is it important to prevent obesity in children?

It is important to keep in mind that during childhood many diseases that affect the heart, for example (coronary disease) or metabolism (type II diabetes) can begin to develop.

Various studies conducted on children and adolescents indicate that **heart disease** and the narrowing of the arteries associated with it begins to develop early in life. Obesity encourages its development and obese children tend to remain so well into their adult life. With this in mind, it follows that reducing risk factors both in childhood and adolescence (fomenting more active participation in sports and thus a healthier weight) at stages in children's growth where irreversible coronary disease damage has not yet taken place would lead to a reduction in the mortality rates associated with this disease.

In Navarre one out of four children exhibits risk factors which may lead to coronary disease. The most common ones are high cholesterol levels, high blood pressure and OBESITY.

**Diabetes type II** once associated with adults in their forties has begun to appear in adolescents who have been obese children.

**Psychological disorders** are also a direct result of obesity: it is very common for obese children to have a negative self image and self-esteem. Depression, altered sleep patterns, a state of sadness, low grades, and an introverted state are all commonly found in obese children who can also experience marginalization and rejection.

## What should an overweight person do?

Although this program focuses on the prevention of obesity it is important to remember that with an obese child treatment is based on three mainstays:

- 1) a low calorie diet.
- 2) a program which changes habits established in a lifestyle (walking to school, going up stairs...).
- 3) daily physical exercise.

In this manner it is easier to attain a negative energetic balance and thus burn more calories than what has been consumed that day and thus lose weight.

## B) Obesity and Food

### Basic nutritional concept

**Nutrition** is the science that studies the different processes involved in the consumption, transformation and utilization of food by the body in order to maintain life.

The objectives of Nutrition are:

- to provide the energy necessary for each person
- to form and maintain several structures in the body
- to regulate metabolic processes

Food is formed of by components called **nutrients** that are classified into:

- Carbohydrates
- Lipids
- Proteins
- Vitamins
- Minerals
- Water

Each one of these has different functions:

- Energetic (carbohydrates, lipids, and protein)
- Structural (proteins, vitamins, and minerals)
- Regulatory (minerals, fibre, and water)

Nutritional intake should be adequate for the needs of each individual in order to avoid deficiency or intoxication.

Our body needs a specific amount of energy to carry out different life functions like getting the heart to beat, neurons to transmit electrical impulses, glands to synthesize and secrete essential vital hormones, .... and the minimum amount of energy needed to maintain these vital functions (at rest) is called **BASAL METABOLISM (BM)**.

### Estimating Basal Metabolism

To calculate the **Basal Metabolism** of a person different formulas can be used:

TABLE 1 / Estimating the BM (Kcal/day) according to the WHO		
SEX	AGE	FORMULA
Boys	0 – 3	$(60,9 \times P) - 54$
	3 – 10	$(22,7 \times P) + 495$
	10 – 18	$(17,5 \times P) + 651$
Girls	0 – 3	$(61 \times P) - 51$
	3 – 10	$(22,5 \times P) + 499$
	10 – 18	$(12,2 \times P) - 746$

P = weight in kilos

## Estimating the Calories Burned in Activities

When we perform an activity our body needs more energy and must balance its energy consumption. **Daily Activity Energy Expenditure** is calculated by multiplying Basal Metabolism by a specific activity factor.

$$\text{Daily Activity Energy Expenditure} = \text{Basal Metabolism} \times \text{Specific Activity Factor}$$

It is believed that the level of daily physical activity should be **1,75** times the energy consumed which is our basal metabolism.

The World Health Organization affirms that this formula is very important in the prevention of obesity because if everyone consumed the amount of kilocalories equivalent to multiplying their Basal Metabolism by their activity factor, obesity would be considerably decreased.

The following chart indicates several activities and their corresponding Specific Activity Factor.

TABLE 2 // Different activities performed daily with the corresponding factor	
ACTIVITY	ACTIVITY FACTOR
<b>Rest:</b> sleep or lying down	1,0
<b>Very Light Activity:</b> activities performed sitting down or standing	1,5
<b>Light:</b> walking on level terrain, at 4-5 km/h...	2,5
<b>Moderate:</b> walking at 5'5-6'5 km/h, gardening, cycling...	5,0
<b>Intense:</b> walking uphill with a heavy load, cutting down trees, playing football, mountain climbing...	7,0

**Example 1 >>>** A seven-year-old child who weighs 28 kilos that throughout 24 hours performs the following activities:

Rest 10 hours x1 (specific activity factor) = 10

Very light activity 8 hours x 1,5 = 12

Light activity 4 hours x 2,5 = 10

Moderate activity 2 hours x 5 = 10

Adding up the results of this multiplication process (10 + 12 + 10 + 10) and dividing by 24 (hours per day) gives the average activity factor.

In this case it is  $42/24 = 1,75$

**Example 2 >>>** A child of the same characteristics but that performs more sedentary activities throughout the day will have a lower activity factor.

If the two hours of moderate activity were added to the ten hours of rest and multiplied by 1 then the Activity Factor is that of 12:

Rest  $12 \times 1 = 12$   
Very light activity  $8 \times 1.5 = 12$   
Light activity  $4 \times 2.5 = 10$

The result obtained is  $32 / 24 = 1,42$

If we continue with these two cases the Activity Energy Expenditure can be calculated to show the differences between both.

**Example 1 >>>** A seven-year-old boy who weighs 28 kilograms and an activity factor of 1,75.

**Energy expenditure per activity= Basal metabolism x Activity factor**

According to table 1 the formula to be applied is:

$$(22,7 \times P) + 495$$

Basal Metabolism=  $(22,7 \times 28) + 495$

So, his basal metabolism = 1130,6 kcal, and his

**Energy expenditure per activity = 1978,55 kcal**

**Example 2 >>>** A boy the same age and weight with an activity factor 1,42

MB  $(22,7 \times 28) + 495$

So, his basal metabolism = 1130,6 kcal, and his

**Energy expenditure per activity = 1605,4 kcal**

With these two examples it is easily seen how two boys the same age and with the same weight but with different activity factors can have a difference of 400 calories in the calories they burn daily. With time this difference is translated into excess weight depending on the food both eat. If both boys follow the recommendations for daily energy consumption at their age, 2000 kcal/day, with time, the second boy will be overweight because his daily energetic balance is positive, that is to say he consumes more calories than he burns.

With these two examples we can see the importance of healthy eating and the daily practice of physical exercise.

## The Characteristics of different nutrients

### CARBOHYDRATES

Also known as sugars or glycogens.

Their main function is to provide energy, 4kcal per gram consumed.

They can be classified into:

- **Monosaccharide**, is the simplest and among these can be found glucose and fructose.
- **Disaccharides**, Formed by short chains of monosaccharide, like Sucrose lactose, maltose...
- **Polysaccharides**, for example starch, glycogen, cellulose...

There are several food sources that provide these nutrients

- Cereals

- Legumes
- Milk (lactose)
- Fruit and vegetables
- Sweets

The daily recommended allowance should be **55-58%** of the calories consumed, reducing monosaccharide to 10% of the total consumption (sweets, baked goods, junk food). Reality, however, is very different since the current consumption is 40-45% and that of monosaccharide (sweets and junk food) is very much above the recommended 10 %.

### LIPIDS

They are commonly known as fats. As with carbohydrates they also have an energetic function providing 9 kcal per gram consumed. This makes it the most energy-dense nutrient of all.

The most common classification is related to the degree of saturation of fat:

- **Saturated fatty acids**, should be eaten with moderation because they are unhealthy fats. They are primarily found in fatty meat, entrails, sausages, butter, pastries and bakery goods, cocoa and palm oil...
- **Monounsaturated Fatty acids**, like olive oil which is known for its preventative role in cardiovascular diseases which is why it is so important to consume moderately these types of fat in our daily diet.
- **Polyunsaturated Fatty Acids**, known as the fat acids omega -3 they have positive effects on coronary disease. They are found in fish like sardines, tuna, salmon, and anchovies and nuts and dried fruit, margarine, fish oil and oil derived from seeds...

The daily recommendations are approximately **30%** of caloric consumption including olive oil yet the actual percentage is situated around 40-45% due to the excessive amount of junk food and industrially baked goods rich in fat.

### PROTEINS

These are more complete nutrients and are characterized for being composed of a chain of amino acids. They are classified in the following manner:

- **Essential proteins**, are not synthesized in the body and therefore must be obtained through daily diet.
- **Non-essential proteins**, because the body is capable of synthesizing them.

Of the functions attributed to proteins the most outstanding are the structural and energetic ones, providing 4 kcal per gram consumed.

