IES Cortes de Cádiz Secondary School

El Molar

P.E. Department

[PHYSICAL EDUCATION]

4th secondary school

Name and surname: _____ Group: ___

Index

1 Benefits of physical activity

Robert Marchand lived the I and II World Wars, was a French gymnastic champion, fireman in Paris, woodcutter in Canada, chicken breeder in Venezuela and gardener until he was 76 years old. The secret of his long life is in physical exercise. He has been active his whole life, and even when he was 105 he was still training to improve his hour record cycling (for people older than 100). His golden rule is not to exceed 110 beats per minute when exercising, and its only magic potion is to add a little honey to his water bottle. Thanks to the training with more than 100 years old he improved his maximum VO_2 to the rates that are normal for a 45 year old people. He is still alive.

We all know (or think we know) that in order to have good health we should eat sensibly, get regular rest and sleep, improve our ability to cope with stress and do regular physical activity. We also know (or think we know) the benefits of the healthy practice of physical exercises. In fact, if there were one pill that would provide all the benefits that healthy physical exercise brings everyone would want it, although few could afford it. the fact is that exercise means health, and through last years doctors of all countries are prescripting moderate physical activity exercises instead of pills. Why? Because exercise prevents and heals. We can read below some of the benefits:

Helps to have physical and mental health

Prevents heart disease
Prevents cancer
Prevents stroke
Prevents hypertension
Prevents diabetes,
Prevents cardiovascular diseases
Prevents lung problems
Prevents osteoporosis
Prevents rheumatoid arthritis
Prevents depression
Prevents atherosclerosis

Reduces obesity
Helps to control weight
Improves your strength and endurance
Make your muscles and bones stronger
Improves sleep
Increases your energy and self – esteem
Reduces stress
Improves your strength and endurance
Provides long – term health benefits
Keeps cholesterol within the proper values.
Helps to sleep properly

Increases your chances of leaving longer and in sound condition.

¿Did you know? Exercise increases life expectancy. In a study conducted in 2011, it was found that when they were 82years old, 50% of former runners of the Tour de France were still alive, while 50% of the general population had already died at 73 years old.

Nonetheless, 46% of the Spanish population does not practice any type of physical activity, in spite of the fact that some problems related to the lack of physical exercise are the following ones:

- In almost all likelihood (80%) an obese teenager will be an obese adult.
- VO_2 maximum decreases (VO_2 is the maximum oxygen consumption).
- Muscle volume decreases.
- Low aerobic capacity (you are going to get tired easily).
- Higher body weight, because there is more fat in your body.
- It increases the risk of cardiovascular diseases, chronic diseases, metabolic and psychological disorder.

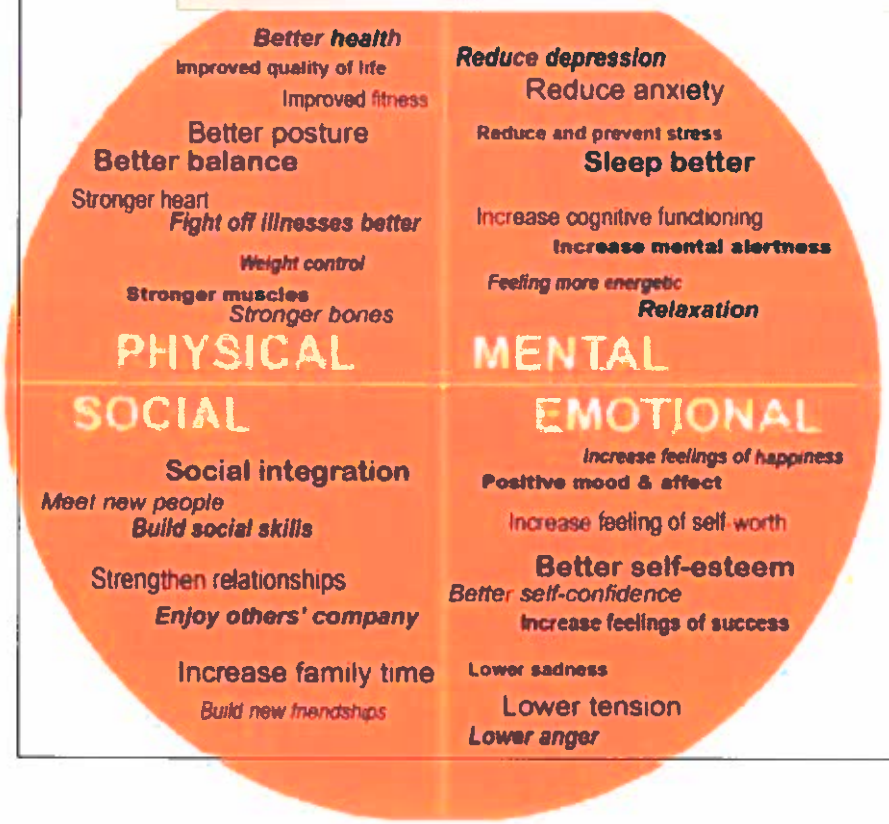
Good news is that it is never too late to jumpstart a healthy lifestyle.

Here you have some of the recommendations on physical activity for health (according to the World Health Organization):

- It is also recommended to do moderate or vigorous physical activity for at least one hour a day (increased volume or intensity reported greater benefits).
- Daily, adopt an active lifestyle: climbing stairs, walking, cycling to school…
- Limit passive entertainment to maximum 2h / day (TV, computer, video games…).
- Practice regular physical activity: aerobic exercises should predominate; it is recommended to work endurance strength and flexibility regularly.

You can check if you are an active person by doing a small test on the page of the Ministry of Health of Spain (this page is written in Spanish):

http://www.estilosdevidasaludable.msssi.gob.es/actividadFisica/descubrelo/home.htm



11 Cardiovascular and respiratory systems

HELPFUL REMINDER OVER THE PULSE

A fundamental objective is to achieve that training is a beneficial stimulus, and not a health risk. This is why is useful to control some physiological variable such as weight control or pulse (heart rate) to check the proper assimilation of physical exercises. As a reminder, some ideas that we have seen in the previous years are the following ones:

Normal resting heart rate: 60 – 90 beats per minute (bpm)

Cardiovascular system provides to the muscles both oxygen and nutrients, so they can maintain a high level of energy production

Making an effort is advisable to work between 60 and 85% of maximum heart rate

Cardiac output: heart rate x stroke volume

Amount of blood pumped out per minute. About 6 liters at rest, between 20-30 when doing physical activity.

Number of times the heart beats per minute.

Amount of blood pumped by the heart in each beat.

Heart: it is in charge of pumping, distributing and collecting blood to every organ and from every organ of our body, keeping blood flow with constant pressure

As we grow up we need a fewer heart rate to get healthy benefits. Very old people get walking many more benefits than a teenager (if he is walking, too).

Ideal beats interval at which we should do exercises for developing a good level of health: between 60 - 85 % of maximum heart rate (is found by subtracting 220 - age for men and 226 - age for women).

TOBACCO when people smoke there are some changes on their respiratory system: the airways are less able to displace air to the lungs or muscles, and respiratory muscles have to do more work to ventilate enough air to the different parts of the body. Tobacco increases heart rate in the short term. Not to smoke is the best advice, but smokers should know that at least they shouldn't do it neither half an hour before or after doing exercise.

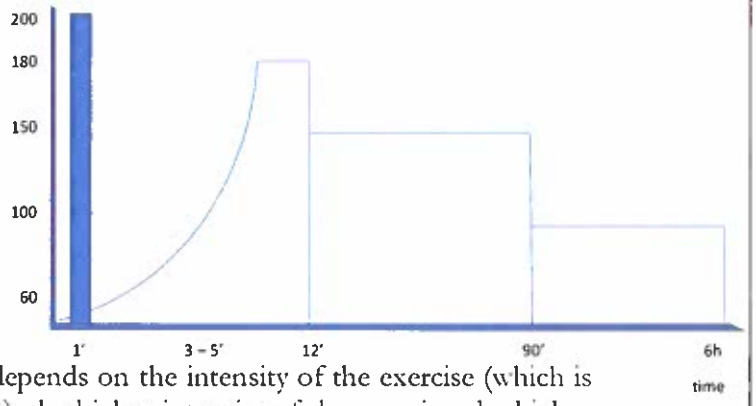
Endurance sportspeople will have a much lower rate, because their hearts are stronger and higher, and are able to pump more blood in fewer beats than an unfit person. Their stroke volume is therefore greater. In this way we can increase the amount of oxygen going to our working muscles. This will help us to work harder and for longer in our sport.

1.- Heart rate response to exercise:

a) Anticipatory response: heart rate increases even before the activity starts, in anticipation to the needs we are going to have. It happens in a simply training session, much more when a sprinter is lining up at the start of a race.

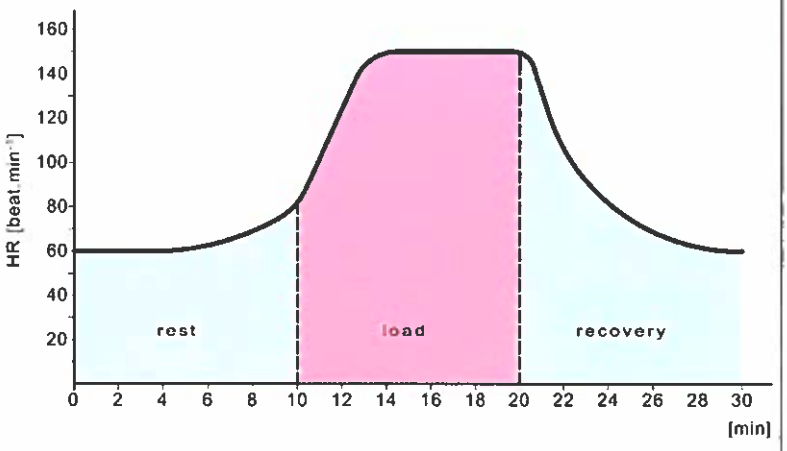
b) Exercise response: during exercise contracting muscles require a continual oxygen supply and nutrients to support energy production. Therefore, and given that oxygen and nutrients reach the muscles through the blood, and since it is the heart that is responsible for pumping it, the heart rate increases to meet those demands.

Different activities have different demands. A goalkeeper, for example, is going to have less demand on their cardiovascular system than a midfield player, even though both of them are playing the same game and in the same match.

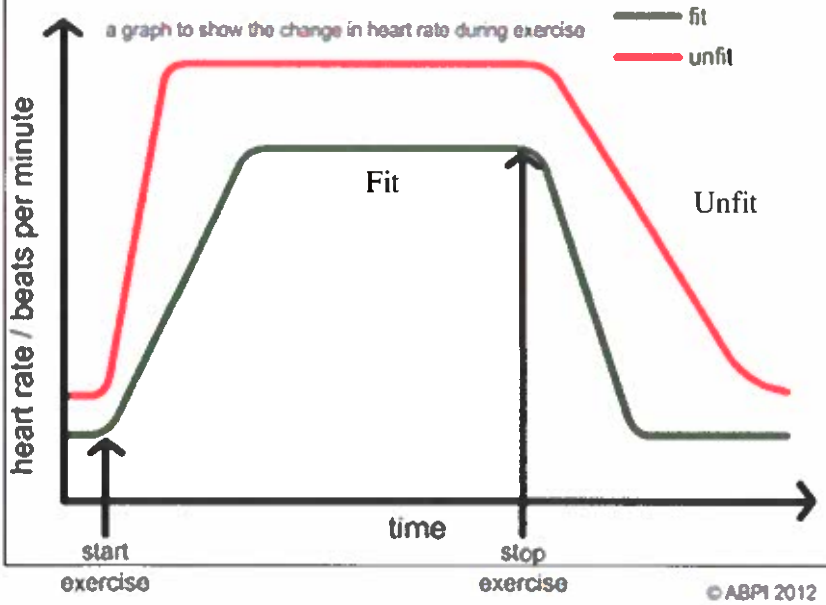


How much it is going to increase depends on the intensity of the exercise (which is the amount of work done per unit of time): the higher intensity of the exercise, the higher the heart rate, and the shorter its duration.

So, as you can see in the graph, even before starting the exercise our heart rate starts to increase up to a point (after some minutes of exercising) in which heart rate is enough to satisfy the demands of the activity. Then, heart rate is going to be the same until the end of the exercise, moment in which it begins to descend until returning to the resting heart rate.



At finishing the exercise, the faster our heart rate goes down to our resting heart rate, the better our recovery is. Fit people are going to have a faster recovery than unfit people, and in the long run their resting heart rate will remain lower.

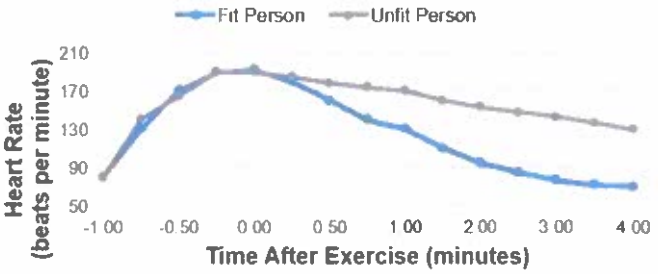


In this next graph you can also see the following differences between fit and unfit people:

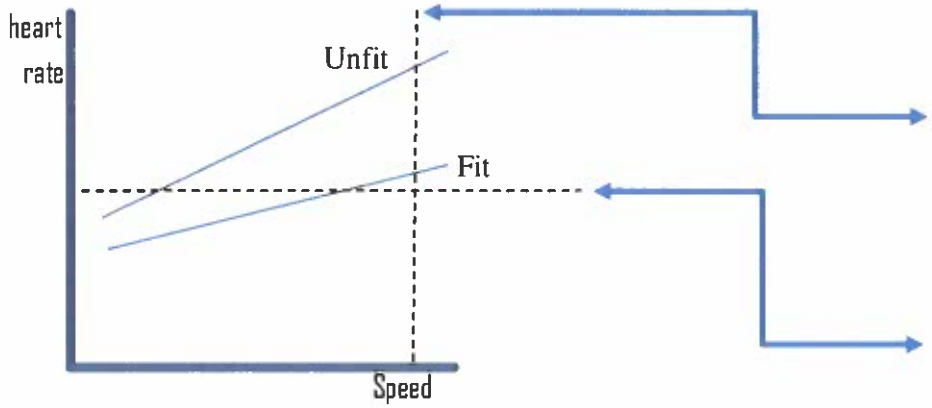
- Fit people have less resting heart rate.
- Doing the very same exercise fit people are going to have less heart rate (and therefore are going to be less tired).
- Doing exercise at same intensity (for example, with the same heart rate) fit people can perform it at a faster speed.
- The recovery of fit people is also faster.

HEART RATE RECOVERY AFTER ONE MINUTE GO TEST

After doing an anaerobic exercise, which means that both of them are going to have more than 180 beats per minute, the recovery of fit people is going to be much faster than the recovery of unfit people. (In this graph you can see how fit person has recovered their resting heart rate in four minutes, while unfit person is still in 130bpm).



