PHYSICAL FITNESS AND HEALTH

4º e.s.o.

Notes also available on **bilingualpe.wordpress.com**

What is *Physical Fitness*?

*"It is a **state of well-being** with **low risk of premature health problems** and **energy to participate** in a variety of physical activities"*

If you enjoy a good physical fitness:

- you will feel **less fatigue**
- your muscles will be more **resistant, flexible and stronger**
- you will have **fewer injuries**, **diseases** and will relax **and release stress** easily.

Physical fitness depends on some factors: *endurance, strength, flexibility, speed, coordination, balance, agility and body composition*. Some of them are considered health-related, because of their straight relationship with the body system's function; so, if you want to keep *healthy*, you must practice physical activity that involve aerobic endurance, maximum strength, resistance strength and static flexibility, trying to improve a correct body composition as well.

COMPONENTS OF PHYSICAL FITNESS: (in bold, health-related factors, the rest are skill-related factors)

	Types	Subtypes	Features	Test	Beneficial adaptations of regular training
Endurance	**Aerobic**		· Low-medium intensity · High volume (15'-hours)	*Cooper test* *Course-Navette*	· Your **heart grows** (larger and thicker) · Your **breathing capacity** increases
	Anaerobic	Alactic	· Very high intensity (95-100%) · Low volume (0´´-20´´)	-	· You have more **capillary vessels** (they transport oxygen and fuel to your muscles)
		Lactic	· High intensity (80%-90%) · Low volume (20´´-2')		· It's easier to maintain your **ideal weight,** reducing fat
Strength	**Maximum strength**		· heaviest load (100%)	*1RM-10RM*	· Your muscles and tendons **grow** in size
	Explosive strength(Power)		· ligth weight	*overhead medicine ball throw*	· It helps you keeping a **good posture**
			· fastest speed	*standing long jump*	· You can move weights easier
	Resistance strength		· medium loads · high volume	*60´´ push ups* *plank*	· It **reduces sports injuries** to less than 1/3
Flexibility	**Static**		· slow and **steady** movements, **holding a position** for some seconds	*sit and reach*	· You have **less injuries***
	Dynamic		· short-duration, high-force stretch that uses **bouncing** movements to stretch muscles.	-	· Your **range of movement** in joints is bigger, so you can accelerate your arms and legs for a longer distance. Then, you can kick, throw and hit faster and stronger.
			· **High risk of injury** if muscles are fatigued or cold!		· Your **muscles** are more **elastic** and more **powerful**.
Speed	Reaction speed	simple	· stimulus and response are known	-	· Speed is basic in many sports (skill-related ability)
		discriminatory	· stimulus and/or response are unknown		
	Speed of an isolated movement		· a single movement as fast as you can (p.e. a taekwondo high kick)		· It is **related with explosive strength (power), coordination and agility**. If you react and move fast, you have an advantage in all sports.
	Speed of combined movements		· a short **sprint** (running, swimming, cycling, skating, rowing….)	*50-m sprint*	· Speed training develops and **makes your muscles grow**.
Balance	Static	Controlling body position while **standing still**		-	skill-related abilities, basic in sports performance
	Dynamic	Controlling body position while moving			
Coordination		Making movements work together smoothly			
Agility	ability to stop, start, and change directions quickly			*10x5 m*	

Heart Rate Training Zones*: *are calculated by taking into consideration your Maximum Heart Rate (MHR). The calculation of a zone value, X%, is performed in the following way:*

- ✓ **MHR=220-age**
- ✓ Calculate the required X% on the MHR: 80%= 80* MHR /100

Example: The athlete's age is 15; then, MHR is 205 (220-15) - determine the 70% value

70% of 205 = 143.5 bpm

These are the **Heart Rate Training Zones:**

Training Zone	% MHR	Training effect	Fuel used
Energy efficient or Recovery Zone	**60% to 70%** (aprox. 125-130 / 140-145 bpm)	It develops **basic endurance** and **aerobic capacity** while allows your muscles to re-energise with glycogen previously expended	**Fat** (lipids)
Aerobic Zone	**70% to 80%** (aprox. 140-145 to 165-170 bpm	It develops your **cardiovascular system** (aerobic capacity	**Fats** and some **glycogen**
Anaerobic Zone	**80% to 90%** (170 to 180-185 pbm)	It develops your **lactic acid system,** improving your ***anaerobic threshold***	**Glycogen**
Red Line Zone	**90% to 100%** (>185 bpm)	It develops your **speed (lactic and alactic acid systems**)	**Glycogen** and **Phosphagen of Creatine**