Proteins can also be classified according to their biological value, that is to say, their quality which is determined by the number of essential amino acids absorbed by the body. They can be classified as:

- **Proteins with a high biological value** and greater absorption of essential amino acids which are found in meat, fish, eggs and dairy products.
- **Proteins with low biological value** and a lower absorption of essential amino acids; they can be found in legumes, cereals, nuts, dried fruits, and seeds.

The daily recommended amount of protein is greater in the early years of life because of its fundamental role in children's growth.

- 2.2 g/ kg/day in infants
- 1-1.2 g/ kg/ day in children
- 0.8 g/ kg/ day in adults

Thus, a child weighing 25 kilos needs the daily amount of 25-29 grams and can find it in the food which is featured in table 3.

TABLE 3 / The relationship between different types of food and their protein content in grams	
FOOD	PROTEIN CONTENT
100 grams of whole milk	3,1
125 grams of natural yoghurt	4,2
1 egg	12,1
100 grams of chicken breast	21,3
100 grams of sole	16,5
50 grams of boiled ham	9,5

### MINERALS

These are essential nutrients that are not synthesized in the body and for this reason must be taken through food.

An excess amount or a lack of them in food can lead to different diseases. Normal health can be restored if food intake is corrected.

Minerals are classified according to the amount necessary for our bodies:

- **Macrominerals**, a minimum of 100 grams should be taken daily and among these are calcium, chloride, potassium, sodium, phosphorus, sulphur, and magnesium.
- **Microminerals**, maximum of 20 grams should be taken daily and these are chrome, cobalt, copper, fluoride, iron, iodine, manganese, molybdenum, selenium and zinc.

Their function is mainly a **structural** one forming part of bones and teeth and a **regulatory** one, as occurs with the water balance in our bodies. They can be found in different types of food and drinks in the form of salts and ions.

### VITAMINS

Also essential and necessary in small quantities to balance the body's different needs. An inadequate intake can lead to several diseases.

They are classified into two big groups:

- **Liposoluble:** vitamins A, D, E, and K
- **Hydrosoluble:** the vitamin B group and vitamin C

Their main function is to regulate the metabolism of carbohydrates, lipids, proteins, and minerals. They can be found in most food.

## WATER

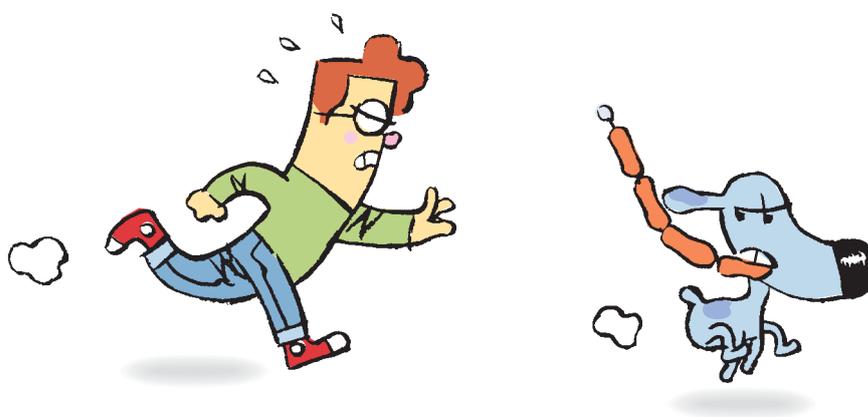
It is crucial for life. It has a regulatory function and between 1–1,5 ml /kcal should be drunk per day.

It provides the body with quantities of fluoride, calcium, magnesium...

It can be consumed in liquid form or as part of food in vegetables, fruit, fish, meat...

## Does a growing child need vitamin-mineral supplements?

**NO**, not if he or she is eating a varied and balanced diet



## What is a varied and balanced diet?

In the case of a child's diet, **a varied and balanced diet** is defined as that which contains all types of food that provides all the necessary nutrients for the correct growth and development of a child.

Diet is a crucial factor in the growth and development of a child from the early stages of life and this is why it is so important that in these early years healthy eating habits are acquired which will later help prevent adult diseases.

In order to follow a varied and balanced diet it is necessary to consult the recommendations made by diverse national and international nutritional organizations whose experts continuously investigate in the field.

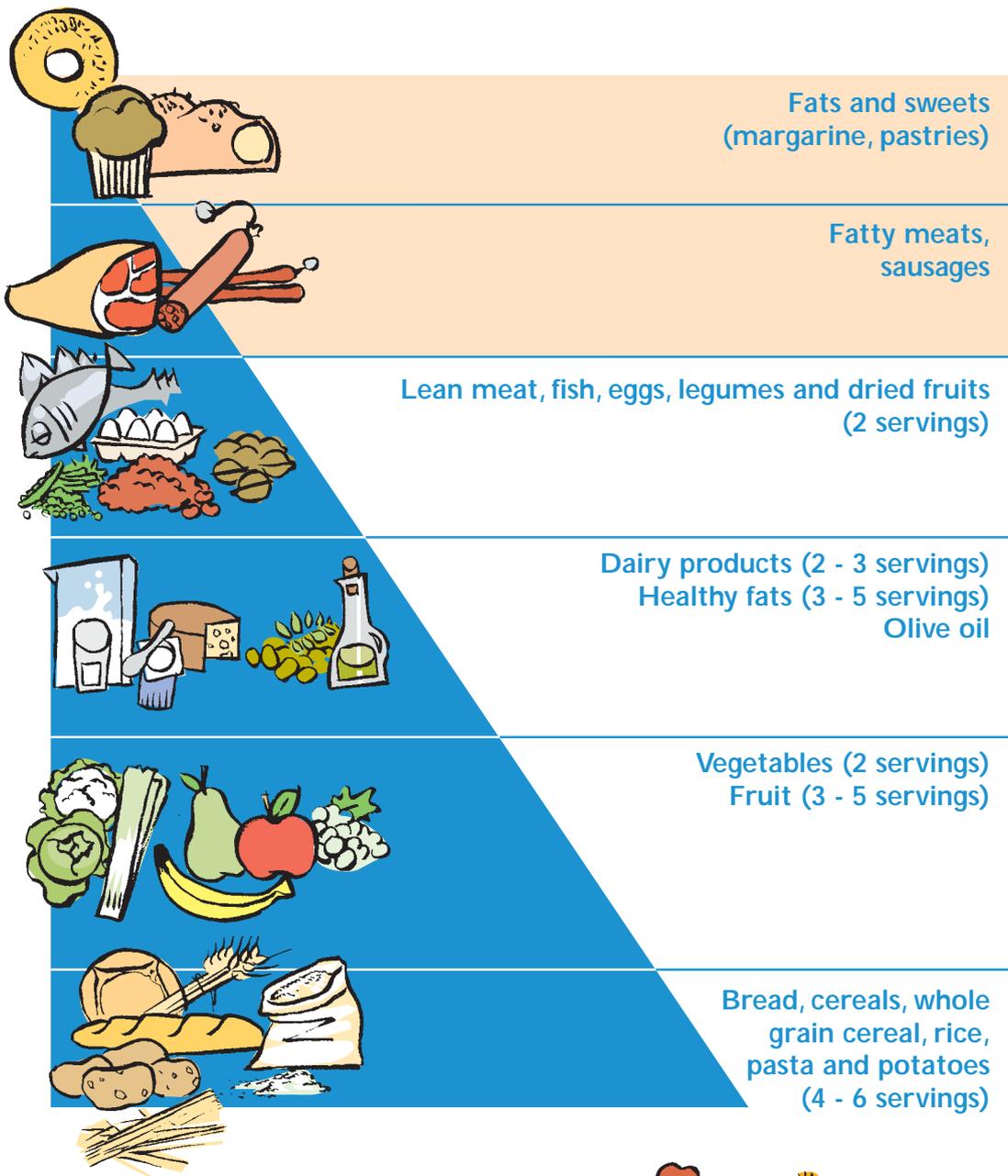
In this guide we will be focusing on the recommendations based on the "Mediterranean diet" which precisely does not coincide with today's children's food likes.

## What are the daily recommendations for the juvenile population?

A school age child's diet must be varied and must adhere to a series of recommendations. Thus the daily calorie intake must be 1.800-2.000 kcal, depending on the daily energetic expenditure of the child (**see Section 3B, Calculating Basal Metabolism and Daily Activity Energy Expenditure**) and the distribution of these calories:

- **55-58%** in the form of **carbohydrates**
- **12-15%** in the form of **proteins**
- **30%** in the form of **fats**

This distribution in children's diets can be obtained by following the recommendations given in 2001 by the Spanish Society of Community Nutrition in its food pyramid for the infant and juvenile population:



This pyramid also refers to the daily recommended intake of water for school-aged children, indicating that approximately 2-3 litres of water should be taken. With respect to water intake, caution must be taken with commercialized fruit drinks and carbonated drinks because of their high sugar content and high energetic value. Once again, the value given to physical exercise by the Spanish Society of Community Nutrition must also be stressed here. Unfortunately, most children today do not follow any of these recommendations because they prefer to consume food rich in fats instead of carbohydrates.