And here you can see the relationship between heart rate and speed (no matter you are running, or cycling, or swimming, or…). Both to fit and unfit people the faster you run the higher your heart rate is going to be, but there are also significant differences depending on the level of training: as you can see in the graph, training moves the graph to the right.



Performing the very same exercise (same duration, same speed) a fit person will have less heart rate than an unfit person

With the same number of beats, a fit person can perform the exercise at a higher speed

2.- Long – term effects of the exercise on the cardiovascular system:

CARDIAC HYPERTROPHY (the heart increases its size and blood volume)

INCREASE IN STROKE VOLUME (the heart pumps more blood in each beat)

CAPILLARISATION Increase in the size and number of bloods vessels (the delivery of oxygen and nutrients is more efficient)

DECREASE IN RESTING HEART RATE (which explains why fit people usually have less than 60 beats per minute)

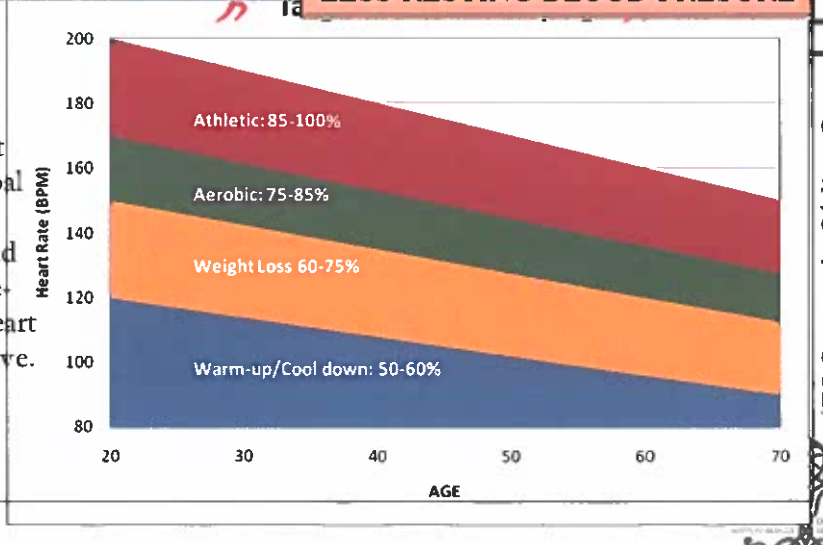
INCREASE IN CARDIAC OUTPUT (as a result of increases in heart rate and stroke volume)

INCREASE IN BLOOD VOLUME

LESS RESTING BLOOD PRESURE

3.- Work zones depending on heart rate and age:

Depending on our objectives we must work at a certain intensity. We know that if our goal is to achieve healthy exercise this should be done between 60 - 85% of our maximum heart rate. And we also know that our maximum heart rate decreases with age. So, the older we are, the fewer the heart rate needed will have to be to achieve each objective.



- ***50 – 60%:*** this is a good range for sedentary or unfit people that wants to start training. For fit people, this is the warm up or cool down zone.
- ***60 – 70%:*** this is a moderate aerobic zone, good for training long distances (such as a marathon). This is also the fat burning zone (if what we want is to lose weight, we should train at this %, or even up to 75%, and at least for 30').
- ***70 – 85 %:*** it is good to work at this % to develop aerobic stamina (recommended mainly for fit people).
- ***85 – 100%:*** anaerobic exercises. Not recommended for untrained people.

4.- Respiratory system response to exercise:

As it happens with heart rate, respiratory rate is going to increase during exercise, in order to provide our working muscles with the oxygen they need. This increase depends on the intensity of the exercise: resting the normal rate is about 12 breaths per minute, but in anaerobic exercises this can be increased up to three more times.

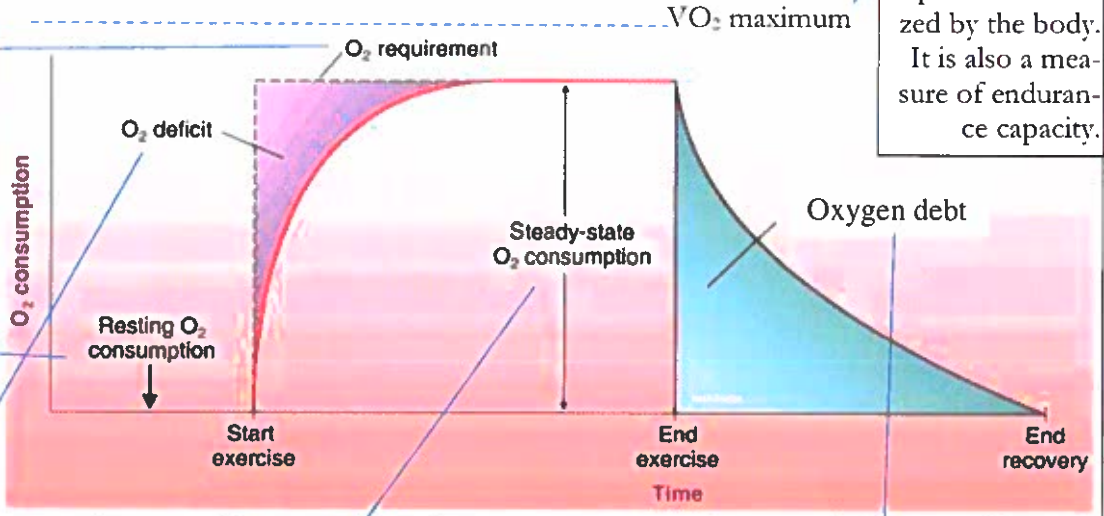
In aerobic exercises, respiratory rate will increase until reach the steady state (and will remain the same until the end of the activity), while in anaerobic exercises respiratory rate is going to increase up to one point in which no matter how intense the exercise is that our body is not able to take more oxygen.

In both types of exercises not only our respiratory rate is going to increase: the amount of air in each breath (in and out) will also be greater (this is called tidal volume).

VO_2 maximum: maximum amount of oxygen that can be uptake and utilized by the body. It is also a measure of endurance capacity.

Oxygen requirement: amount of oxygen we need to do a specific exercise.

Resting oxygen consumption: amount of oxygen we need when we are at rest.



Oxygen deficit: difference between the oxygen volume we are uptaking and the needs of our body (it happens in anaerobic exercises, and at the beginning of aerobic exercises).

Steady state: condition of a system that does not change in a time. In this example, the steady state is the period in which our respiratory system responds to the demands of the activity providing the amount of oxygen that our body needs.

Oxygen debt: the extra volume that is needed to restore all energetics systems.

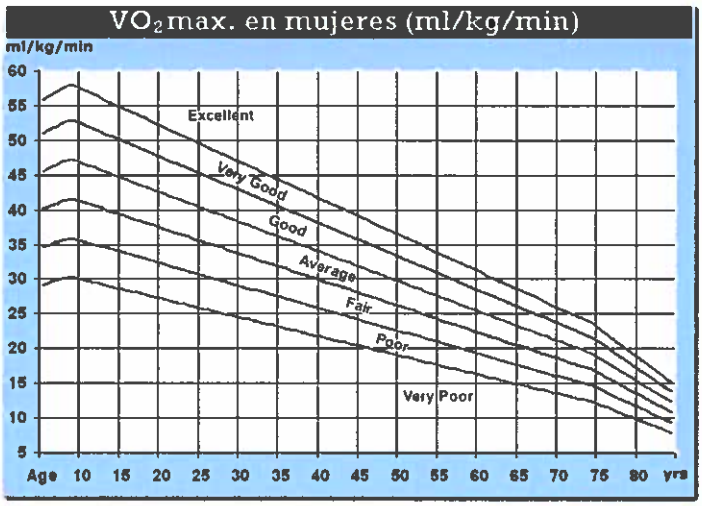
Did you know? If you work very hard during a physical activity, you may find that you are out of breath for quite some time after you have finished. This is because your body has needed more oxygen than you were able to supply, and you have experienced oxygen debt. You need to repay the oxygen debt and also disperse the lactic acid that has built up. One of the best ways to do this is to exercise lightly after you have finished (this is called the cool down!).

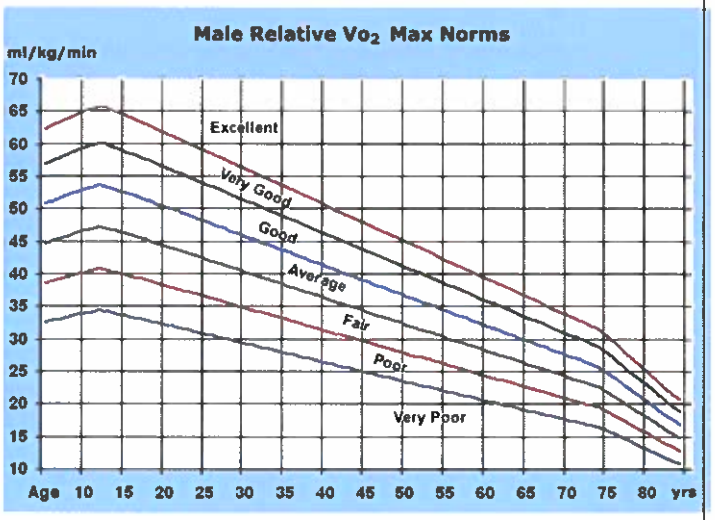
5.- Long – term effects of the exercise on the respiratory system:

INCREASED VITAL CAPACITY (maximum amount of air that a person can expel from the lungs after a maximum inhalation)	INCREASE IN MINUTE VENTILATION (volume of air that can be inhaled and exhaled in one minute)	INCREASE STRENGTH OF RESPIRATORY MUSCLES	INCREASE IN OXYGEN DIFFUSION RATE (It benefits the arrival of oxygen from the lungs to the blood and the tissues, and the remove of the carbon dioxide)

6.- VO_2 maximum and age:

VO_2 maximum is the maximum amount of oxygen that can be uptake and utilized by the body. It is also a measure of aerobic capacity (the higher it is, the better our cardiovascular capacity is). As it happens with our maximum heart rate, VO_2 maximum reduces throughout our lives. Good news, once again, is that exercise can delay this process.





To calculate VO_2 max, doctors use an ergospirometer, an instrument that measures oxygen consumption, but there are also some indirect ways that everybody can use:

- Cooper test: consists in to go as far as possible in twelve minutes. With the results obtained, the following formula is completed:

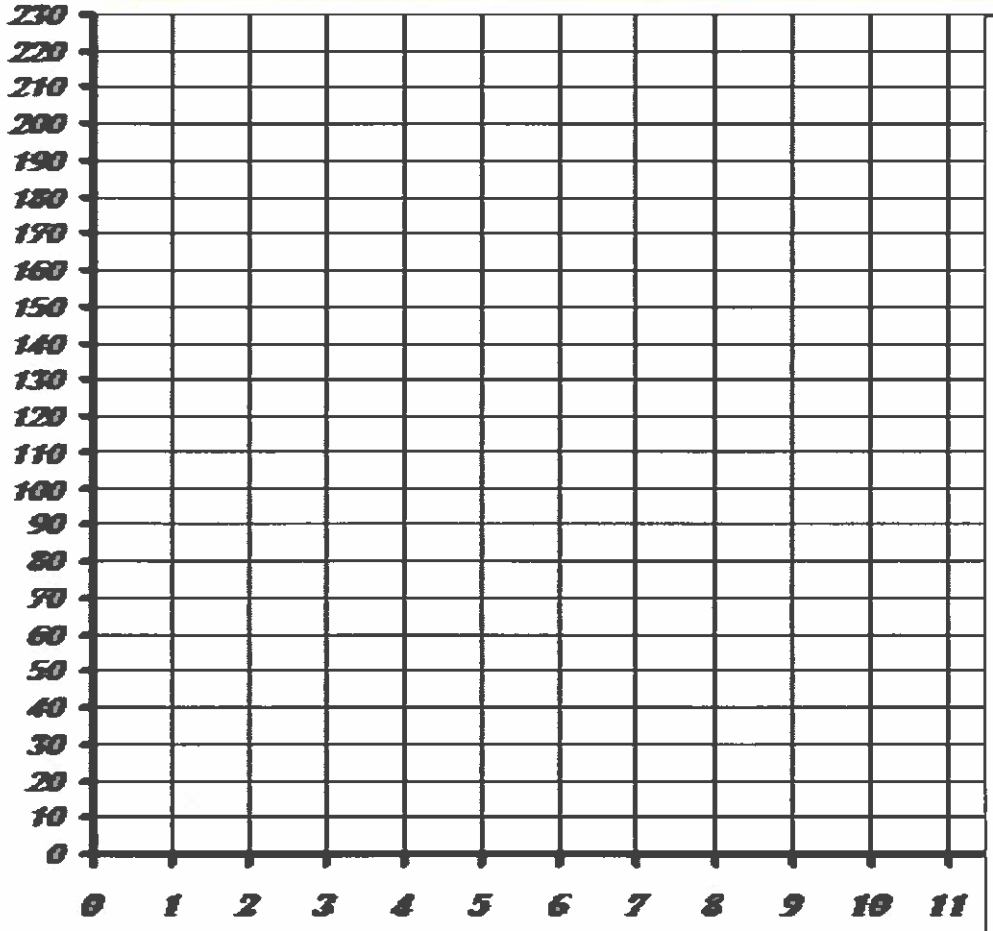
  VO_2 max = (distance in meters - 504) / 45

- Course Navette test: you know well what this test consists of. To know what our VO_2 max is we can use some tables that you can consult in page 23.

Heart rate assessment

We all know that heart rate is a reference about the intensity of effort, that it is normal to be between 60 and 90 beats per minute (bpm) when we are resting, and that making an effort is advisable to work between 60 and 85 % of maximum heart rate.

EXERCISE	Heart rate	Partial intensity (%)
(1) Heart rate at rest		
(2) Comfortable ride (1')		
(3) Fast walk (1')		
(4) Race at 150 bpm approximately (A)		
(5) Race at 150 bpm approximately (B)		
(6) Race at 150 bpm approximately (C)		
(7) 1' resting		
(8) 3' resting		
(9) Fast race (1')		
(10) 1' resting		
(11) 3' resting		



Now, as a practical reminder, we will do an activity to remember the right rhythm and intensity at which we should work.

- ***Intensity***: amount of work done per unit of time.
- ***Partial intensity***: partial heart rate of the exercise x 100 / Maximum heart rate.

Intensity has an inverse relationship with ***volume*** (which is the total amount of work done). We can measure volume in time, kilometers, number of times we do an exercise...

If the volume of an exercise is high, then the intensity is low, and vice versa.

1. Represent graphically the results.
2. Calculate the partial intensity for each exercise.

3. What is the heart rate interval in which aerobic endurance is worked?

4. How was the exercise if our heart rate is higher than those values?

5. How was the exercise if our heart rate is lower than those values?

6. What is your maximum heart rate? How did you find out that number?

7. What should have been the more intense exercise?

8. Why?

9. What was, for you, the most intense exercise?

10. How can you know that?

11. Were you able to run at the same speed on exercises 4, 5 and 6?

12. How can you know that?

13. How is your recovery?

14. How can you know that?

15. Two people are running together, one is trained and the other not. Who will have the highest heart rate?

16. Two people are running with the same heart rate and the same time, one is trained and the other not. What is the difference between them?