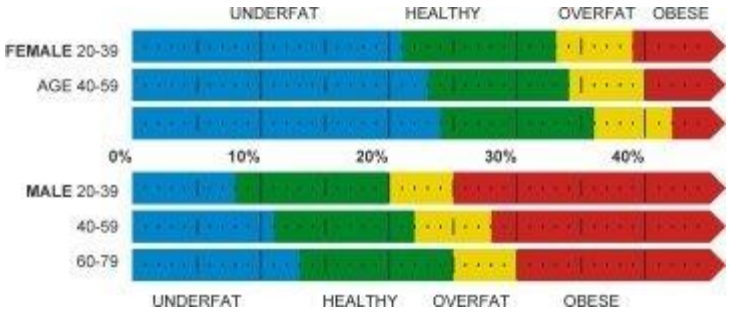
Thus, if you want to develop <u>a healthy physical fitness</u>, the training <u>intensity</u> in <u>aerobic training</u> should be kept within the <u>recovery</u> an <u>aerobic</u> zones (60 to %80% of MHR). A higher intensity training (within anaerobic and red line zones) will be useful to develop sport performance, *not always* considered as healthy (but it is currently becoming more and more useful to reduce body fat, supported by health approach scientific researches)

Body Fat Composition

Body fat composition refers to the **amount of fat on your body**. For example, a 100-kg person with a 25% body fat composition will have a **lean body mass** of 75 kg.

To qualify as fit:

Clasificación	Mujer (%)	Varón (%)
Normal	24-30	12-20
Límite	31-33	21-25
Obesidad	>33	>25



WHO (World Health Organisation):

What are overweight and obesity?

Overweight and obesity are defined as abnormal or **excessive fat accumulation** that may **damage health.**

What causes obesity and overweight?

The fundamental cause of obesity and overweight is an **energy imbalance between calories consumed and calories expended**. Globally, there has been:

- an increased intake of energy-dense **foods** that are **high in fat and sugars**; and
- an increase in **physical inactivity** due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization.

How can overweight and obesity be reduced?

At the individual level, people can:

- **limit** energy intake from total **fats** and **sugars**;
- **increase** consumption of **fruit** and **vegetables**, as well as **legumes**, **whole grains** and **nuts**; and
- engage in **regular physical activity** (**60 minutes a day for children** and **150 minutes** spread through the **week** for **adults**).

DRUGS ABUSE

Drugs, alcohol and tobacco can become chemically or psychologically **addictive**.

In **chemical addictions**, the body **gets used** to the drug and the person has to take an **increasing amoun**t of the drug for it **to continue to have an effect**. This results in people drinking more and smoking more often, which **increases the risk** of adverse health problems.

If the person **stops taking the drug**, they could develop **withdrawal symptoms**, such as fever, nausea and hallucinations.

In **psychological addiction**, the person **feels** that they have to keep taking the drug but would **not experience harmful effects** if they stopped.

Alcohol and tobacco can become very addictive without the person thinking they have a problem. They are both **legal** and **socially acceptable** drugs. Smoking has recently become less acceptable in public places and is being restricted; there are more and more no smoking areas. This is due to the harmful effects of **passive smoking**.

TOBACCO

Cigarette smoke contains **over 100 different chemicals**. The most damaging are **carbon monoxide, nicotine and tar.** Nicotine is an addictive substance and a mild stimulant. Tar is known to contain carcinogens that contribute to cancer. The effects smoking has on the body can be divided into short-term and long-term.

Short-term effects

- Bad breath, reduction in appetite and sense of smell and taste
- Sore throat, prone to colds and chest infections.
- Longer recovery rate.