As can be seen in this pyramid, food rich in fats like donuts, pastries or industrially- produced baked goods are considered food to be eaten occasionally and not on a daily basis –something many children do today. Food that they should be eating, however, is fruit, vegetables, legumes and cereals.

In the pyramid we refer to a serving which is a standard **portion** of what is usually served to be eaten. The servings children should be eating are the following:

TABLE 4 / List of food items with the number of daily recommended servings and its equivalent in grams		
FOOD GROUP	SERVINGS	AVERAGE SERVING IN GRAMS (net weight raw)
Dairy products	2-3 servings/ daily	Milk: 150-200 g Yoghurt: 125 g Cheese: 20-40 g
Grains and potatoes	4-6 servings/ daily	Cereals: 50-80 g Potatoes: 100-150 g Bread: 25 g
Vegetables	≥ 2 servings, one raw, daily	Boiled: 150-200 g Raw: 30-70 g
Legumes	2-3 servings/ weekly	60 g
Meat and fish	alternate consumption	Meat: 80-100 g Fish: 100-150 g
Eggs	3-4 units per week	60 g
Fruit	≥ 3 (1 citric)/ daily	80-100 g
Fats	3-5 (as dressing) servings/ daily	Oil: 10 g
Sweets and pastries	moderate consumption	Butter: 10-12 g

## Eating behaviour: recommendations for correct nutrition

In any child's diet the following basic recommendations must be considered:

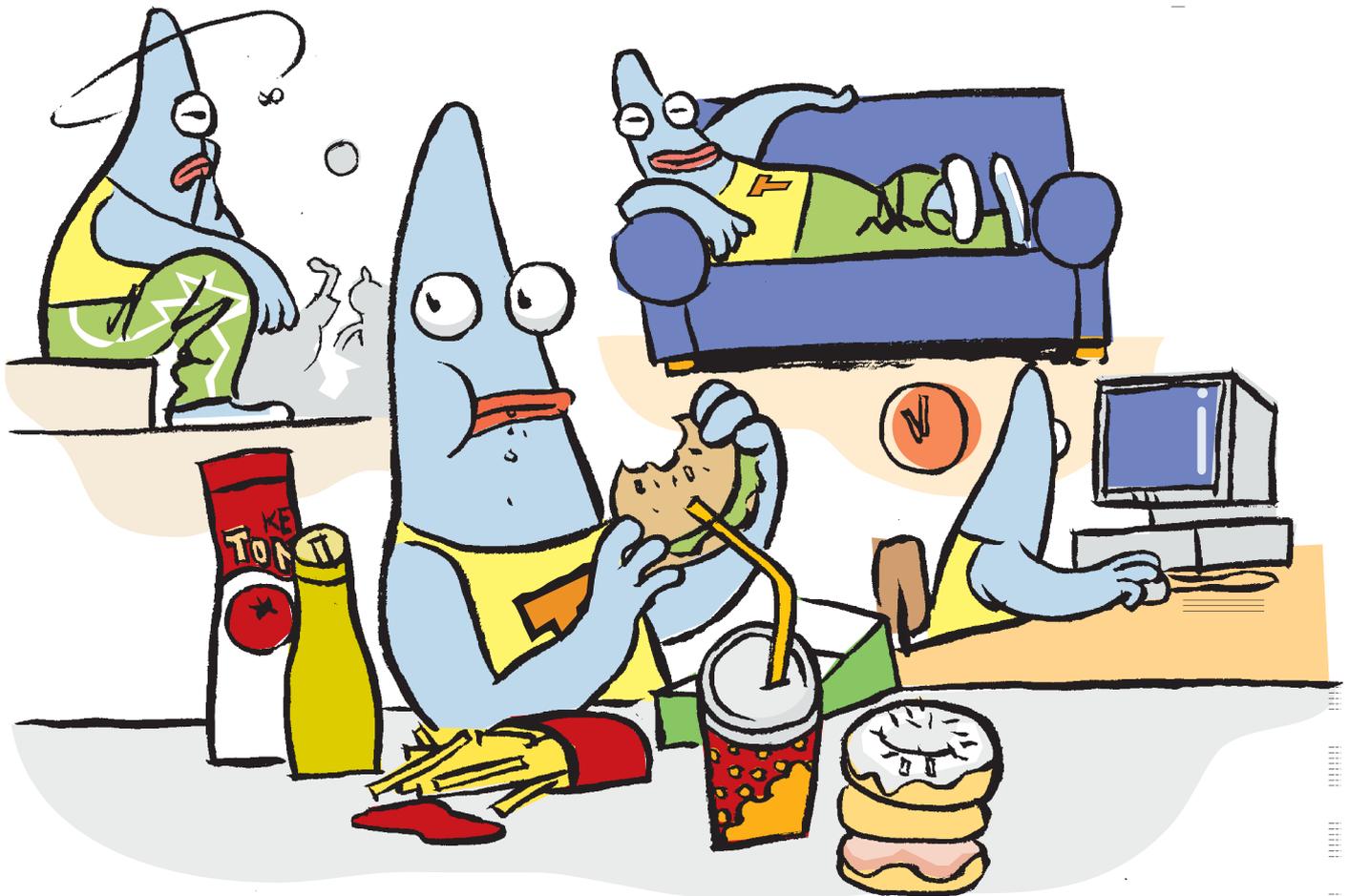
- 1) A **regular eating timetable** must be established
- 2) One **must sit** at the table and dedicate a certain amount of **time** to chewing and swallowing properly.
- 3) **Five meals** per day that include breakfast, a mid-morning snack, lunch, an afternoon snack, and dinner should be taken. All other eating between these meals should be avoided.
- 4) The child's diet must be planned so that it is **varied and balanced** by including all the food groups.
- 5) Reduce the amount of **animal proteins**, especially meat, and promote the consumption of whole grain cereals and legumes.
- 6) Reduce the consumption of **saturated fats** and cholesterol; consume fish and olive oil
- 7) Limit the consumption of **processed baked goods** and refined sugars
- 8) Control the use of **table salt**.
- 9) Increase the **daily consumption** of fruit, vegetables and bread.
- 10) Avoid **junk food**.

## Special attention must be given to Eating Disorders

An obsession with health very common today in some young people can give way to problematic illnesses like anorexia and bulimia. These illnesses of an unknown origin and often very serious must keep us on alert when we talk about energy balances and calorie burning to students. There are boys and girls who in some cases run the risk of developing these illnesses which manifest an obsession with calorie consumption and burning. It is important that children become conscious of the importance of having a daily activity energy consumption balance to optimize correct body growth but without this becoming an obsession. Parents and teachers must be on the look out for any signs in children's behaviour which could signal an eating disorder.

TABLE 5 / Food products with caloric (high) and nutritional content

FOOD	AMOUNT	KCAL	CH	PROTEINS	LIPIDS
• Donuts	45g	201,1	21,5	2,8	12,1
• Donuts (chocolate)	50g	231,7	21,7	1,88	15,8
• Bollycao (chocolate roll)	70g	270,3	41,7	2,59	11,5
• Croissant	60g	251,7	26,8	5,81	14,2
• Cheetos chips	120g	638	74	6,2	35
• Frozen cheese pizza	250g	322	67,2	20,5	22,5
• Big Mac	219,5	505	43	27	12
• Chocolate shake	400ml	373	61,7	10	10
• Small serving fries	80g	235	29	3	12
• Carbonated cola drink	330ml	138,6	36,8	Tr	0



**TABLE 6 / Different food and its caloric (low) and nutritional content**

FOOD	AMOUNT	KCAL	CH	PROTEINS	LIPIDS
• Serrano ham sandwich	50g bread	121,7	25,8	4,5	0,8
	20g ham	48,2	Tr	6,2	2,6
	Total	169,9	25,8	10,7	3,4
• Broiled steak	100g	131,4	Tr	20,7	5,4
• Sugarless soft drink	330ml	0,8	0	0	0
• 100% natural orange juice	200ml	81,6	20	1,2	0,2
• Banana	100g	85,23	20,8	1,2	0,27
• Flavoured yoghurt	125g	116,6	21,2	5	1,9
• Whole milk	100ml	61,7	4,5	3,1	3,6
• Lentils and potatoes	40g lentils	125,12	21,9	9,2	0,7
	50g potatoes	36,1	8,1	1,25	0,1
	Total	161,22	30	10,45	0,8
• Hake	100g	63,4	0	11,8	1,8
• Marie biscuits	25g (5 units)	115	17,25	1,9	4,75



## C) Obesity and Physical Exercise

Since 2004, the World Health Organization has been working on developing a strategy for Diet, Physical Exercise and Health in children. This proposal recommends a series of changes that when applied efficiently can become a deterrent in the juvenile obesity epidemic. In general terms, this intervention seeks to transform the lifestyle directly associated with excessive weight and juvenile obesity these last two decades. Although the situation varies in every country, children tend to be far more sedentary than previous generations basically because of the degree of urbanization and technology present in their lives. The extent of the presence of mechanized transport and the screen –television or computerized- has led to this passivity.