17. After doing exercise, how many heart beats should we have after three minutes resting to know that our recovery is ok?

18. Say whether are true or false the following sentences:
    - If we are in good health, it is ok to work at 75% of our maximum heart rate.
    - When we are smoking our heart beats faster.
    - As we grow up we need a higher heart rate to get healthy benefits.
    - Resting, well trained people have more heart rate than average people.
    - After one year of endurance exercises, our heart is going to be bigger and stronger, and our heart rate is going to be lower.
    - Our heart rate increases as we are getting older.
    - Doing an exercise is dangerous to have 200 beats per minute.

Cardiorespiratory system assessment

1. Match each phrase with the right column in the graph

Person with a normal resting heart rate _____

Person with bradycardia _____

Person con tachycardia _____

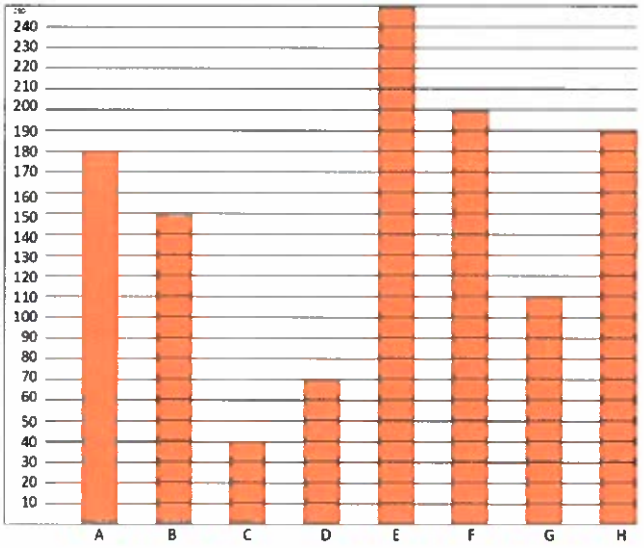
Person in aerobic exercise _____

Person in anaerobic exercise _____

Jodie's maximum heart rate (she is 26 years old) _____

Burt's maximum heart rate (he is 40 years old) _____

Highly improbable heart rate _____



2. What the ideal range of effort for a sixteen year old girl? (write the calculations you have to do).

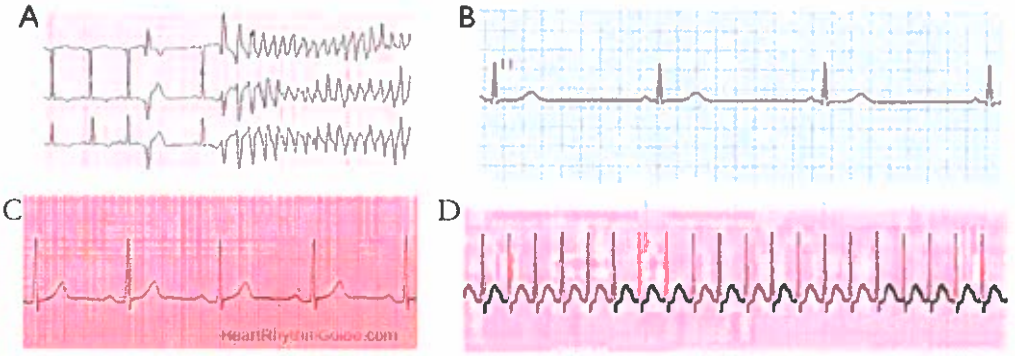
3. Relates each electrocardiogram with the following situations: arrhythmia, tachycardia, bradycardia, normal heart rate.

Arrhythmia _____

Tachycardia _____

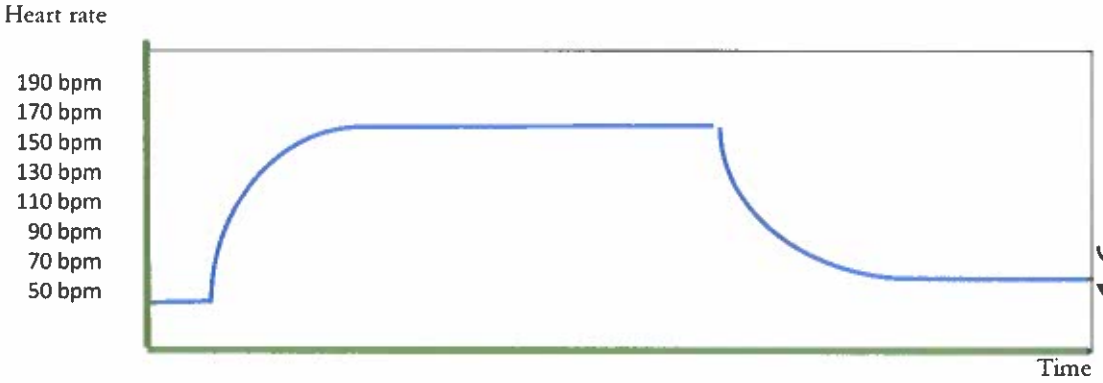
Bradycardia _____

Normal heart rate _____



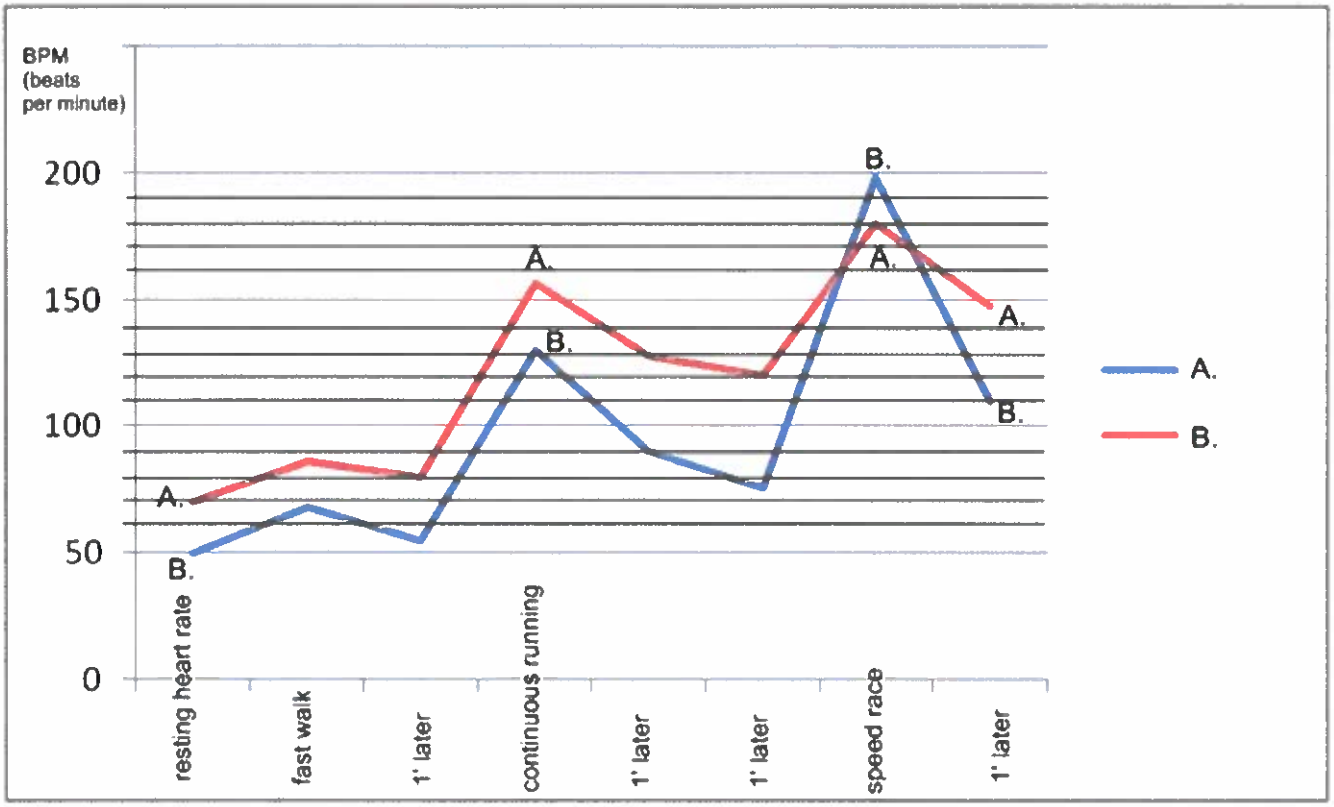
4. Look at the graph and answer the following questions:

a) Can we know if this person is fit, moderately active or sedentary? Why?



b) What type of exercise is being done? How can you know that?

c) How is the recovery? Why?



5. Related to the previous graph, say whether are true or false the following sentences:
   - Resting heart rate of B is better than resting heart rate of A
   - B is more physically fit than A
   - 1´ after continuous running, since the decrease of beats has been similar, both are equally ready to perform another activity.
   - A is recovering faster than B after the effort.
   - If they are running at the same speed in continuous running, then this exercise is harder to A
   - A does all the exercises properly.
   - A y B are running at the same speed in the speed race.
   - B does all the exercises properly.

6. At what % of our maximum heart rate should we train if what we want is to lose weight? For how long, at least, do we have to exercise to get that goal? Why?

7. Say whether are true or false the following sentences (if they are false, explain why):
   - Fit people don't have oxygen debt after doing an anaerobic exercise
   - Our VO_2 maximum is going to be higher and higher if we keep training aerobic exercises for thirty years.
   - To reach the steady state of oxygen consumption in anaerobic exercises you have to be a really trained person.
   - The oxygen requirement depends on the type of exercise we are going to do.

8. Is it possible (and normal) to breathe more than 30 times while doing an exercise? What type of exercise could be that? (write an example).

III Locomotor system

It gives humans the ability to move. It is made up of the muscular system and skeletal system.

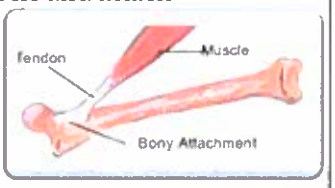
1.- Locomotor system response to exercise:

- Muscular system:
  - They are warmed up (gradually, with a proper warm up).
  - Their blood supply is increased.
  - They have more flexibility (which is needed, because they have to relax and contract again often and quickly).
  - Muscle micro tears: micro tears that (if the exercise is not excessive) can cause the muscle to react and becoming stronger. But we need to remember that the greater the demand, the greater the risk of an injury: that is why the exercises should be adapted to our level of physical condition.

- Skeletal system (bones and joints):
  - Joints increase their range of movement.

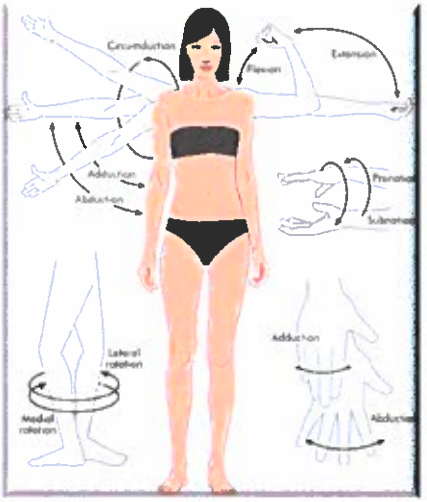
2.- Long – term effects of the exercise on the locomotor system:

- Muscular system:
  - Increase muscle strength.
  - Hypertrophy: the muscle increases their size and strength when we follow a regular programme (it only happens with the muscles that are working on this exercises). (It is the opposite to atrophy: when we do not use our muscles regularly they get smaller and weaker).
  - Increase the tendon strength (tissue that is at each end of the muscle and attach it to the bone).
  - Increased tolerance to lactic acid.
  - Increase muscle flexibility.



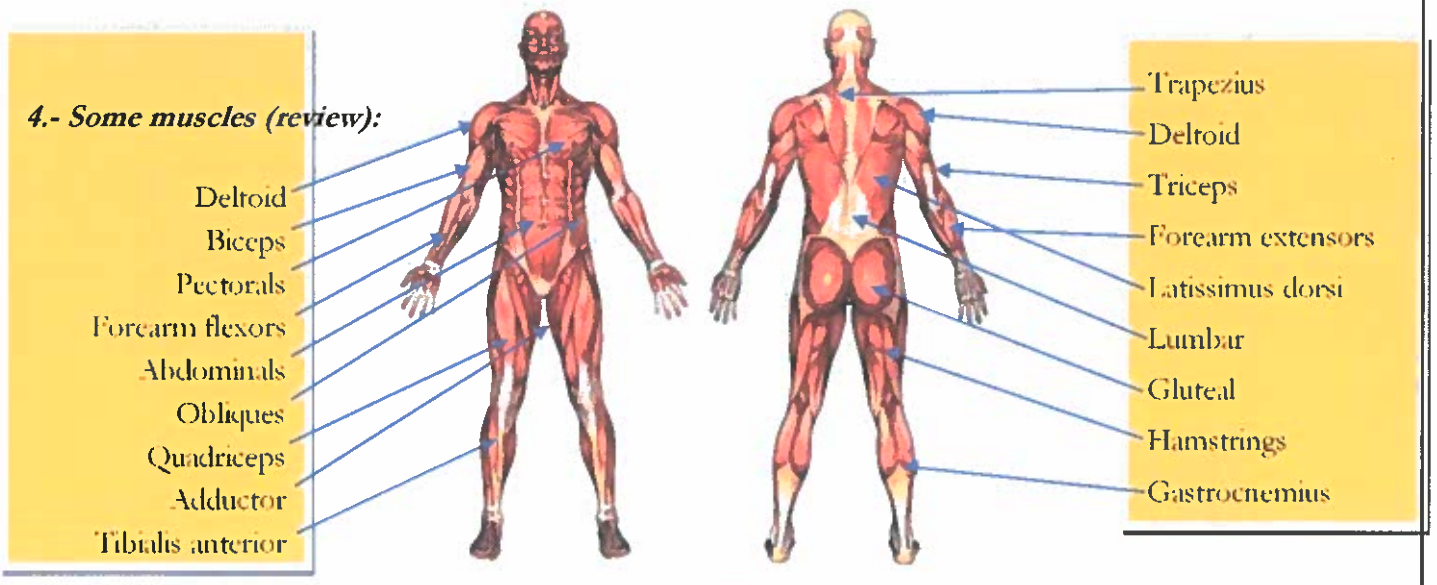
- Skeletal system:
  - Increase calcium in bones (making them stronger).
  - Increase stretch in the ligaments (which are strong fibrous bands that goes from one bone to another bone, to stabilize them).
  - Joints are more lubricated (thanks to this movement is no painful o restricted).