Long-term effects

- Shortness of breath, reduced lung capacity and oxygen carrying capacity due to carbon monoxide being absorbed, which means less oxygen reaches the muscles. This will obviously reduce performance in sport as energy levels will be affected, as will stamina.
- Weakens the heart muscle's ability to pump blood.
- Cancer of the mouth, throat, lungs.
- Low resistance to chest and other illnesses – smoker's cough as smoke irritates the air passages making them narrower and inflamed, emphysema, bronchitis.
- Increase in blood pressure, blood clots, strokes and heart disease.
- Stomach ulcers

ALCOHOL

Although recent research suggests that a daily glass of red wine may have health benefits, any excess will be detrimental to health. Alcohol is addictive and is a depressant, because it reduces the activity of the brain and nervous system.This is why it has been used illegally by some sportspeople to keep them calm in events that require precise, controlled movements, such as archery. The World Anti-Doping Agency (WADA) 2004 Prohibited List of Drugs prohibits in-competition use of alcohol in certain sports, including archery, football, gymnastics, karate and skiing, as well as all motor and motorcycling sports.

Short-term effects

- Reduce coordination/balance/judgement/ vision
- Slower reaction time
- Distorted vision
- It can lower the level of glycogen in the muscles, which will reduce their ability to work for long. This will reduce fitness.
- Dehydratation, which will affect performance in long distance or endurance events
- Heat loss due to blood vessels in the skin opening up. In a cold environment this could result in hypotermia.
- Headache, increased blood flow, raised blood pressure.
- Aggressiveness, memory loss.
- Stomach irritation, vomiting.

Long-term effects

- Weight gain, kidney problems, cirrhosis of the liver
- Gastritis, stomach ulcers.
- Heart disease/hardening of the arteries
- Muscle weakness
- Depression, brain damage.

The **main dangers** of excessive amounts of alcohol and smoking are **addiction** and that they can contribute to **heart disease, the blocking of arteries and damage to vital organs**.

QUESTIONS

- **Can you suggest some sports or physical activities that help you to get a healthy physical fitness ?**

- **How can you test your physical fitness's factors?**

- **<u>Write</u> at least two beneficial adaptations of regular training for the following examples:**
  - 2 hours cycling or hiking:
  - 30' circuit training:
  - 15' stretching routine:

- **Which physical fitness factors can reduce sports injuries***?*

- **What <u>causes</u> overweight and obesity? How can you <u>reduce</u> or <u>prevent</u> overweight and obesity?**

	CAUSE	PREVENT OR REDUCE
10% of body fat (men)		
35% of body fat (women)		
Go cycling to everywhere		
Reducing consumption of vegetables		
Reducing consumption of sugars		
Consumption of fats		
Physical activity: 60' a day for children		
Consumption of whole grains		
60' of physical activity a week for adults		
Consumption of nuts		
Go by car to everywhere		

<u>Draw</u> and <u>explain</u> five exercises for each of the following types:

- Joint mobility
- Coordination exercises and/or running technique
- Stretch your hamstrings, glutes, adductors, calf muscles, pectorals, triceps and/or trapecius (specify)
- Strengthen your core (abs and lumbar muscles), arms and legs.

Classify the following exercises based on the physical fitness factor on which it depends (write the number only)

ENDURANCE		STRENGTH		
A.Aerobic	B.Anaerobic	C.Maximum	D.Explosive	E.Resistance

FLEXIBILITY		SPEED			K.AGILITY
F.Static	G.Dynamic	H.Reaction	I.Of isolated movements	J.Of combined movements	

1. A penalty shot in football (2)
2. 30' jogging
3. 20' circuit training (2)
4. 10 x 5 m. test
5. Glutes stretch
6. Standing long jump test
7. A high kick in taekwondo (2)
8. A 100 meters race
9. Course Navette test
10. 2 hours hiking
11. Sit and Reach test
12. Plank test
13. Overhead ball throw test
14. Weight lifting
15. A 800 m race
16. Climbing
17. A boxing punch
18. Spagat

- Why people who give up smoking gain weight?

- How does alcohol affect driving?

- Explain two reasons why smoking cigarettes reduces sport performance

- Why does drinking alcohol deteriorate your body composition?

- Which body systems do either alcohol and tobacco damage