### What is understood to be physical exercise?

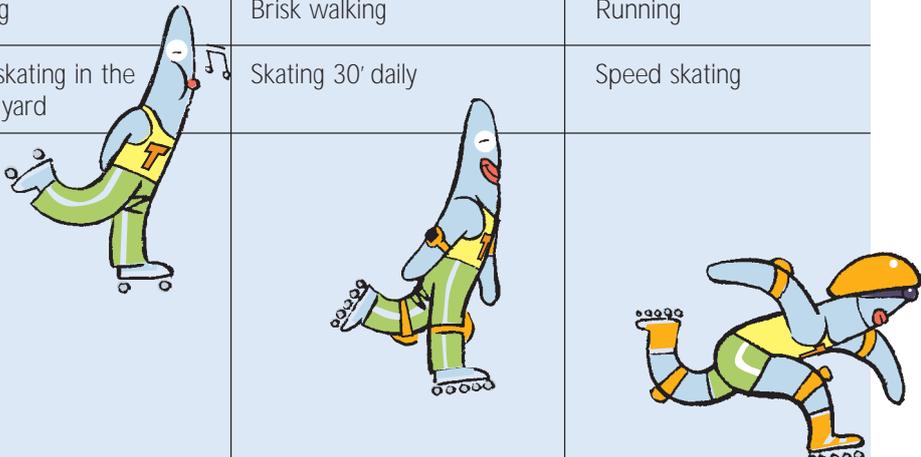
**Physical activity** is the total energy that is consumed by the body's movement. The most frequent physical activities are the ones performed in our daily lives like lifting a school bag or rucksack, riding a skateboard, playing ball, household chores, or doing the grocery shopping. One feature common to all of these activities is that they form part of our routine.

**Physical exercise** as a concept means planned and intentional movement, specifically designed to stay fit and healthy. It can include activities like brisk walking, aerobics, cycling, or active hobbies like gardening, and competitive sports.

Lastly, the term **sport** as a concept can be understood as physical activity within a competition regulated by rules.

TABLE 7 / Examples of Physical Activities, Physical Exercise and Sports

PHYSICAL ACTIVITY	PHYSICAL EXERCISE	SPORT
Strolling	Brisk walking	Running
Roller skating in the school yard	Skating 30' daily	Speed skating



Physical form or **physical condition** refers to the capacities or qualities (endurance, flexibility, and strength) necessary to perform physical activities.

The better the physical condition of a person, the better he will perform the physical activity underway. Similarly speaking, the more physically demanding an activity, the more it will develop physical condition if the activity is repeated with certain frequency.

## Why is it necessary to do physical exercise?

In the **prevention of obesity**, the more calories a child burns (in physical education classes or playing) the more possibilities of balancing calorie intake with expenditure. Being physically active also contributes to having a better quality of life in later years. In addition to this, physical exercise contributes to alleviating tension and stress. It also contributes to an overall sense of well-being, weight-balance, and prevention of chronic diseases.

When it comes to **weight loss**, physical exercise is crucial. In a weight loss program, the combined practice of physical exercise and a low-calorie diet achieve the results summarized in the table below:

TABLE 8 / The importance of physical exercise in weight loss
1. An Increased well-being and self-esteem.
2. An increase in physical condition improving strength, flexibility and endurance.
3. Blood pressure, cholesterol, and triglyceride levels can improve (even without weight loss).
4. Prevents the reduction of basal metabolism.
5. Reduces the loss of muscle, which is inevitable when following a low-calorie diet.
6. Favours weight-loss and consequently motivates to continue doing exercise.
7. When no longer dieting, it helps to maintain the weight lost.

The greatest advantage to doing physical exercise for an obese child is its effect on the risk profile possessed because of this condition. It has been confirmed that obese people who manage to maintain physically active and fit reduce the risk at the same rate of normal-weighting people of suffering from cardiovascular or metabolic diseases, like diabetes.

## How to promote physical exercise in children

Children should learn about the benefits of physical exercise for their health from an early age onwards. At this stage of life, schools should develop and promote positive attitudes towards physical education and nutritional programs. Yet most school curriculum focus on the selection of students and discriminate against those who are not so good. In Physical Education classes, for example, when the Cooper test is performed the child who runs the most metres in twelve minutes gets a better grade compared to the child with a worse physical condition (an overweight child, for example) who runs fewer metres.

In primary school Physical Education should foment programs that promote aerobic recreational activities and activities that promote the muscular strength necessary for lifting moderate weights. School age children are at an ideal stage in their lives to control obesity through aerobic exercise which expends the most **energy** when practiced regularly. These programs would be even more effective if families became involved and participated in their children's exercise routines.

Recommended **intervention strategies**:

### 1) FAMILY INTERVENTION.

These are focused on four points and intervene in the areas of food and physical exercise:

- a- Modify any of the child's or family's eating habits. For example, have breakfast or dinner together.
- b- Establish an "adequate diet" for the child's stages of growth and development.
- c- Do exercise and physical activities as a routine combining work with leisure. Extracurricular activities that stress physical exercise as is the case with a specific sport should reflect the child's preferences. Activities done during free time should stress energy expenditure so playing should involve movement and reducing the amount of time spent sitting in front of the television set or computer.
- d- Parents and family must actively participate, offering role models of people with healthy lifestyles by organizing physically active weekends that involve walking and playing.

### 2) INTERVENING IN THE PHYSICAL EDUCATION CLASS.

These interventions are focused on recommendations made to professors on the intensity, duration, and frequency of the aerobic and strength exercises implemented. (see section 3 E)

## Types of recommended exercises for children

Children must, above all, move and play: they must balance calories burnt with calories consumed in order to prevent obesity.

It was previously mentioned that physical activity programs must be based on **recreational** aerobic activities because aerobic stamina is the physical feature which consumes the most energy in school age children. Subsequently, the most important thing to do is to determine which **type** of aerobic activity best suits the child's preferences, circumstances, and age.

With respect to **aerobic activities**, the **most adequate** ones to prevent excess weight gain are those that involve transporting the entire body, or weight-bearing, (walking, running, cycling, skating, skiing...) and that are maintained for long periods of time (30-60 minutes).

The type of activity should **be adapted** to the child's preferences. Some popular initial activities are walking, cycling, or swimming. In this particular guide book walking is stressed because it is usually very popular with parents who see it as a safe activity for kids, accessible to everyone and especially the family as a whole. There are also other entertaining and inexpensive activities like basketball and cycling which can be done with parents or brothers and sisters.

## How much physical exercise should a child do and with how much intensity?

The American Heart Association makes the following recommendations:

- Children must participate in programs that are fun and that have a moderate intensity for at least 30 minutes a day.
- In addition to this, 3 or 4 times a week they should participate in more intense activities for at least 30 minutes in order to achieve cardiovascular adaptation
- If thirty consecutive minutes, daily, are not possible they can be distributed into consecutive periods of 10-15 minutes.

If children are already active throughout the day, however, it is best to let them continue with these activities. In the case of a sedentary child it is very important to keep in mind that experts recommend **breaking aerobic exercise sessions into 10-15 minutes each in order to guarantee a better adherence to the program.**

Children who lack sports experience in general or who are overweight or obese must be initiated into physical exercise programs in a **progressive** way to avoid injuries and to achieve optimum adherence.

**The guidelines for aerobic exercise** in an initial stage should include work at a moderate intensity that is characterized as:

- Having **short** sessions 10-15 minutes that will progressively increase to 30 minutes.
- Allowing a child to **talk** while they perform the activity.
- Being easy to do **five times a week**.

**An example** of a physical activity for a sedentary child who is overweight could be:

Five days a week performing the aerobic exercise of walking to school (30 minutes coming and going) at a medium to brisk pace (moderate intensity) in addition to the physical education classes at school with the sole objective of burning at least 2000 kcal per week.