3.- Joint movements (review):



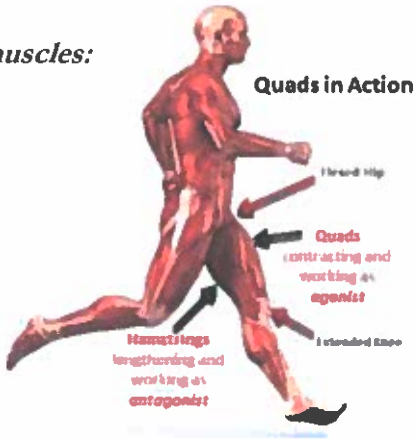
- Flexion: our limbs bend at a join.
- Extension: our limbs straighten at a join.
- Abduction: our limbs are moved away from a line down the middle of the body.
- Adduction: our limbs are moved towards a line down the middle of the body.
- Rotation: this is a circular movement (part of the body turns whilst the rest remains still).
- Circumduction: the end of a bone moves in a circle (for example swinging your arm in a circle at the shoulder).

4.- Some muscles (review):



5.- Some functions of our muscles:

- Agonist: it is the muscle that contracts and move a joint, the main responsible of the movement.
- Antagonist: it is the muscle that relaxes in opposition to agonist (when it contracts, it provokes the opposite movement). If it did not relax, movement could not take

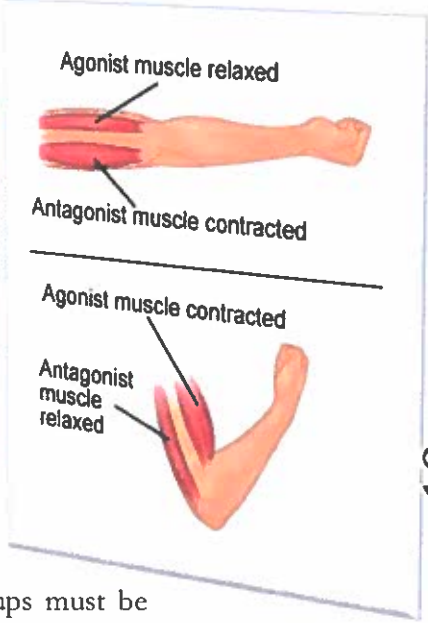


For example, quadriceps and hamstrings (or biceps and triceps, or abs and lumbar), are antagonistic muscles: if both are contracted, there is no movement. If one is contracted and doing a movement, then the other is relaxed.

6.- Types of muscular contraction:

Muscle contraction		Type of exercise	Length of the muscle	Oxygen consumption
Isometric		Static (there is no movement)	It doesn't vary	Anaerobic exercise
Isotonic	Concentric	Dynamic (there is movement)	It is shortened	Aerobic exercise
	Eccentric		It lengthens	

- The movement goes against gravity.
- The movement slows the action of gravity



7.- Proper exercises to take care of the locomotor system:

Muscle strengthening activities: strength exercises, those that develop and strengthen muscles and bones. The large muscle groups must be worked on, and the level of effort can go from moderate to high.

Activities to improve bone mass: those that produce a mechanical force of traction or compression on the bones (thanks to the tractions and contractions of the muscles) which promotes their growth and strengthening.

Muscular system assessment I

Name and surname: _____

1 	2 	3 	4 
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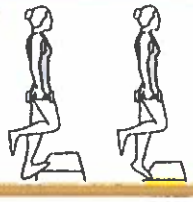
9 	10 	11 	12 
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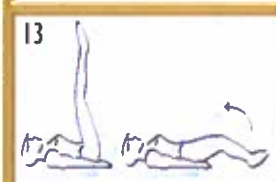
13 	14 	15 	16 
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Write, for each exercise, which muscle is mainly worked on it (agonist muscle), and what is its antagonistic muscle (only in those exercises in which antagonistic muscle is required).

Our major muscles (review):

Forearm flexors, forearm extensors, biceps, triceps, deltoid, pectorals, abdominals, obliques, trapezius, lumbar, latissimus dorsi, quadriceps, hamstrings, adductor, gastrocnemius, tibialis anterior, gluteal.

Muscular system assessment II

1. **Write whether each of the following sentences are true or false (and, if they are false, explain briefly why):**

- If our muscles contract many times in a few minutes, we feel hot.

- Muscles allow us to move all our joints.

2. **What is the function of a tendon? What is the function of a ligament?**

3. **What kind of people have their muscles hypertrophied? What kind of people have their muscles atrophied?**

4. **Draw or explain one exercise in which hamstrings is the antagonistic muscle. Draw or explain one exercise in which biceps is the antagonistic muscle.**

5. **Fill the table by writing what movements can be done for each joint.**

	Flexion	Extension	Abduction	Adduction	Rotation	Circumduction
Shoulder						
Elbow	X	X				
Wrist						
Neck						
Hip						
Ankle						
Muscle						
Muscle						
Vertebral column						

6. **Fill the table by writing what is the action of each muscle. You have to write a joint movement (flexion, extension, adduction, adduction, rotation or circumduction) and a joint (elbow, hip, knee...):**

Muscle	Movement	Muscle	Movement
Quadriceps	Extension of the knee	Abdominal	
Hamstrings		Lumbar	
Adductor		Biceps	
Gastrocnemius		Triceps	
Gluteal		Deltoid	

IV Warm up review

1.- What is a warm up?

They are moderate and progressive exercises performed before a more intense effort (a physical activity such as working out, a match, a competition…).

2.- Objectives of a warm up:

- To avoid the risk of injury during the effort.
- To prepare us for the following effort, physically, physiologically and psychologically.

3.- Specific warm up:

It is performed after the general warming, and involves exercises related to the sport that is going to be practiced next.

4.- Structure of the warm up:

Order	Body system	Type of exercise	Benefits	General warm up	Specific warm up
1	Cardiovascular and respiratory systems	Stamina.	Increase heart rate and blood flow. Increase the temperature of the body. Increases respiratory rate. More oxygen supply to the muscles.	Gentle aerobic exercises at 60 – 75% of our maximum heart rate. Running, cycling, swimming... The specific exercise depends on the activity we are going to do later.	
2	Locomotor system	Flexibility; (mainly joint mobility; you can also do muscle elasticity exercises-).	Lubricate the joints with synovial fluid. Take muscles and connective tissues through the full range of movement. It is easier for muscles to contract and stretch without injuries.	Exercises from head to toes or vice versa.	Exercises focused on those parts of the body that are going to work more in the later sport.
3	Nervous system	Strength. (Speed).	Increased intermuscular and intramuscular coordination (which prevents muscle breakage).	Exercises from head to toes or vice versa.	Technical movements of the sport we are going to practice.

5.- How do we perform a warm up?:

- Gentle exercise for the whole body, such as light jogging. This gradually increases our heart rate, our breathing and blood supply to the muscles. It increases the temperature of our muscles and prepares us mentally for the session.
- Exercises to move all parts of your body, from head to toe, and gentle stretching. This kind of exercises help us to prepare muscles, ligaments and joints, (which allows us to have a greater range of movements).
- Practising techniques and skills to be used in the session (prepare the body for specific exercises).
- End with some sprints or short fast races.

- It has to be progressive, from low-intensity to high-intensity exercises.
- It should last at least 10' or 15'.
- Our heart rate should increase until 140 beats per minute (bpm).
- Do not get tired, don't make too many repetitions of each movement and alternate the parts of the body you are moving.

4.- Some benefits of warming up properly:

- Increases heart rate and the blood flow to the working muscle, which results in decreased muscle stiffness, less risk of injury and improved performance.
- Increases muscle temperature (it increases the temperature of the body). A warmed muscle both contracts more forcefully and relaxes more quickly.
- It stretches the muscles, moves the joints and increases the range of movement - so you're ready to work and less likely to injure yourself.
- Increases respiratory rate so that more oxygen gets into your lungs, passes to your blood and reaches the muscles. Muscles need oxygen to work.
- It helps us to concentrate on training.

1.- What is cool down?

There is a group of light exercises that we perform at the end of a training session in order to bring the body gradually back to its resting condition (we should avoid to go from hard exercise immediately to rest).

V Cool down review

2.- Type of exercises:

All the exercises in cool down must have a low intensity, focusing on aerobic components. Some examples are the following ones:

- Light running, or just walking.
- Stretching.
- Respiratory exercises and relaxation exercises.

3.- Benefits of the cool down:

- It favors the arrival of oxygen to the cells, which helps to eliminate waste products (such as lactic acid) and makes better our recovery after the effort.
- Light exercise makes sure that the blood continues to circulate well and prevents it pooling in the skeletal muscles, which may lower blood pressure and cause dizziness.
- It reduces the chances of fainting after an intense session.
- It decreases the chances of muscle stiffness, and helps the muscles to return to their initial muscle tone.
- It promotes a better recovery after the exercise.
- It makes progressive the decrease of heart rate and blood circulation.

1.- Review:

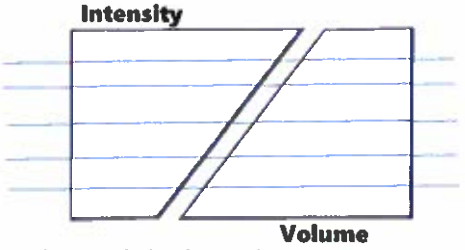
Stamina is the ability to work for relatively long periods of time without becoming tired (is the ability of the cardiovascular and respiratory systems to supply the exercising muscles with oxygen to maintain the exercise). The subcomponents of stamina (types of stamina) are aerobic and anaerobic. These are their characteristics:

	DURATION	INTENSITY	BEATS	OXYGEN SUPPLY	EXAMPLE
Aerobic	Long (it could last several hours)	Low or medium	120 – 170 (even 180)	Sufficient (good supply)	Marathon
Anaerobic	Short (from a few seconds up to 2–3 minutes)	High	More than 180	Insufficient	100m 400m

2.- Stamina and health program

- We should develop our aerobic stamina.
- It is good to take part regularly in any continuous exercise involving the whole body.
- To keep healthy, heart rate should be between 60% and 85% of your maximum heart rate (your heart rate would be between 120 – 180 beats per minute).
- If what we want is to keep healthy, we need to work out at least three days a week.
- If what we want is to train and improve our level, four or more days per week is ok.
- Stamina exercises must be adapted to our own characteristics: exercises must be progressive, generic and individualized (depending on each one).
- It is very appropriate to complete stamina exercises with endurance strength exercises (and flexibility exercises).
- We should exercise at first for a minimum of 15 minutes (to improve our cardiovascular and respiratory systems), increasing this time as we become fitter.
- We do not have to run to improve our stamina: we can practice other activities such as swim, or cycle, or dance, or skate, or even walk (especially if our body weight is high, or our physical condition level is really low).
- It is appropriate to distribute the work in series, with some resting minutes between them, or combine walking and running.
- We should alternate exercise days and rest days, to allow our body to rest after exercise.
- We need about six weeks of stamina exercises to achieve significant changes in our body (less resting heart rate, and so on: you can read some of the previous pages).
- We must work first volume, and then intensity.

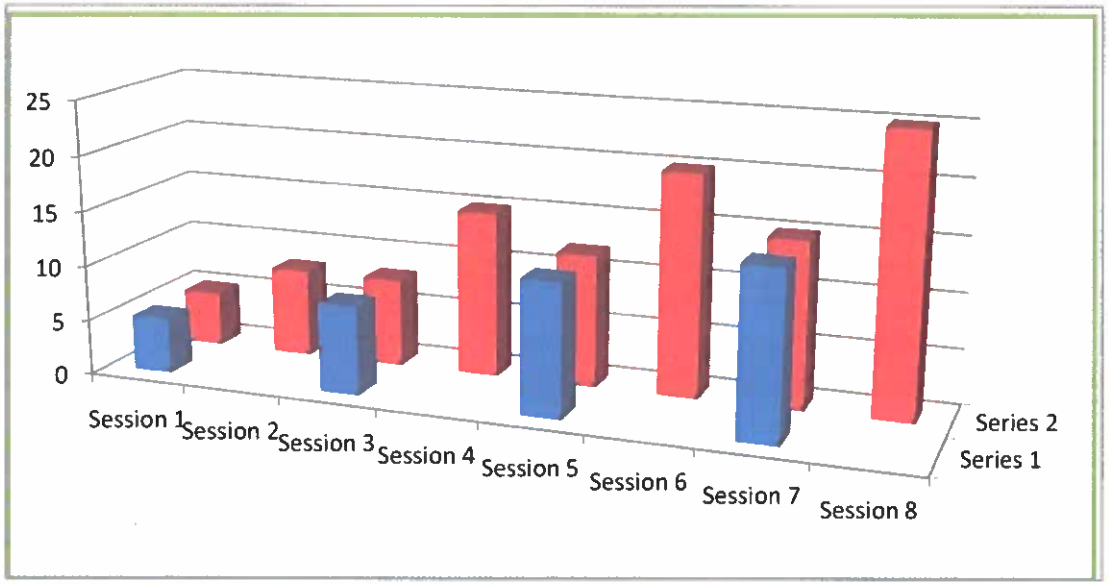
(Their relationship is inversely proportional: the greater the volume, the less the intensity, and vice versa)



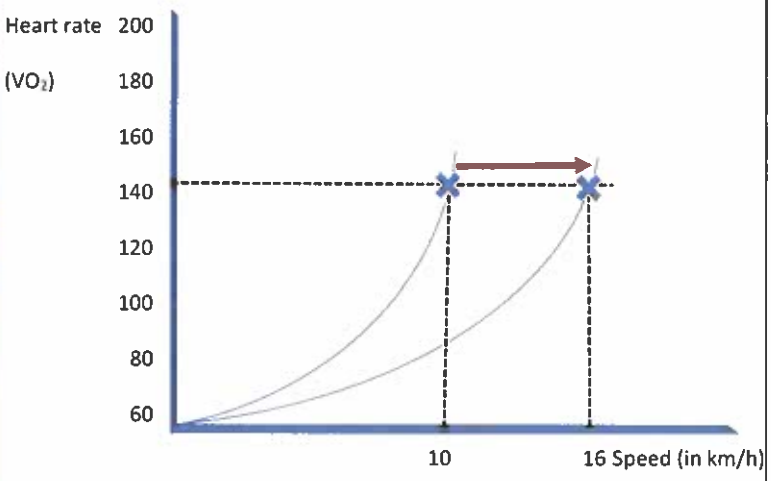
3.- Benefits of stamina training:

- Heart size increases: the pulse decreases when we are resting and the heart is more effective.
- Increases lung capacity, which improves respiratory efficiency.
- Increases the number of red blood cells: there is more oxygen present in blood.
- Body weight is lower by mobilizing fat (over 30 min of aerobic effort).
- It makes the immune system stronger (body's defenses).

Here you have an example of progression in aerobic stamina training for someone with a low physical condition level. It is passed in 8 sessions (2 - 3 weeks of work) from a very smooth load (2 series of 5' continuous race, with a rest period between them) to much higher load (25' continuous race).



Training moves the graph to the right: this graph shows us how (with proper training) our body's response to exercise improve: with the same heart rate, or with the same oxygen consumption (VO_2), the speed at which we can perform the exercise will be increase. (Or, at the same speed, our pulsations and our oxygen consumption will be lower, which means that moving at the same speed our fatigue will be lower).