The ideal exercise is that which demands high energy expenditure with a special emphasis on quantity and not intensity. That is why it is so important to explain to the child and parents that walking a kilometre is just as effective as (from the calorie expenditure perspective) running a kilometre, the only difference being the time employed.

## How to perform aerobic work to prevent obesity?

Any physical activity is positive. The important thing is that the child moves, and does different physical activities and does not spend hours of his or her free time in front of the television set or computer. As has been previously indicated, if the child is already **active** throughout the day then he or she should continue to be so. In the case of **sedentary** children, however, the simplest way to increase their physical activity is to select interesting pastimes to occupy their free time. If, in addition we add activities to their daily routine we will increase their physical activity performance (e.g., walking to school).

**Organized sports** offer another possibility for increasing the level of physical activity in children. Many children enjoy this type of exercise while others hate this type of sport. In such cases, swimming or judo are attractive alternatives to team sports and transmit values like participation and cooperation, very different from those values associated with highly competitive sports. In these cases parents should look for sports clubs that emphasize participation more than competition.

## What other types of physical activities should children perform to prevent obesity?

Those children who normally play sports and those who do so less frequently could combine aerobic exercise with **strength exercises** (weight bearing,...). For a child who plays sports it is not necessary to go to a gym and use special equipment because initially in strength-training the child can use his or her own body's weight or that of a companion's (moderate intensity).

To perform these exercises the child can use household items of little weight, as for example a one litre container of milk or a half-litre bottle filled with sand or salt.

**To strength train children in a safe and effective way** it is necessary to design individualized programs and to respect the principle of working with moderate weights.

To train in a **safe** manner during the weight bearing exercises it is important:

- 1) To avoid the "Valsalva manoeuvre", that is to say, air must be expelled (never retained) while making the effort (contracting muscles) and air must be taken in while recovering the initial position (muscles relaxed).
- 2) Exercise all muscles in all their range of movement.
- 3) To avoid muscular action with maximum weights.

To calculate the intensity during a weight bearing exercise the degree of exertion demanded by the exercise is measured. In general terms, the following recommendations can be given: children

with a poor physical condition should begin by performing **moderate intensity** exercises that allow for a minimum of 8-10 repetitions and a maximum of 15-20 repetitions.

### **What types of objectives should be set to prevent juvenile obesity?**

- 1) Modify eating habits by learning to differentiate the different food groups and how to combine them daily.
- 2) Do physical exercise regularly every day or almost every day in order to increase daily calorie expenditure and thus achieve a balance in calorie intake and energy expenditure.
- 3) Achieve balanced energy expenditure at the end of the day by combining a balanced diet with daily physical exercise of a low- moderate intensity.

### **What should a child do, on a practical level, to maintain balanced energy expenditure?**

Following the order established in the previous section a child should:

- 1) Have five varied but balanced meals throughout the day in such a manner that the recommended energetic requirements (2000 kcal/day) are met.
- 2) Take advantage of daily activities to increase the amount of physical activity done. He or she could, for example, accompany an older brother or sister while walking the dog or his or her parents while they go buy bread, the newspaper, or groceries.
- 3) Do physical exercise for at least 30 minutes daily (ride a bike, skate, swim, walk...) to compensate caloric intake.

### **Is it necessary for obese children to combine physical exercise with a low calorie diet?**

Although aerobic exercise alone could reduce body weight, this loss would be very slow. A number of studies indicate that by only doing physical exercise, without dieting, after a period of four months to one year only 0,5 to 2 kg is lost.

We know that a low calorie diet is fundamental in weight loss and combining it with an increase in time dedicated to physical activities facilitates weight loss.

The most adequate solution, therefore, is the combination of physical exercise with a low calorie diet.

## D) Recommendations for healthy physical exercise in obese and overweight people:

- Begin an intervention (a physical exercise program and low calorie diet) the moment excess weight is detected in a child because the risk of becoming overweight increases with age. Changes in adolescence are also more difficult to implement and maintain.
- The child and family must know the long-term risks associated with obesity because it can at least serve to motivate parents.
- Involving the family in a program that creates new habits will also allow for new behaviour in the family's eating habits and physical activity.
- Setting long-term objectives is more reasonable because gradual change is more likely to set in.
- Calorie control and physical activity must be daily.
- Reducing the amount of time spent in front of the television set in addition to fomenting physical activity has the added benefit of reducing exposure to publicity for junk food.
- The intensity and duration of physical exercise must increase progressively.

## E) Recommendations for Physical Education classes:

In some European and American countries many of the interventions to prevent obesity have been carried out in schools. School is an ideal place to implement health education and to promote physical education. The subject Physical Education, itself, can be the area where the development of health education and physical education are best implemented.

There are studies that illustrate how simple interventions in Physical Education classes achieve positive results in the prevention of juvenile obesity.

Changes in the Physical Education class should include modifying the standard session with ones of greater intensity (moderate) and duration. The activities should be more motivating for students in addition to being based on cardiovascular endurance training (aerobics) and the practice of any type of strength-training workout.

### What does aerobic activity of moderate intensity consist of?

We understand **moderate intensity** aerobic activity to be any physical exercise performed at an intensity that makes the heart beat at a range of 55-69% of its maximum cardiac frequency.

It would be convenient, therefore, to measure the intensity of the aerobic exercise by controlling **pulse beat or heart rate (respiration is also valid)**, during exercise. In this way we know the pulse rate or cardiac frequency at which we are working and the effort our heart will be making. If a child begins to pant it is a signal that the physical activity being performed is anaerobic instead of aerobic.

TABLE 9 / Calculation of maximum heart rate and pulse rate for performing moderate aerobic activity		
AGE	MAXIMUM H.R. (BEATS PER MINUTE) (220-AGE)	BEATS FROM 55-69% OF MAXIMUM H.R. (BEATS/MINUTE)
6	214	118 - 148
8	212	117 - 146
10	210	116 - 145
12	208	114 - 144

In a **child's case**, the strategies that combine aerobic work with playing formats are much more effective than the traditional method of racing. Nonetheless, if the child enjoys racing, he/she could start with five-minute work-outs of continuous racing at the age of six. The distances could then be increased in a progressive manner 10% every two sessions in order to reach a level of 40 minutes of continuous racing. By the time he/she reached puberty, aerobic capacity would have improved considerably and energy expenditure would be adequate enough to reduce weight or avoid excess weight.

TABLE 10 / Pulse beat and respiration control	
<b>How do we control pulse beat?</b>	Its range must be between <b>55-69%</b> of maximum pulse beat
<b>How do we calculate the maximum pulse beat or maximum heart rate?</b>	Subtract 220 minus the person's age? <b>Max H.R. = 220 - age</b>
<b>How do we control respiration?</b>	If a person who is <b>barely active</b> starts panting during the sports activity it is because it is an excessive one and must therefore reduce the intensity.

### What does physical exercise of a moderate intensity consist of?

We understand **moderate intensity** to mean in weight training, the weight and difficulty of the exercise that can be performed at 15-20 repetitions. If more than 20 consecutive repetitions are possible it means that the exercise is too light and that the weight or the difficulty must be increased. If, on the contrary, the child is exhausted after 8-10 repetitions, it means that the exercise is too intensive and the weight or difficulty must be decreased. If weight bearing exercises where a companion's weight is being moved are also used, at least ten repetitions should be possible. In a similar manner, exercises using household items of little weight (between 6-14 kg) should allow for at least ten repetitions.

## What type of sessions can the Physical Education teacher program?

The guidelines for **aerobic** workouts during class will be determined by the length of the classes (50-55') and the frequency (2 hours/week). The teacher should include workouts at a moderate intensity organized in:

- **Short** aerobic sets of 10-15 minutes in length which can be progressively prolonged to 30 minutes of continuous aerobic activity.
- With an intensity that makes the heart work at **55-69%** of the maximum pulse rate and avoiding that the child maintains a prolonged effort causing panting.
- That it be performed at least **three times a week**. These guidelines can only be followed by those academic centers which have more than two hours of physical education scheduled into the school timetable. Those schools which do not should increase the amount of time dedicated to workouts in each session in order to reach the designated 40 minutes of aerobic activity.

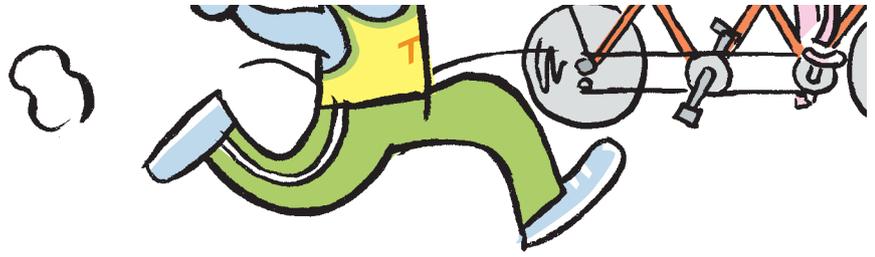
The guidelines for **weight** training will be determined by the number of exercises to be performed, the sets and the repetitions. For this age range the teacher should include workouts at a moderate intensity that allow for:

- 8-10 exercises aimed at the **bigger muscle groups** (arms, shoulders, chest, trunk, back, hips, and legs).
- In sets of **10-12** repetitions with an intensity that allows for 25-30 repetitions.
- **1 or 2** sets of each exercise.
- Practiced **twice a week** on alternating (non-consecutive) days. This guideline can only be followed in academic centres where physical education classes are not on consecutive days.



# 4. Teaching Proposals:

A practical implementation  
of the contents



<b>I. Nutrition Sessions</b> .....	<b>36</b>
<b>1 A</b> - "Design your diet: daily food" Theoretical basics ( <b>see section 1A</b> ).....	<b>36</b>
<b>1 B</b> - "Design your diet: occasional food" Theoretical basics ( <b>see section 1B</b> ).....	<b>37</b>
<b>1 C</b> - "Test what you know about healthy eating" Theoretical basics ( <b>see section 1C</b> ).....	<b>38</b>
<b>II. Physical Exercise Sessions</b> .....	<b>39</b>
<b>II A</b> - "Is physical exercise important?" Theoretical basics ( <b>see section IIA</b> ).....	<b>39</b>
<b>II B</b> - "Who does physical exercise?" Theoretical basics ( <b>see section IIB</b> ).....	<b>40</b>
<b>II C</b> - "How do I use my free time?" Theoretical basics ( <b>see section IIC</b> ).....	<b>41</b>
<b>III. Physical Education Sessions</b> .....	<b>42</b>
<b>III A</b> - "I improve my endurance" Theoretical basics ( <b>see section IIIA</b> ).....	<b>42</b>
<b>III B</b> - "Strength is necessary for....." Theoretical basics ( <b>see section IIIB</b> ).....	<b>43</b>
<b>III C</b> - "Session 10" Theoretical basics ( <b>see section IIIC</b> ).....	<b>44</b>

# I. Nutrition Sessions (IA, IB, and IC):

## I A - Title: "Design your diet; daily food"

Theoretical and practical information is presented to work on in small groups, with the objective of illustrating the final results on a wall poster where the importance of eating certain foods with what frequency is illustrated. Step by step, a food pyramid is constructed.

**Daily food** groups are studied in depth and the importance of frequent daily **water intake** is stressed.

### GENERAL OBJECTIVES:

- Understanding the theory and put it into practice by building a food pyramid.
- Putting into practice a varied and balanced diet.

### TEACHING OBJECTIVES:

- Identifying the food groups consumed daily.
- Understanding the importance of water in our diet.

### RESOURCES:

- Theoretical content.
- Chart IA illustrating the various daily food groups from the food pyramid.
- Scissors, colouring pencils or crayons and glue.
- Plastic cups.
- Water.
- A bottle and funnel.

### ORGANIZATION:

- Work is to be done in small groups: a minimum of six work groups that reflect the six food groups that form part of the food pyramid (daily food groups).

### CONTENT:

- Obesity and Food.

### IMPLEMENTATION:

The teacher presents in a very simple way the corresponding background theory. Afterwards, the class is divided into 6 groups:

1. The cereal group: bread, rice, pastas and potatoes.
2. The vegetable group.
3. The fruit group.
4. The dairy products group.
5. The healthy fat group.
6. The lean meat, fish, eggs, legumes, and dried nuts group.

In this practice session the teacher will give each student a chart with the food pyramid (chart 1A) in which they will colour in and glue the food cut-outs that correspond to each step of the food pyramid.

As a final activity each group should reflect on the amount of water they drink each day. Afterwards, they should colour in, cut, and glue the glasses of water that appear in chart IA. This amount of water corresponds to the daily recommended amount for children. Once this activity is completed, the teacher should discuss the amount of water that should be drunk daily.

### TIME:

55 minutes.

## IB - Title: "Design your diet; occasional food"

The theoretical and practical component is presented in order to facilitate working in small groups with the objective that at the end of the session the students can illustrate the importance of each food group and the frequency of its intake on a wall poster. The different food groups are slowly placed on the food pyramid.

Those food groups which should only be **eaten occasionally** will be looked at in depth along with the importance of **daily physical exercise**.

### GENERAL OBJECTIVES:

- To understand the theory and put it into practice through the building of a food pyramid.
- To put into practice a varied and balanced diet.

### EDUCATIONAL OBJECTIVES:

- To identify the food groups that should only be eaten occasionally.
- To learn about the food groups seen in the previous session that should be eaten on a daily basis.
- To understand the importance of daily physical exercise in our daily routine.

### RESOURCES:

- Theoretical content.
- Chart IB which illustrates the food groups that should only be eaten occasionally as seen on the food pyramid.
- Scissors, colouring pencils (or crayons) and glue.

### ORGANIZATION:

- Individual or group participation. The teacher can decide how the class can be divided based on the previous experience in session IA.

### CONTENTS:

- Obesity and nutrition.

### IMPLEMENTATION:

The teacher presents in a very simple way the corresponding theoretical content.

The class should then be divided into 3 groups –or if the teacher prefers- each student can work individually but each student must be told what to do with all three food groups.

1. Fatty meat and sausages group.
2. Saturated fats and sweets group (margarine, baked goods).
3. Daily water consumption and physical exercise group.

In this practice session the teacher gives each student a chart with the food pyramid (chart IB) which is to be coloured in and on which the corresponding cut-outs are to be glued. At the end of the session each student will have produced an individualized food pyramid and can take it home.

In the following section there is a word game in which ten daily food items appear and five occasional food items also appear. The following chart indicates the correct answers.

#### Daily food items:

- |             |              |
|-------------|--------------|
| 1. Hake     | 6. Olive oil |
| 2. Peaches  | 7. Spinach   |
| 3. Macaroni | 8. Milk      |
| 4. Chicken  | 9. Eggs      |
| 5. Cheese   | 10. Lentils  |

#### Occasional food items:

- |                         |                       |
|-------------------------|-----------------------|
| 1. Sweets and junk food | 4. Pizza              |
| 2. Soft drinks          | 5. Pastries and cakes |
| 3. Hamburgers           |                       |

As a final activity, discussion should take place on the importance of daily physical exercise. The student can design and decide what would be appropriate for the short story's character TRANQUI'S PERSONAL DIET.

### TIME:

55 minutes.

## IC - Title: "Test your knowledge of healthy food"

Theoretical-practical content is presented through very simple questions to be answered as true or false.

Discussion should take place about the terms summarized in the food dictionary (pages 49-50) which appears in the teacher's guide.

### GENERAL OBJECTIVES:

- To identify the basic nutritional concepts.
- To put into practice a varied and balanced diet.

### TEACHING OBJECTIVES:

- Understanding the theory and answering the questions posed about different situations.
- Having knowledge of each food group and being able to put them into the corresponding section of the food pyramid.

### RESOURCES:

- Theoretical content.
- Questionnaire IC.
- Food dictionary.

### ORGANIZATION:

- Individual participation.

### CONTENT:

- Obesity and food.

### IMPLEMENTATION:

The teacher gives each student a questionnaire composed of questions and answers (questionnaire 3A). These questions are then read out so that the teacher can make sure the students have understood the exercise and can therefore answer the questions.

Once they have had enough time to answer the questions the teacher can now give them each a copy of the dictionary which appears in the teacher's guide so that students can look up words.

Once students have looked up words, the questionnaire can be corrected and the students' versions of the dictionary definitions read out.

As a final activity, each student should complete the text that appears in exercise 3. The student, however, must have previously read the short story called "The Obstacle Course" first.

### TIME:

55 minutes.

## II. Physical Exercise Sessions (IIA, IIB, and IIC):

### II A - Title: Is physical exercise important?

Theoretical-practical content is presented in the form of simple questions which can be answered by colouring in or joining through arrows.

The students are informed of the **IMPORTANCE** of physical exercise.

In this session the student learns to distinguish between those activities demanding more physical effort from those that require very little and therefore do not contribute to preventing obesity.

#### GENERAL OBJECTIVES:

- To identify physical activities.
- To classify activities according to their intensity.

#### TEACHING OBJECTIVES:

- To understand the theory and answer the questions posed.
- To foment physical exercise.

#### RESOURCES:

- Theoretical content.
- Questionnaire with questions and answers 2A.
- Colouring pencils and cardboard paper.