4.- How are we going to measure our stamina this year? (again)

By doing the "Multistage fitness test", known as beep test or Course-Navette: to measure VO_2 max we perform a number of 20 metre shuttle runs in time to beeps from a pre-recorded tape. After each minute the time interval between beeps get shorter so our running speed has to increase. We keep going until we can no longer keep up with the speed set by the beeps. At this point we stop and record the level.

Objective: check the maximum aerobic power and determine the oxygen consumption. Oxygen consumption indicates the ability of the body to use it. At the beginning it is proportional to the intensity of the exercise, up to a certain level in which, although this intensity increases, the oxygen consumption does not (this is the maximum oxygen consumption we have, which allows us to predict our response to exercise).

After doing the Course Navette test you can use these data tables to know (approximately) what your VO_2 max is, as well as what does it mean.

FEMALE

(values in ml/kg/min)

Age	Very Poor	Poor	Fair	Good	Excellent	Superior
13-19	<25.0	25.0 - 30.9	31.0 - 34.9	35.0 - 38.9	39.0 - 41.9	>41.9
20-29	<23.6	23.6 - 28.9	29.0 - 32.9	33.0 - 36.9	37.0 - 41.0	>41.0
30-39	<22.8	22.8 - 26.9	27.0 - 31.4	31.5 - 35.6	35.7 - 40.0	>40.0
40-49	<21.0	21.0 - 24.4	24.5 - 28.9	29.0 - 32.8	32.9 - 36.9	>36.9
50-59	<20.2	20.2 - 22.7	22.8 - 26.9	27.0 - 31.4	31.5 - 35.7	>35.7
60+	<17.5	17.5 - 20.1	20.2 - 24.4	24.5 - 30.2	30.3 - 31.4	>31.4

MALE

(values in ml/kg/min)

Age	Very Poor	Poor	Fair	Good	Excellent	Superior
13-19	<35.0	35.0 - 38.3	38.4 - 45.1	45.2 - 50.9	51.0 - 55.9	>55.9
20-29	<33.0	33.0 - 36.4	36.5 - 42.4	42.5 - 46.4	46.5 - 52.4	>52.4
30-39	<31.5	31.5 - 35.4	35.5 - 40.9	41.0 - 44.9	45.0 - 49.4	>49.4
40-49	<30.2	30.2 - 33.5	33.6 - 38.9	39.0 - 43.7	43.8 - 48.0	>48.0
50-59	<26.1	26.1 - 30.9	31.0 - 35.7	35.8 - 40.9	41.0 - 45.3	>45.3
60+	<20.5	20.5 - 26.0	26.1 - 32.2	32.3 - 36.4	36.5 - 44.2	>44.2

Etapa	Vel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	8.5	20	40	60	80	100	120	140								
2	9	160	180	200	220	240	260	280	300							
3	9.5	320	340	360	380	400	420	440	460							
4	10	480	500	520	540	560	580	600	620							
5	10.5	640	660	680	700	720	740	760	780	800						
6	11	820	840	860	880	900	920	940	960	980						
7	11.5	1000	1020	1040	1060	1080	1100	1120	1140	1160	1180					
8	12	1200	1220	1240	1260	1280	1300	1320	1340	1360	1380					
9	12.5	1400	1420	1440	1460	1480	1500	1520	1540	1560	1580					
10	13	1600	1620	1640	1660	1680	1700	1720	1740	1760	1780	1800				
11	13.5	1820	1840	1860	1880	1900	1920	1940	1960	1980	2000	2020				
12	14	2040	2060	2080	2100	2120	2140	2160	2180	2200	2220	2240	2260			
13	14.5	2280	2300	2320	2340	2360	2380	2400	2420	2440	2460	2480	2500			
14	15	2520	2540	2560	2580	2600	2620	2640	2660	2680	2700	2720	2740	2760		
15	15.5	2780	2800	2820	2840	2860	2880	2900	2920	2940	2960	2980	3000	3020		
16	16	3040	3060	3080	3100	3120	3140	3160	3180	3200	3220	3240	3260	3280		
17	16.5	3300	3320	3340	3360	3380	3400	3420	3440	3460	3480	3500	3520	3540	3560	
18	17	3580	3600	3620	3640	3660	3680	3700	3720	3740	3760	3780	3800	3820	3840	
19	17.5	3860	3880	3900	3920	3940	3960	3980	4000	4020	4040	4060	4080	4100	4120	4140
20	18	4160	4180	4200	4220	4240	4260	4280	4300	4320	4340	4360	4380	4400	4420	4440

Level	Shuttle	VO_{2max}
4	2	26.8
4	4	27.5
4	6	28.9
4	9	29.5
5	2	30.2
5	4	31
5	6	31.6
5	8	32.9
6	2	33.6
6	4	34.3
6	6	35
6	8	35.7
6	10	36.4
7	2	37.1
7	4	37.8
7	6	38.5
7	8	39.2
7	10	39.9
8	2	40.5
8	4	41.1
8	6	41.8
8	8	42.4
8	11	43.3
9	2	43.9
9	4	44.5
9	6	45.2
9	8	45.8

Level	Shuttle	VO_{2max}
9	11	46.8
10	2	47.4
10	4	48
10	6	48.7
10	8	49.3
10	11	50.2
11	2	50.8
11	4	51.4
11	6	51.9
11	8	52.5
11	10	53.1
11	12	53.7
12	2	54.3
12	4	54.8
12	6	55.4
12	8	56
12	10	56.5
12	12	57.1
13	2	57.6
13	4	58.2
13	6	58.7
13	8	59.3
13	10	59.8
13	13	60.6
14	2	61.1
14	4	61.7
14	6	62.2

Write your result in the Course Navette test:

How many meters did you run?

What is your VO_2 max?

According to your age, how is your VO_2 max?

5.- Stamina training systems:

CONTINUOUS SYSTEMS

The exercise is performed without pauses. The work can last from 3' to several hours, usually at 60 – 85 % of our MHR (maximum heart rate). Good to:

- Improve our aerobic capacity.
- Improve health-related fitness (mainly cardiorespiratory fitness).
- Reduce amounts of body fat.
- Maintain fitness in the off season.

Examples: running, swimming, cycling, dancing, rowing…

Continuous race: race keeping the same pace. Useful for beginners, when recovering from an injury, children, elderly people, athletes at the beginning of a season.

Low intensity	Médium intensity	High intensity
60-70% of your MHR (between 120 – 140 bpm)	70-80% of your MHR (between 140 – 160 bpm)	80-85% of your MHR Between 160 – 170/180bpm

Fartlek: race with pace changes (by time, by distance…); the intensity of the exercise varies between 70 – 85%, about 140 – 170 bpm.

Complete training: without stops, continuous race combined with various exercises (other subcomponents of the physical condition are also worked, mainly the endurance strength, and anaerobic stamina at the end of the exercise). Originally there were performed in nature.

FRACTIONAL SYSTEMS

Training using alternating periods of very hard exercise and rest. These are high-intensity exercises, usually (but not always) at more than 85% of our MHR. This training requires a good aerobic stamina base (we will only work the fractioned systems after having developed the aerobic stamina). Good to:

- Improve our anaerobic capacity (which helps us to improve both anaerobic stamina and displacement speed).
- Improve our aerobic fitness (depending on how we exercise).
- Improve the performance on a specific sport (to do it properly we should know the different distances a player id going to sprint on every sport).

Interval training: the recovery between breaks is not complete, the exercise is performed again when the bpm are 120. We have to consider the number of intervals, intensity and duration both of the work interval and the rest interval. Usually distances are between 60 and 400 metres, and repetitions are between 10 and 20.

Some examples:
3x5'(170 bpm)/2'30" (for aerobic stamina). (Which means: we have to run three times five minutes at 170 beats per minute, resting 2'30" between each series).
12x100m/120bpm (for anaerobic stamina). (Which means: twelve series of 100 metres resting until our bmp are 120bpm)

Training repetitions: each repetition is performed at 85-100% of the maximum heart rate, with a complete recovery between each exercise (the next repetition of the exercise is done when the beats return to the resting heart rate). This training is good to accustom muscles to keep working with a high oxygen debt.

MIXED SYSTEMS

There are worked both stamina and another sub-component of physical condition.

Inclines: runs uphill (that develops explosive strength -or power-) or downhill (which improves speed).

Circuit: normally consists of about ten different exercises, with a time period to perform each one (for example, 1' per station) and a rest period between each exercise (for example 30"). To avoid fatigue, the stations should be structured in a way that consecutive exercises use different muscle groups. We usually work at 40 – 60% of your repetition max.

6.- Most used methods trainings to improve stamina related to health:

- Continuous race low intensity (60 – 70% of your maximum heart rate).
- Continuous race medium intensity (70 – 80% of your maximum heart rate).
- Fartlek.
- Complete training.
- Circuits.
- Interval training (for fit people).

Stamina assessment I

1. **Choose a sport in which both aerobic and anaerobic stamina are needed (and write an example of when they are needed).**

2. **Between what % of our maximum heart rate should we work to do healthy exercises?**

3. **Say whether are true or false the following sentences (if they are false, explain why):**
   - If our heart size increases, then our resting heart rate increases.
   - It is recommended to work out our stamina for at least 15 minutes.
   - Only really well trained people can do anaerobic exercises for 57 minutes.
   - In the Course Navette test the effort is mainly anaerobic.

4. **For how long, at least, do we have to do aerobic exercise if what we want is to lose weight?**

5. **How are named each of the following stamina training systems?:**
   - When you swim close to your maximum heart rate many times, but with a incomplete resting between each series:
   - Run – sit ups – run – sprint – run – push ups – run – throw stones far away – run…:
   - To swim slowly, and then fast, and then slowly, and then fast, and so on…:
   - Running and a group of exercises like skipping rope, push ups in bar, lumbars…:
   - We are cycling for six hours:
   - We need a complete recovery after and before start to do a new series.
   - Recommended to lose weight (write all of them):
   - Depending on how we exercise, we can improve both our aerobic stamina or our anaerobic stamina:
   - Useful for beginners:
   - Depending on where are we going, it is good to improve our speed or our explosive strength (working also some kind of stamina):

6. **Answer the following questions, and explain your answers:**
   - If two people are running with the same beats per minute, and one person is in shape but the other isn't, what is the difference between them?
   - If two people are running at the same speed, and one person is in shape but the other isn't, what is the difference between them?
   - If two people are running the one hour and at the same speed, does it mean that their physical condition is the same?
   - If two people are in really good condition, does it mean that their level of aerobic stamina is the same?

Stamina assessment II

COMPLETE TRAINING

Name(A):_____ Bpm at rest: ___

Name(B):_____ Bpm at rest: ___

Name(C):_____ Bpm at rest: ___

Beats per minute after running

	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Lap 6	Lap 7	Lap 8	Lap 9	Lap 10	1´ later	2´ later	3´ later
A													
B													
C													

Stage 1: jumping from hoop to hoop on one leg (two times with each leg)

Stage 2: with arms extended, raise and lower the medicine ball

Stage 3: sit ups (20)

Stage 4: jumping rope (30 jumps)

Stage 5: push ups (10)

Stage 6: working the lumbar muscle (10)

Stage 7: jumps on the stairs (10 jumps)

Stage 8: with weights, flexion and extension of the elbow (15 times)

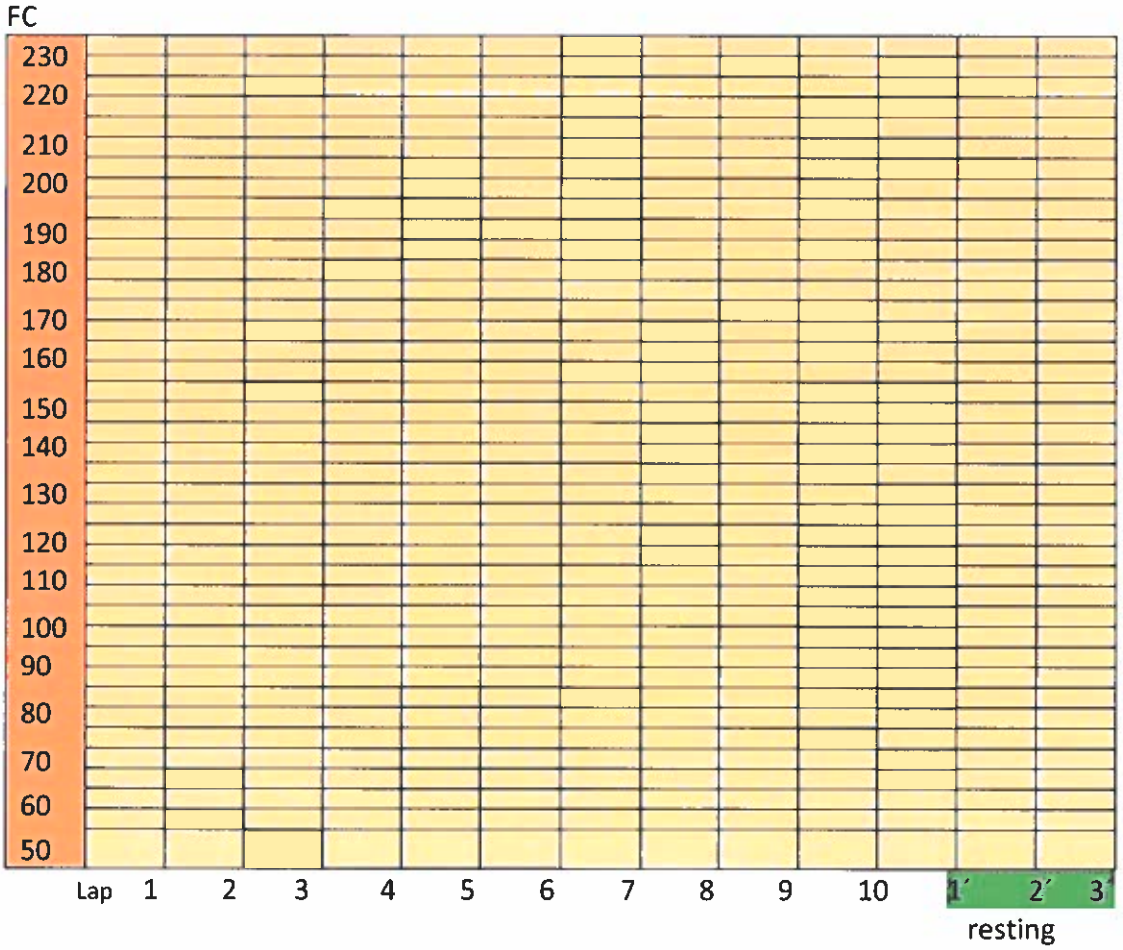
Stage 9: passes with the medicine ball –from the chest- (10 passes)

Stage 10: passes over the head with the basketball (15 passes)

In even laps, perform the following exercises until you reach the first corner:

- Lap 2: carry someone a piggyback
- Lap 4: jumps with feet together (front - back) on each line
- Lap 6: leapfrog jumps
- Lap 8: sprint to the corner

GRAPHIC (paint each line with a different color)



ANSWER THE FOLLOWING QUESTIONS:

- What are the characteristics of the "Complete training"?
- Was constant the race pace? How can you know it?
- How is the exercise? (aerobic or anaerobic). What are the characteristics of this type of work?
- Between what % of the maximum heart rate should you have done the exercise? Calculate that interval for you. According to it, did you do the exercise rightly?
- In the long term, what adaptations occur as a result of the practice of these exercises? (mention one for each of the systems involved on the exercise).
- Which of all three is in better physical shape? Why?
- How is your recovery? How can you know that?