#### ORGANIZATION:

- Individual or small group participation.

#### CONTENT:

- Obesity and Physical Exercise.

#### IMPLEMENTATION:

The teacher presents in very simple terms the corresponding theoretical content.

In the practical component the teacher gives each student a questionnaire with questions and answers (questionnaire 2A). The teacher reads aloud all five activities in order to clarify any misunderstandings about the exercises. The students are then allowed time to work on them alone.

#### TIME:

55 minutes.

## II B - Title: "Who does physical exercise?"

The theoretical-practical background information is presented through simple questions which are answered by indicating if they are true or false.

The students are taught to distinguish between sedentary activities and active ones.

The terms related to physical education presented in the Teacher's guide dictionary are gone into more in depth by the teacher (pages 49-50).

In this session students learn to distinguish between activities that require more physical expenditure and those of minor intensity.

### GENERAL OBJECTIVES:

- Identify physical exercise.
- Distinguish activities based on their workout intensity.

### TEACHING OBJECTIVES:

- To understand the theory and be able to understand and answer the questions posed.
- To foment physical exercise.

### RESOURCES:

- Theoretical content.
- Questionnaires: questions and answers 2B.
- A big hall or room with a stage for the performances.
- A dictionary for the teachers involved.

### ORGANIZATION:

- Individual participation.
- Groups of 4-5 students.

### CONTENT:

- Obesity and physical exercise.

### IMPLEMENTATION:

In the first part of the class (activities 1 and 2) the teacher reads the questionnaire out loud to ensure that everyone has understood it. Sufficient time for student reading must always be given.

In the second part of the class (activity 3) the teacher puts students into groups of 4-5 who will be assigned a situation based on doing physical exercise that will be acted out using the necessary costumes or background scenery. The teacher should supervise in order to help the class out with the representation of the story they have invented.

As a final activity, discussion about the situation being theatrically represented should be encouraged and students should record their own experiences and feelings in the classroom notebook being used.

### TIME:

55 minutes.

## II C - "How do I use my free time?"

Theoretical-practical background information is presented in the form of closed questions which students must answer on the chart. Students should be informed of the amount and variation of physical activities available that can be performed in their free time. In this session students can share and compare their different experiences. They should be able to make decisions about changing habits in their daily routine and learn the minimum guidelines for daily physical exercise.

### GENERAL OBJECTIVES:

- To identify one's own free time and how to use it in a varied, active way.
- To know the positive relationship between healthy lifestyles and good health.
- To distinguish between a sedentary attitude and a physically active attitude when using free time.

### TEACHING OBJECTIVES:

- To analyze our daily routine.
- To reflect upon how to vary habits in our lifestyle in order to be more physically active.

### RESOURCES:

- Theoretical content.
- Questionnaire 2C.
- Colouring pencils.

### ORGANIZATION:

- Individual participation.

### CONTENT:

- Obesity and Physical Exercise.

### IMPLEMENTATION:

The questionnaire on the analysis of daily routines (Questionnaire IIC) is distributed to students who should be informed that they must be as specific as possible about the type of daily activities and the amount of time dedicated to them. The teacher should make sure everything is clear to the students and that they complete everything except for the last two squares. Once the questionnaire has been completed, students will be asked to colour in red all the areas where they have indicated that they do physical exercise and with yellow all the areas that indicate sedentary activities.

Since we know the type and amount of physical activity that occurs weekly, we only have to calculate the time we spend each day on the activity or exercise. The student is therefore asked to add up in minutes the time reflected in the areas coloured in red and those for sedentary activities coloured in yellow.

To finalize, the class should reflect on the amount of time spent daily on physical exercise with a discussion on the types of activities performed and if they are sufficient or not in terms of the recommendations made in this guide.

### TIME:

55 minutes.

## III. Physical Education Sessions (IIIA, IIIB and IIIC):

### III A - Title: "Improving my strength"

Practical material is presented in the manner of racing, moving and marching activities which the children must do.

An attempt will be made to present situations that must be resolved or performed through the use of strength. The teacher will then inform the student of the correct pacing necessary in each race in order to perform the exercise and its duration. The teacher must also insist on the students' respecting each other's individual rhythm while working.

With the implementation of this session students could perform activities or games all aimed at developing **endurance**. They can learn specific exercises for developing this physical quality and do a strength-training session that complies with minimum requirements of physical activity that should be done weekly.

#### GENERAL OBJECTIVES:

- To relate physical exercise (endurance-training exercises and games) with the essential parts of our daily routine.
- To actively participate in games and exercises by intervening, listening, and respecting classmates.
- To know the heart and lung's functions and their relationship with physical activity.

#### TEACHING OBJECTIVES:

- To improve the performance and duration of endurance-training exercises by better control of pacing in a race.
- To relate the exercises performed with the physical capacity they are geared to improve.

#### RESOURCES:

- Theoretical content.
- A gymnasium or outdoor courtyard and a ball.

#### ORGANIZATION:

- Individual or small group participation based on level of physical capacity.

#### CONTENT:

- Obesity and physical exercise.

#### IMPLEMENTATION:

The activities in section IIIa are put into practice: there are a total of 4 activities. These are organized into two blocks: warm-up and games for the main part. At the end of the activity 1b and 3c a general discussion based on the work carried out should be conducted. A series of possible conclusions based on student reflections are included to facilitate matters for the teacher.

#### TIME: :

55 minutes.

### III B - Title: "Strength is necessary for..."

Practical material is presented through activities to be performed by the children. The idea is to create situations where strength is necessary to resolve or perform the activity correctly. The teacher must advise the student as to the correct technique necessary for the activity and the number of repetitions that should be done. The teacher must also insist that the students respect the basic security guidelines for each session.

In this session students have the opportunity to develop **muscular strength** through activities and games. They will also learn specific exercises to develop this physical quality and partake in a strength-building session that will help them meet the minimum weekly physical activity requirements.

#### GENERAL OBJECTIVES:

- To associate physical activity (exercises and games) with an important part of our daily routine.
- To actively participate in games and exercises while listening and respecting the companions involved.

#### TEACHING OBJECTIVES:

- To improve performance through practice in exercises meant to improve muscular strength.
- To associate exercises performed with the physical capacity they are aimed at.

#### RESOURCES:

- A gymnasium, elastic bands, ropes of different colours and size, chalk or different-coloured insulating tape.
- Self-evaluation questionnaire 3B.
- Dictionary (pages 49-50).

#### ORGANIZATION:

- Individual participation.
- Participation in pairs.

#### CONTENT:

- Obesity and Physical Exercise.

#### IMPLEMENTATION:

The activities proposed in section III B are performed, and as a final activity the self-evaluation questionnaire 3B is answered. A discussion should follow in terms of the different answers given and the importance of activities and games that increase strength and prevent juvenile and adult obesity.

#### TIME:

55 minutes.

### III C - Title: "Session 10"

Practical material is presented through activities and games in which the children must participate. In this session, however, the student **decides** which activity or exercise to perform.

The idea is to pose situations that require the use of aerobic exercise and muscular strength to resolve or perform them.

In **endurance training** activities the teacher should inform the student as to which is the appropriate pace for each exercise and its duration in minutes.

In **strength-related activities** the teacher must inform the student about the correct technique necessary for each exercise and the number of repetitions.

The teacher must also insist that students adhere to basic security norms when participating in these sessions along with the concept that each student must work at an individual pace.

#### GENERAL OBJECTIVES:

- To identify the type of physical activity that best suits our preferences and daily routine.
- To actively participate in games and exercises while learning to listen and respect companions.

#### TEACHING OBJECTIVES:

- To learn, through practice, the types of activities that best suit our daily routine and preferences.
- To correctly associate specific exercises with the specific physical ability they are aimed at.

#### RESOURCES:

- Theoretical content.
- Jump ropes.
- Dictionary (pages 49-50).

#### ORGANIZATION:

- Individual participation.

#### CONTENTS:

- Obesity and Physical Exercise.

#### IMPLEMENTATION:

In each of the session's parts various tasks are proposed so that students can choose whichever one suits their preferences and interest. The final decision is in the student's hands and the teacher can only act as a guide during the class session.

At the end of each block of exercises a joint activity is proposed that can serve as a summary of the previously done work. It is through this activity that the teacher must attempt to integrate all of the proposals made.

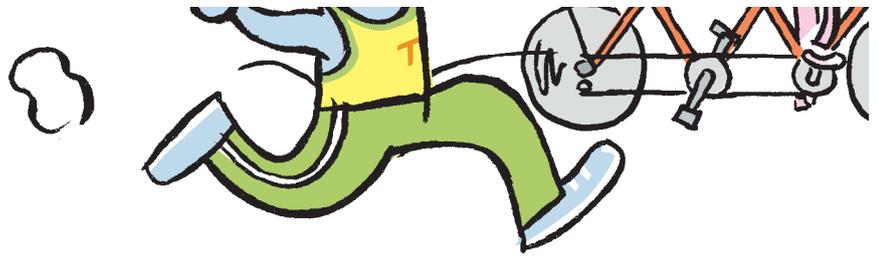
#### TIME:

55 minutes.

Session number		Title	Contents	General Objectives	Resources	Organization	Student Material
I A	Healthy Nutrition Sessions	Design your diet; daily food	Basic nutritional concepts. Estimating basal metabolism. Estimating activity energy expenditure The characteristics of different nutrients What is a varied and balanced diet? What are the recommended daily requirements for children? Hygiene and dietary advice for adequate nutrition.	To understand the theory and put it into practice by building the food pyramid. Putting into practice a varied and balanced diet.	Theoretical content. Chart 1A illustrating the various daily food groups from the food pyramid. Scissors, colouring pencils (or crayons) and glue. Plastic cups. Water. A bottle and funnel. Chart 1B with occasional food.	Work is done individually or in small groups. (Session 1A: 6 groups minimum)  (Session 1B: 3 groups minimum)	- Chart 1A. - Handout 1A. - Short story 1 "The Birthday...". - A plastic cup.
		Design your diet; occasional food					
		Test your knowledge of healthy food					
II A	Physical Exercise Sessions	Is physical exercise important?	What is physical exercise? Why is it necessary to do physical exercise? How can physical exercise be promoted in children? Which types of physical exercise are good for children? How much and how intense should physical exercise be for children?	To identify physical activities. To classify activities according to their intensity.	Theoretical content. Questionnaire 2A. Colouring pencils and cardboard paper.	Individual or small group participation.	- Handout 2A. - Colouring pencils and cardboard paper. - Short story1: "The Birthday...".
		Who does physical exercise?					
		How do I use my free time?					
III A	Physical Education Sessions	I improve my endurance	How can aerobic work-outs be done to prevent obesity? What other types of physical activities can a child do to prevent obesity? What kinds of objectives should be set to prevent obesity in the future?	To identify one's own free time and how to use it in a varied, active way. To distinguish between a sedentary attitude and a physically active attitude when using free time. To know the positive relationship between healthy lifestyles.	Theoretical content. Questionnaire 2B. Food dictionary (Pages 49 and 50?).	Individual participation Groups of 4-5 students.	- A photocopy physical exercise dictionary. - Handout 2B. - Short story 2: "Time to Dance".
		Strength is necessary for...					
		Session 10					
III B	Physical Education Sessions	I improve my endurance	How can aerobic work-outs be done to prevent obesity? What other types of physical activities can a child do to prevent obesity? What kinds of objectives should be set to prevent obesity in the future?	To relate physical exercise with the essential parts of our daily routine. To know the heart and lungs functions and their relationship with physical activity. To identify the type of physical activity that best suits our preferences and daily routine. To actively participate in games and exercises by intervening, listening, and respecting.	Theoretical content. A gymnasium or outdoor courtyard and a ball.  A gymnasium, elastic bands, ropes of different colours and size, chalk or different-coloured insulating tape. Self-evaluation questionnaire 3B. Dictionary (pages 49-50).	Individual or small group participation selected by level of physical capacity.  Individual participation.	- Class notebook. - Sports attire. - The short story 1: "The Birthday...".
		Strength is necessary for...					
		Session 10					
III C	Physical Education Sessions	I improve my endurance	How can aerobic work-outs be done to prevent obesity? What other types of physical activities can a child do to prevent obesity? What kinds of objectives should be set to prevent obesity in the future?	To relate physical exercise with the essential parts of our daily routine. To know the heart and lungs functions and their relationship with physical activity. To identify the type of physical activity that best suits our preferences and daily routine. To actively participate in games and exercises by intervening, listening, and respecting.	Theoretical content. A gymnasium or outdoor courtyard and a ball.  A gymnasium, elastic bands, ropes of different colours and size, chalk or different-coloured insulating tape. Self-evaluation questionnaire 3B. Dictionary (pages 49-50).	Individual or small group participation selected by level of physical capacity.  Individual participation.	- Class notebook. - Sports attire. - The short story 1: "The Birthday...".
		Strength is necessary for...					
		Session 10					

# 5. Bibliography and Dictionary

For the student



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## Dictionary:

- ◆ **Aerobic Activities (endurance):** are those exercises that are maintained for long periods of time (30-60 minutes) and that transport the body during their performance (walking, running, cycling, skating, skiing...). They help to prevent excess weight.
- ◆ **Activity Energy Expenditure:** The extra energy our body needs in order to carry out a physical activity.
- ◆ **Active Life:** Is a way of life where physical activity and exercise are consistently present. It is a way of living which is learnt very early in school and with family and friends.
- ◆ **BMI= weight kg divided by height squared.**
- ◆ **Basal Metabolism:** The minimum amount of energy necessary to maintain vital functions for a body at rest.
- ◆ **Body Mass Index (BMI):** The formula used to determine the weight-height ratio in a person. It is obtained by dividing a person's weight in kilos by height squared.
- ◆ **Carbohydrates:** are also called glycogens or sugars. They are fundamental to our diet and constitute the basis of the food pyramid. They should make up 55-58% of the daily calorie intake. They are basically found in cereals, bread, potatoes, pasta, legumes and rice.
- ◆ **Cardiovascular Diseases:** Plaques of fat can sometimes accumulate in the arteries disrupting normal circulation of the blood. Different types of cardiovascular diseases may appear conditioned by the location and degree of the obstruction: angina pectoris, myocardial infarction... To prevent these diseases it is recommended that diet be improved, physical exercise be increased, smoking given up and stress controlled.
- ◆ **Diabetes:** Is a metabolic disease which is characterized by the body's incapacity to extract glucose from the blood. There are various types of diabetes: type II (non-insulin dependent) is the most common one and the factors that predispose one to this disease are obesity and age. More than 80% of diabetics with type II diabetes are overweight or obese.
- ◆ **Energy Balance:** Is the number of calories that a person consumes with respect to those burnt daily.
- ◆ **Healthy Diet:** A diet which is varied and balanced and contains all sorts of food that provide the necessary nutrients for the correct growth and development of a child.
- ◆ **Kcal:** The traditional unit used to measure energy or the energetic value of food.
- ◆ **Leisure:** Are those activities that people do in their free time wilfully and for personal amusement, improvement or any other voluntary purpose.
- ◆ **Lipids:** Also called fats. They are important in our diet but limiting their consumption to 30% of the daily caloric intake. The most important source is olive oil (good fat) although they can also be found in pizzas, hamburgers, junk food and industrially-baked goods... (bad fat).
- ◆ **Maximum Cardiac Frequency:** The maximum number of times that the heart is capable of beating per minute. It is generally reached when maximum physical effort is made or when an emotional state becomes extremely intense.

- ◆ **1- Maximum Repetition Test (1MR):** A test that measures the maximum strength in a muscle group. It is the maximum amount of weight a person can move once.
- ◆ **Nutrition:** Components that form part of food. They are classified as carbohydrates, lipids, proteins, vitamins, minerals and water.
- ◆ **Obesity:** An excess of body fat that can be accompanied with the appearance of diseases like diabetes or coronary disease.
- ◆ **Physical Activity:** Is any voluntary movement of the body that produces energy expenditure. The most frequent physical activities are those performed in our daily lives like carrying a schoolbag, riding a skateboard, playing ball, doing housework or doing the grocery shopping.
- ◆ **Physical Condition:** are the capacities or qualities (endurance, flexibility and strength) required to perform physical activities.
- ◆ **Physical Exercise:** Is a planned, intentional movement designed to help keep in shape and in good health. It can include activities like: walking at a brisk pace, aerobics, cycling, or even activities like gardening and dancing.
- ◆ **Protein:** A necessary nutrient in our diets in order to perform different activities like the synthesis of hormones or of different tissues. Intake must be at least 12-15% of our daily calories. It is found mainly in fish, meat, legumes and dairy products.
- ◆ **Sedentary Lifestyle:** When the amount of physical activity does not reach the minimum level necessary to maintain healthy. People with sedentary lifestyles develop more diseases than those who are active.
- ◆ **Serving:** The standard portion that is normally served for each type of food.
- ◆ **Sport:** Is physical exercise of a competitive nature with specific rules.
- ◆ **Strength Exercises:** are those exercises in which weights are moved. Children can also perform such exercises by moving their own or a companion's weight (without the need for a gymnasium or weights). They also help to keep off excess weight.