VII Strength

Strength is the ability to overcome a resistance using our muscle contraction (when we are doing strength exercises our muscles are in tension).

Maximum strength	Explosive strength	Endurance strength
What is it?		
It is the ability to overcome a maximum load. In this kind of exercises muscles are in its highest tension. It is not recommended to work maximum strength before 18, because loads so big make it difficult the bone growth and increase the risk of injuries.	It is the ability to overcome loads at maximum speed. We must work this type of strength without any load (using only our own body, as it happens in jumps, push ups, squats or sit ups) or with medium or small loads (as medicine balls).	It is the ability to perform a strength exercise for a long time. This is the kind of strength work we must do if what we want is to have a good health. Some endurance strength exercises are: sit-ups, squats, push-ups…
Some examples of exercises		
People as weightlifters, which work out with heavy lifts.	Javelin throw, long jump, high jump.	Sit – ups, push – ups, squats, rowing.
Strength training systems used		
Weightlifting (with big loads) 	Jumps  Throws 	Bodyweight  Weightlifting (soft or medium loads)  Isometrics

If what we want is to keep healthy we should work out endurance strength, at least 2 – 3 times a week. In order not to create muscle decompensations that may lead to possible injury or pain, we must work out paying attention to some important ideas:

- Ideal range of effort is located between 60 – 75% of your maximum heart rate.
- The work must be symmetrical (left - right), and we must work out all the parts of the body (arms, trunk and legs). Circuits are good to improve our endurance strength.
- We must work out muscles that are antagonistic to each other (like abdominal and lumbar).
- Mainly while we are growing up, it is a good idea to work with our own body as a load.
- We should combine endurance strength with aerobic stamina and flexibility exercises.
- If we use weights, the loads must be gentle, between 40 – 70% of the maximum weight you can lift. You should avoid to perform weights exercises slowly: this means that the load is excessive.
- First we have to increase volume, and then intensity.

To increase the volume, first increase the number of exercises per zone (legs, trunk, arms)

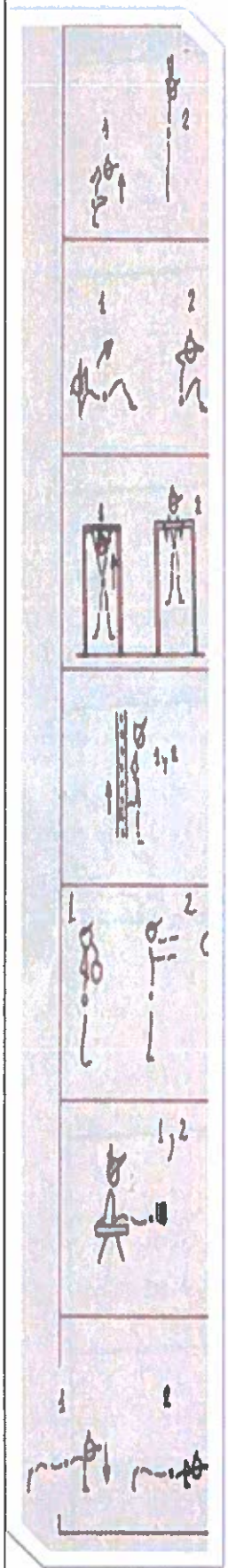
When there is an adaptation, increases the repetitions per exercise (they usually are between 15 – 40)

Increase number of exercises (resting time between each one is about 30" – 1'30")

Increases the intensity of the exercise (no more than 70%) and slightly reduces volume

Strength assessment I

Name and surname: _____



Number of repetitions:
Muscle worked: QUADRICEPS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: ABDOMINAL
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

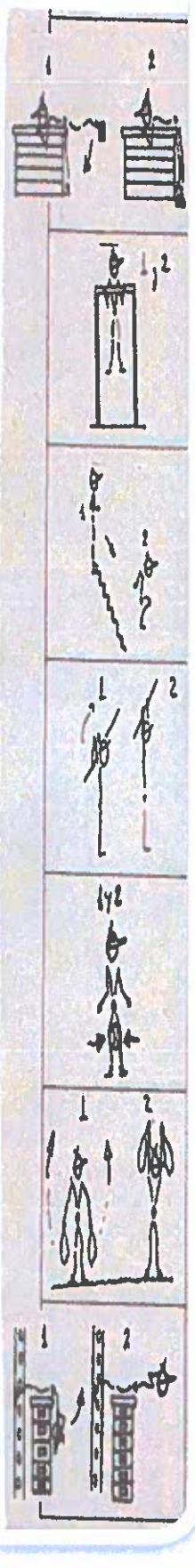
Number of repetitions:
Muscle worked: BICEPS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: HAMSTRINGS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: TRICEPS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: QUADRICEPS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: TRICEPS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics



Number of repetitions:
Muscle worked: GLUTEAL
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: BICEPS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: QUADRICEPS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: TRICEPS
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: ADDUCTOR
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: DELTOID
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

Number of repetitions:
Muscle worked: LUMBAR
Type of contraction: concentric - eccentric - isometric
Trainning system: bodyweight - weightlifting - throws - jumps - isometrics

All these exercises you are going to improve your endurance strength. You have to write the number of repetitions you can perform on each round, and circle the type of contraction of the muscle worked and the training system

1.- Review. Some reminders about flexibility

Flexibility	Types	Benefits
Is the ability to perform movements with significant extent. It helps us to reduce the risk of injuries by increasing the range of movement in a joint	**Joint mobility**: it is the ability to move our joints through their full range of movement.	✪ To avoid muscle and joint stiffness. ✪ To compensate bad postures. ✪ To delay muscle fatigue in an effort and improve recovery after exercise. ✪ Movements are more fluent and effective. ✪ To delay problems with joint diseases (osteoarthritis ...).
	Elasticity of the tissues (muscles, tendons, ligaments): elasticity is the property that enables a muscle to return to its original shape after it has been stretched.	

Its daily work is recommended: from 3 to 5 times each muscle, and at least between 20 – 30".

2.- Flexibility training systems

- Static: we use our own strength. A stretch is held in a challenging but comfortable position for a period of time (usually between 10 to 30 seconds). This is the most common form of stretching found in general fitness and is considered safe and effective for improving overall flexibility. However, many experts consider static stretching much less beneficial than dynamic stretching for improving range of motion for functional movement, including sports and activities for daily living.

- Dynamic: it involves movement, so it has to be done after a properly warm up (otherwise it would be dangerous). It involves kicking and bouncing actions, and (well done) is very effective to increase flexibility. It is also called ballistic stretching.

- Active: we stretch the muscle without any external help.

- Passive: a partner (or other sort of outside assistance) applies an external force on our body, in order to stretch a relaxed muscle. You don't usually have to work very hard to do a passive stretch, because there is always the risk that the external force will be stronger than you are flexible, which could cause injury.

- Progressive neuromuscular facilitation (PNF): usually done with the help of am partner, it has three phases:
  a) Stretching the muscle in a static way for 20 – 30 seconds.
  b) From the very same position, without moving our body and keeping the muscle stretched, do an isometric contraction with the stretched muscle for about 6 – 7 seconds (we have to contract it against a resistance).
  c) To stretch again the muscle in a static way for about 20 – 30 seconds.

Given the requirement of this exercise, it is not recommended to practice it more than three times a week, and is not recommended for 13 year old people. To do these exercises it is important to take a breath and relax (and never hold your breath)

FLEXIBILITY What is it? Types of flexibility Days per week we should work it.

How should we do muscle elasticity exercises? How should we do joint mobility exercises?

MUSCLE	ACTIVE AND STATIC EXERCISE	ACTIVE AND STATIC EXERCISE	PASIVE AND STATIC EXERCISE
QUADRICEPS			
HAMS-TRINGS			
ADDUCTOR			
GAS-TROC-NEMIUS			
GLU-TEALS			

Draw or explain an active and dynamic exercise to work hamstrings
Draw or explain a passive and dynamic exercise to work adductor

Flexibility assessment II

MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

MUSCLE:

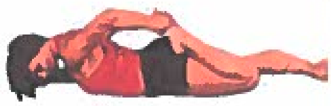
ACTIVE PASSIVE STATIC DYNAMIC

MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

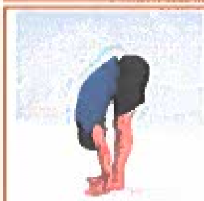
MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC



MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC



MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

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MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

MUSCLE:

ACTIVE PASSIVE STATIC DYNAMIC

Write the name of the worked muscle. Indicates whether you are working actively, passively, statically or dynamically

Name and surname: ____

Strength and flexibility assessment

After performing strength exercises it is necessary to do some flexibility exercises with the muscles that have been training. We need both: flexibility allows us to use our strength through a full range of movement, strength is needed to stabilise joints and avoid injuries.

Name and surname: _____ Group: ____

STRENGTH	FLEXIBILITY
Types	
Which type do we need to work in order to be healthy?	
Days per week we should work it (recommended)	
LEGS	
Quadriceps	
Hamstrings	
Gastrocnemius	
Adductor	
Gluteals	

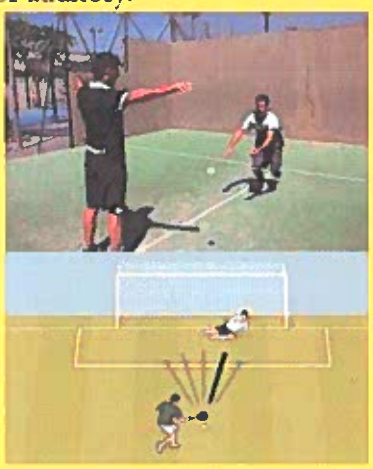
TRUNK	
Abdominals	
Latissimus Dorsi	
Pectorals	
Lumbar	
ARMS	
Deltoid	
Biceps	
Triceps	
SOME MORE QUESTIONS	
How is the muscle on strength exercises?	How is the muscle on elasticity exercises?
How should we train endurance strength?	How should we train elasticity?
Benefits of endurance strength training	Benefits of elasticity training

IX Speed (review)

Speed is the ability to perform an action as soon as possible. (It is the ability to move all or part of the body as quickly as possible). Speed does not just mean running, but it is present in many sporting movements.

1.- Types of speed:

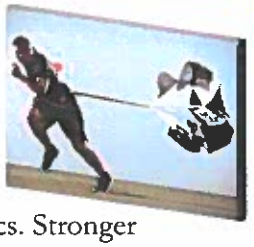
Reaction speed: is the ability to respond to a stimulus in the shortest possible time. This stimulus can be tactile, visual or auditory.



Movement speed: is the ability to perform a skill or carry out a movement (like a smash in badminton, a baseball strike or a hit in fencing).

Displacement speed: is the ability to go from one place to another in the shortest possible time (we can improve this kind of speed by running, swimming, skiing…).

2.- How do we improve our speed?



We cannot increase the percentage of fast-fibres in our bodies, but we can improve our speed in sport in other ways, such as:

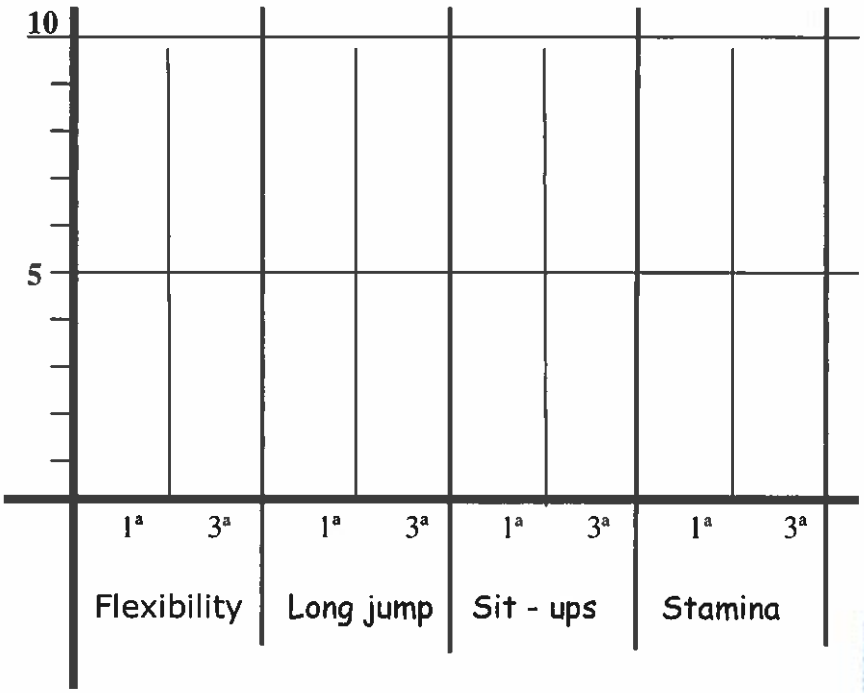
- Increasing strength through a programme of weight training and plyometrics. Stronger muscles will give more power and therefore more speed.
- Improving reaction time.
- Improving our agility: our ability to change speed and direction when moving quickly.
- Improving the ability to deal with lactic acid.
- Improving skill in our sport. For example, a more efficient swimming stroke will create less water resistance and lower our swim time.

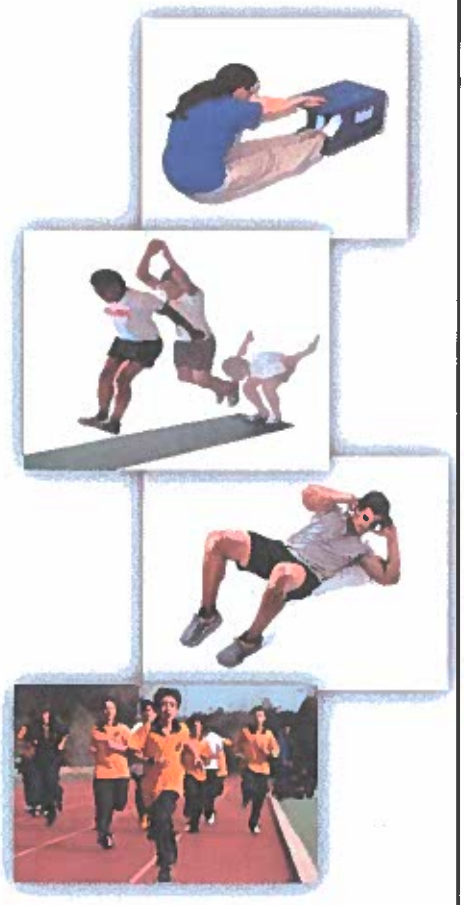
3.- Speed training:

- To reduce the risk of injuries, speed training should take place after the warm up, and the rest of the session should be low intensity.
- We must be rested to train speed: during the week, speed training should be after a resting period (or low intensity training).
- Ensuring that the training distance is appropriate to the specific sport or activity.
- Exercises are performed at the maximum intensity.
- Rest between series is necessary: rest periods require about 1-3 minutes in between sets.

NAME AND SURNAME:
COURSE AND GROUP:

MARK





1st TERM

Sit-ups		Long jump		Flexibility		Stamina	
result	mark	result	mark	result	mark	result	mark

3rd TERM

Sit-ups		Long jump		Flexibility		Stamina	
result	mark	result	mark	result	mark	result	mark

Training session structure

1) **Warm up:**

1.1. Activation of the cardiovascular and respiratory systems.
1.2. Activation of the locomotor system (musculoskeletal system).
1.3. Activation of the nervous system.

2) **Development of physical condition:**

If what we want is to work the most important physical condition components in order to keep a good level of health, then as you know we should work the following ones (you can read again how to do it properly in the previous pages):

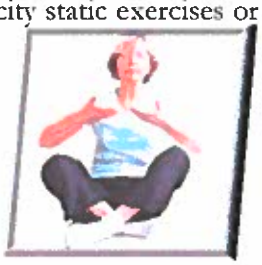
2.1 Development of muscle elasticity.

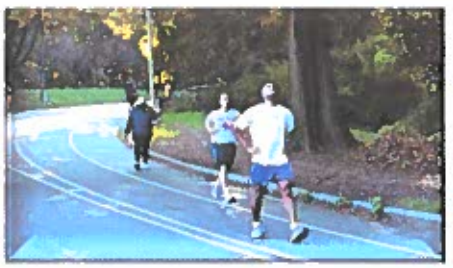
2.2. Development of endurance strength.

2.3. Development of aerobic stamina.

3) **Cool down:**

It is some easy exercises that allow the body to gradually transition to a resting state. At the end of the training session we can do gentle aerobic exercises, muscle elasticity static exercises or relaxation exercises (as respiratory exercises).





Other issues to consider:

- Sequencing of the exercises.
- Time for each exercise.
- Resting time between exercises.
- Use of facilities.
- Use of equipment.
- Contingencies.
- Emergency procedures.
- Consideration of health and safety

Training session structure assessment

Put the following exercises in three groups:

- ⇨ Warm up exercises
- ⇨ Development fitness exercises
- ⇨ Cool down exercises

(Cut and paste the exercises in the correct order)

Physical condition component:

Training system:

3' continious race
140 bpm

Physical condition component:

Training system:

2x10' / 5' (160 bpm)

Physical condition component:

Training system:

Joint mobility of the trunk exercises (draw 3)

Physical condition component:

Training system:

Joints mobility of the arms (+ continuous race) 2'

Physical condition component:

Training system:

30"

Worked muscle:

Physical condition component:

Training system:

Joint mobility of the legs exercises (draw 3)

Physical condition component:

Training system:

30"

Worked muscle:

Physical condition component:

Training system:

30"

Worked muscle:

Physical condition component:

Training system:

30"

Worked muscle:

Physical condition component:

Training system:

3x30"

Worked muscle:

Physical condition component:

Training system:

3x30"

Worked muscle:

Physical condition component:

Training system:

3x30"

Worked muscle:

Physical condition component:

Training system:

3x10/30"

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

Physical condition component:

Training system:

3x30"/30"

Worked muscle:

Physical condition component:

Training system:

3x15/30"

Worked muscle:

Physical condition component:

Training system:

3x30"

Worked muscle:

Physical condition component:

Training system:

3x15/30"
Cada lado

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

Physical condition component:

Training system:

3x15/30"

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

Physical condition component:

Training system:

3x8/30"

Worked muscle:

Physical condition component:

Training system:

3x15/30"

Worked muscle:

Physical condition component:

Training system:

3x10/30"

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

Physical condition component:

Training system:

3x10/30"

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

Physical condition component:

Training system:

3x10/30"

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

Physical condition component:

Training system:

10 reps

Worked muscle:

XII Principles of training

Training is a planned process that uses exercise of adequate intensity and repeated to produce optimal adaptations. All training that aims to achieve results (oriented to health or athletic performance goals) must meet a number of basic principles. Some of the most important are the following ones:

1.- Unity

The human body works as a whole, so we should work simultaneously all its qualities and parts to allow its full and balanced development. If what we want is to develop our health, then we should work mainly:

- **Aerobic stamina.**
- **Endurance strength.**
- **Muscle elasticity.**

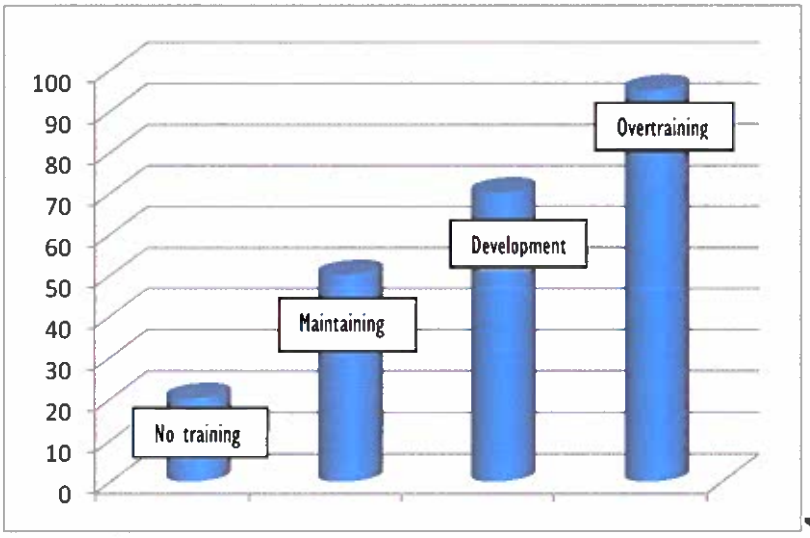
2.- Individualization

Sports training should be adjusted according to each athlete's characteristics and needs, such as age, gender, rate of progress and previous experience.

Everyone should make some tests to know what your level of physical condition is before starting a training program and follow an individual program, avoiding to start from the level of others (what others find it an easy load could be for us a heavy one, and vice versa). Needs, abilities, goals, skills, physical attributes, lifestyles, medical history and exercise preferences are not the same for everybody.

3.- Overload

For there to be adaptation, the workload must exceed a threshold of minimum effort, below which there are no effects or benefits. But you have to be careful, because if loads are too large there is a risk of injury. We look for, then, those loads of work that help us whether to maintain our level of physical condition or to increase it.



There are different types of adaptations:

- **Fast**: initial reaction to the exercise (as increased heart rate, body temperature, breathing frequency…). These changes disappear at the end of training, they are reversible.
- **Chronic**: long term changes in response to training; these changes are stable on our body (such as having fewer heart rate at rest, muscle hypertrophy…). These are the adaptations we want to achieve with training.

Healthy exercises should be:

- 60 – 85 % MHR
- 120 – 180 bpm
- 30' – 1 h / session

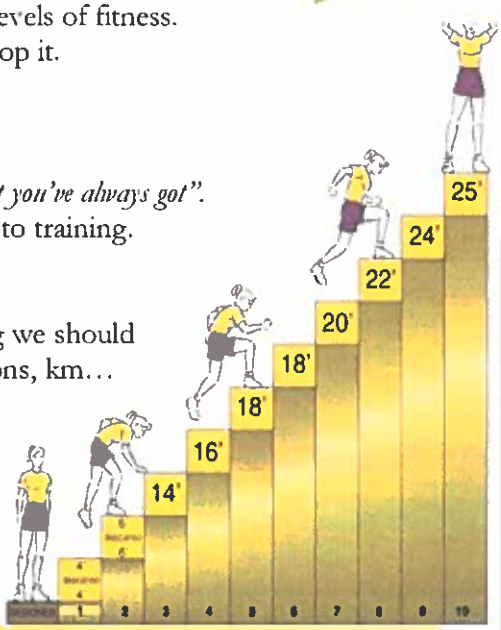
4.- Continuity

Because adaptations are reversible (if we stop training we are going to lose the effects we had won) all program training should be both intense and repeated over time. As a rule, is highly recommended:

- 3 sessions per week to keep current levels of fitness.
- 4 or more sessions per week to develop it.

5.- Progression

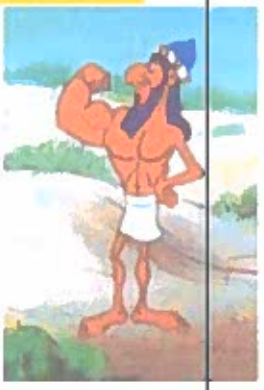
"If you always do what you've always done, you'll always get what you've always got".
To increase training gradually is the only way your body adapts to training.
Doing exercises, we are going to work with two variables:



- **Volume**: total amount of exercise we do. It is the first thing we should increase. It is usually measured in time, number of repetitions, km… It causes long term changes or adaptations on our body.
- **Intensity**: after having worked and increased volume, then exercises become more intense (with less rest, more speed or more heart rate). It produces short term adaptations, which are quickly lost if training is abandoned.

Their relationship is inversely proportional: if the volume of an exercise is high, then the intensity is low, and vice versa.

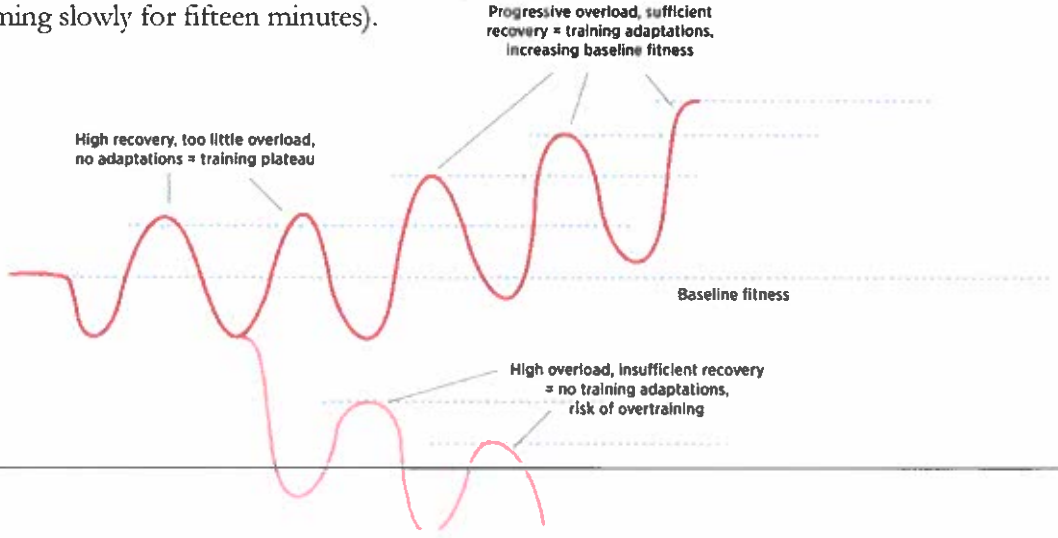
6.- Specifity



The benefits of exercise depend on the type of exercise performed: each exercise causes certain adaptations in our body. That is way you should plan your training according to the needs of your activity or sport. (If you only work maximum strength you are not going to improve your aerobic stamina; if you only work muscle elasticity in your right leg, you are not going to improve your muscle elasticity in your left leg…).

7.- Recovery

After doing exercise, our body needs to recover (for repair and renewal of the body's tissues). Both short periods like hours after a short and non intense season and longer periods like days after a long season are needed to ensure our body does not suffer from exhaustion or overuse injuries. After rest, our body will be able to do a new effort. Rest time depends on the exercise performed (we need more recovery time after running for three hours than after swimming slowly for fifteen minutes).



Principles of training assessment

1. Write the name of what principle of training is referred to:
   - Our low resting heart rate is an example of chronic or long term adaptation.
   - Through the year, we must increase first volume, and then intensity.
   - If the exercise is far too hard, then it is not appropriate, it could provoke injuries.
   - We should work arms, trunk and legs.
   - Not everybody likes same things.
   - We shouldn't rest the same time after doing 10 squats than after cycling 5 hours.
   - Lifestyle or medical history are important.
   - We need to avoid any decompensation in our body.
   - The relationship between volume and intensity is inversely proportional.
   - If we stop training we lose adaptations.
   - If you only work your endurance strength in one arm, the other arm will not improve.

2. Write one fast adaptation and one chronic adaptation for each of the following body systems:

	cardiovascular	respiratory	muscular	skeletal
Fast adaptation				
Chronic adaptation				

3. Write three ways to measure the volume of an exercise; write two ways to measure the intensity of an exercise:

4. What is my goal if I am training three days a week?

5. What subcomponents of physical condition do we have to work if what we want is to keep healthy? How many days a week each one?

6. If what I want is to keep healthy, is it a good idea to run three days a week 45'?

7. If what I want is to improve my performance, is it a good idea to run three days a week for 1h?

8. There are four types of loads, according to their effect on our body. Write one example for each one that could be fit for you:
   - Does not cause any effect:
   - It helps to maintain your physical condition level:
   - It helps to improve your physical condition level:
   - It is dangerous:

XIII First aid

1.- Review:

It is the assistance given to any person suffering a sudden illness or injury, with care provided to preserve life, prevent the condition from worsening, and/or promote recovery.

2.- Steps in an emergency:

- To protect
- To alert
- To help

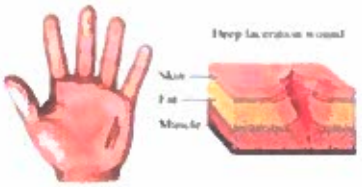
We have to protect both the victim and ourselves by making sure that a similar accident doesn't happen again.

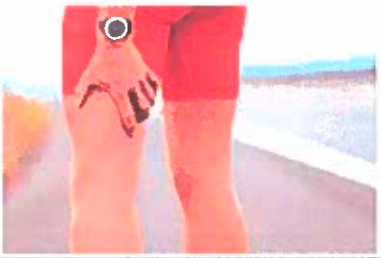
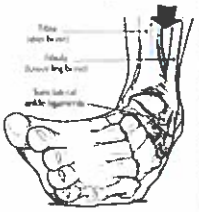
To give the person the attention they need. We need to know what the person needs, and how to do it properly. Otherwise, we need to look for help.

Call 1 – 1 – 2 (in all European Union countries). We have to give the following information:

- ✗ Our name and our telephone number.
- ✗ What has happened.
- ✗ Where it happened.
- ✗ What state the injured person is in:
  - Are they conscious or unconscious?
  - Are they breathing?
  - Is the heart beating?
  - What is their body temperature?
  - Besides, we must report any unusual things we can see (maybe they are bleeding, or have a broken bone...).

SOME INJURIES

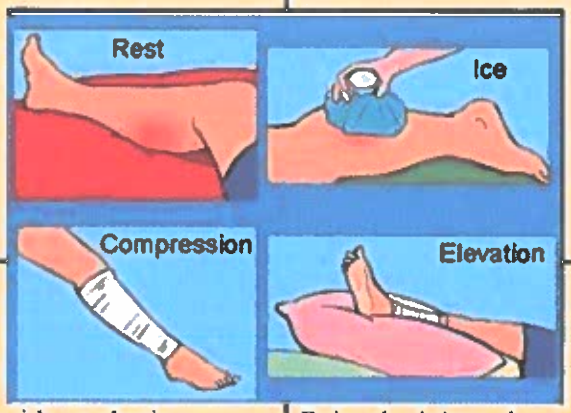
Injury	Symptoms	Action
Wound An injury to living tissue caused by a cut, blow, or other impact, typically one in which the skin is cut or broken.	• Pain • Hemorrhage • Possible infection/inflammation • Skin irritation 	• Clean the wound with soap and water • Disinfect with an antiseptic (peroxide or mercromina) • Cover the wound with gauze 
Contusion (bruise) Because of a hit, a region of injured tissue or skin in which blood capillaries have been ruptured; a bruise.	• Severe pain • Inflammation and bruises 	• Remove clothes if pressing on the injury • Applying ice (no more than 20' three or four times daily the first three days) 

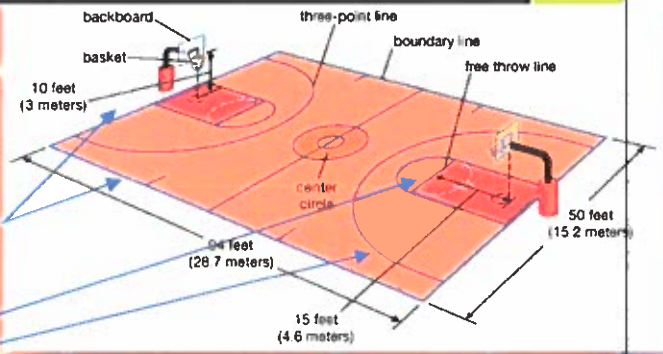
Cramp A painful, involuntary contraction of a muscle typically caused by fatigue or strain	• The muscle contracts involuntarily, causing severe pain in the affected area 	• Suspend physical activity you are doing • Massage the muscle until it relaxes • After relaxing the muscle, do some static stretching 
Strain **(or pulled muscle – colloquially-)** Injury in which muscle fibers tear as a result of overstretching.	• Violent feeling on a muscle. • Pain in the area, which increases when contracting the muscle. • Inability to move it • Inflammation of the area 	• Rest • Apply ice for no more than 20 minutes (don't apply ice directly to the skin) • Use a compressive bandage 
Sprain The result of the twisting or loosening of a joint.	• Pain in the ligaments of the affected area • Inability to move the joint • Inflamma-tion  	• Applying ice (15 – 20') • Apply an anti-inflammatory • Rest • Compressive bandage 
Sunstroke / heatstroke	• High body temperature (between 39 and 41°) • Dizziness, confusion, disorientation • Excessive sweating • Redness and dry skin • Acceleration Pulse • Headache • Unconsciousness	• Put the person in a cool, shaded place. • Have the person lie down and elevate their feet • Apply cold water to the joints. • Upon reaching 38 degrees, stop applying cold • Keep an eye on the tempe-rature and, if it goes up, apply cold again 
• **Tendonitis** Inflammation of the tendon caused by repetitive use or contusion	• Severe pain when using the tendon	• Apply ice after activity • Apply an anti-inflammatory • Rest • Compression bandage • Contrast baths (hot-cold every 5 ') when the area is not used

Periostitis Inflammation of the periosteum (membrane that covers the bone).	• Pain in the area of the tibia, ahead, both touch and movement. • Inability to run or jump from pain	• Apply ice in batches of no more than 20 ' • Massages with ice for 3-5 days • Prevent it, running on soft surfaces 
Luxation The bone is out of its place.	• Severe pain that will increase when you move the area • Deformity in the dislocated area • Inability to move • Swelling and inflammation	• Immobilization of the joint • The zone needs absolute rest. • Transfer to a medical facility to reattach the joint in place. 
Bone fracture The bone is broken.	• Extremity or articulation out of place or deformed • Limited movement or inability to move the limb • Swelling and bleeding • Intense pain • Numbness and tingling • Breaking of the skin with the possibility of the bone coming out 	• Do not move the victim unless the bone is immobilized. Keep calm. • Position it horizontally to prevent fainting • Call 112 • Inspect other possible injuries and if there is blood circulation above and below the break (pressure method and color change) • Cover the fracture with clean and dry cloth • If the bleeding continues and is excessive, apply pressure to the area. • Do not do turnstiles except in case of possible death • Ice can be applied to decrease pain

RICE: this is a treatment that we must follow for most soft-tissue injuries. "R" for rest, "I" for Ice, "C" for Compression and "E" for Elevation.

REST Reduces internal bleeding, and prevents further injury. Rest for the first two or three days. Then reintroduce movement gradually (we should try to avoid losing muscle strength).	ICE Reduces blood flow, pain and swelling. Put an ice pack on the injury for 10 – 15' every two – three hours. Don't apply ice directly to your skin.
COMPRESSION Reduces internal bleeding and swelling. Compress the injury with an elastic bandage, without stopping blood flow.	ELEVATION Reduces internal bleeding and swelling. Raise the injury above the level of the heart and keep it supported.





1.- *Basketball court:*

- Basketball court measures are 28 m long and 15 m wide. If the ball or the player with the ball touches any of these lines, then it is considered to be out of bounds, and the ball possession is for the opposite team.
- Free throw line (at 5'80' m of the basket)
- 3 points line at 6'75 m of the basket
- The central line divides the field into two halves, and it is important because when the attacking team advances with the ball to the opposite field, then the ball cannot go backwards and cross again that line. If that happens, it is foul, and it is called "backcourt violation".

2.- *Rules related to time:*

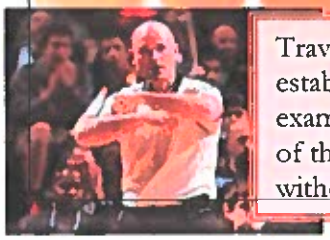
- The match is divided into four periods of ten minutes each (12' in the NBA).
- If the match ends with both teams tied, five more minutes are played.
- 24": the players of the attacking team have 24 " to throw in the basket: if they do not do it they lose possession of the ball.
- 8": a team have only 8" to go from their own field to the opposite field.
- 5": a player cannot stay more than 5" with the ball without bouncing it, or passing it, or throwing in a basket.
- 3": an attacking player cannot stay more than 3" inside the area of free throws.

3.- *Objective of the game:*

- To get as many points as possible. You get one point when you get a basket by throwing from the personal line after a foul; two points when the ball is thrown, from within the line of 6'75 m; and three points when the shot is made from beyond the line located 6'75 m from the basket.

4.- *Players:*

- There are five players on the court in each team. There is no limit in the number of changes a team can do.
- Ways to play the ball: the ball is only played with the hands. a player can use both hands to throw the ball or to pass the ball, but to move with the ball they have to do it by dribbling, bouncing the ball continuously with one hand (never with both hands at the same time, nor with a height of the bounce higher to the one of the player's shoulder). If a player receives the ball, bounces it and picks it up, then he can't bounce it again: in possession of the ball, without throwing it to basket or dribbling, a player can only to pass, to pivot or to do a lay-up.
- Behavior with the opponent: a player can block the opposing player with the trunk, without moving the feet of the ground; It is allowed to remove the ball with your hand without touching the other player, which can't be pushed, or grabbed, beaten, etc.



Travelling: illegal movement of an established pivot foot (for example, and being in possession of the ball, to take three steps without bouncing the ball)

Personal foul: illegal personal contact with an opponent. If a player commits five personal fouls, then they are eliminated (six fouls in the NBA).

4.- Some basketball technique:

Triple-threat position

It is so called because from this position the player can shoot to basket, pass the ball or dribble. Semi-flexed knees; one foot slightly ahead of the other; ball to the side, between the chest and the waist; elbows raised, close to shoulder height.

Dribbling

Keep your hand on top of the ball. Make it with your fingertips, not with the palm of your hand. try to be able to do it with both hands. The ball does not have to go beyond the height of the waist. Do not look at the ball while you are bouncing it.

Control dribble

It is done when we have both the ball and an opponent is close to us. We must protect the ball by putting our body between the opponent and the ball; the dribbling is made with the hand furthest away from that opponent. Keep legs flexed, and the ball low while you are dribbling it.

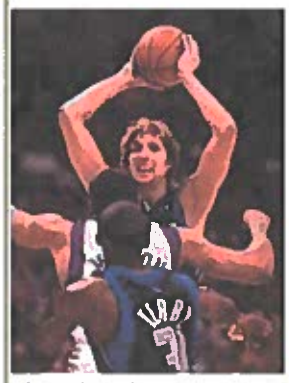
Speed dribble

The player advances quickly by not having any opposite in front. The ball touches the ground in front of and to the side of the player. The hand is located above and behind the ball.

To pivot

It is an action that allows us to move one foot in all directions while the other remains fixed on the ground. We must pivot on the tip of the foot.

Types of passes



Overhead pass

Chest pass

Bounce pass

Baseball pass

Behind the back pass

Shots

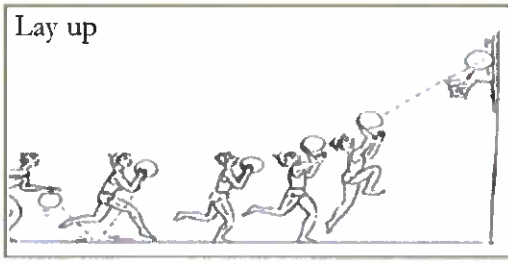
Free throw

Jump shot

Bank shot

Dunk

Lay up

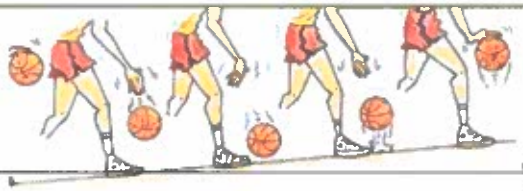


Hook shot

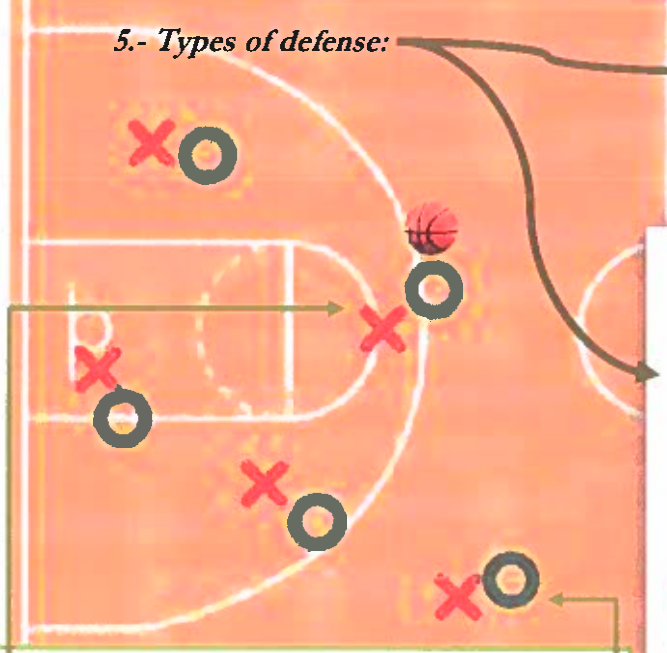
Rebound

Blocked shot

Spanish Basketball Federation: www.feb.es
Basketball Federation of Madrid: www.fbm.es



5.- Types of defense:



MAN-TO-MAN

This defensive scheme assigns players to a specific opposing player, often matched up by position, ability or size.

ZONE DEFENSES

Where Man-To-Man defense has you assigned to a specific player, this defensive strategy has you guarding a specific area instead.

1. Defend the player that does not have the ball. The defender must be placed forming a triangle between the ball and the opponent to whom is marking. The closer the defender's ball is, the closer he must approach the opponent to cut a possible pass. If the ball is far away, he can go away a bit to help his teammates.
2. Defend the player with the ball. The defender must always be placed between the ball and the basket, preventing the advance of the opponent, and being close to them.

Zone defense: each defending player is responsible for defending not a specific opponent, but a specific area of the field.

6.- Spain in the Olympic Games, World Championships and European Championships.

Female team	Male team
Olympic Games	
Silver medal: 2016	**Silver medal**: 1984, 2008, 2012 **Bronze medal**: 2016
World championships	
Silver medal: 2014 **Bronze medal**: 2010	**Gold medal**: 2006
European championships	
Gold medal: 1993, 2013, 2017 **Silver medal**: 2007 **Bronze medal**: 2001, 2003, 2005, 2009, 2015	**Gold medal**: 2009, 2011, 2015 **Silver medal**: 1973, 1983, 1999, 2003, 2007 **Bronze medal**: 1991, 2001, 2013, 2017

Basketball assessment I

Say, for each sentence, if they are true or false (whatever your answer, explain why):

a) We can use our left hand or our right hand to bounce the ball.

b) In Europe, a basketball match usually lasts 40 minutes.

c) If the ball is outside of the limits of the court, then is always out of bounds.

d) After five minutes from the start of the match, the result could be 1 – 0.

e) There is no situation in which if a player is on their own court their teammates can pass that player the ball.

f) A basketball match could last one hour.

g) When they have the ball, a player is allowed to do three steps without bouncing it.

h) There is no situation in which to catch the ball with both hands at the same time is allowed.

i) According to the rules, a team could do more than forty changes in the same match.

j) It is possible to do a lay-up from the own court.

k) At the beginning of the match a coin must be thrown to decide which team has possession of the ball.

l) One player can be bouncing the ball for 27 seconds in a row.

m) Depending on from what part of the court a player throws the ball to the basket, that player can get two or three points.

n) Without losing the ball, a player can bounce the ball y catch it again as many times as they wish.

o) Basketball has been played in three different centuries.

p) A one-point throw is only possible after a fault.

q) In some situations, according to the rules, and being the ball inside the court in possession of a player, the referee could decide that it is out, and give the possession of the ball to the other team.

r) A player can run and at the same time to block an opposite player with the trunk.

s) In the NBA, when a player commits five fouls is always eliminated.

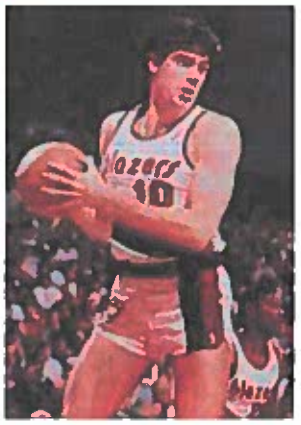
t) If a player bounces the ball higher than their own shoulders, then it is foul.

Basketball assessment II

Do you know who they are, and why are they here?

Larry Bird, Magic Johnson, Michael Jordan

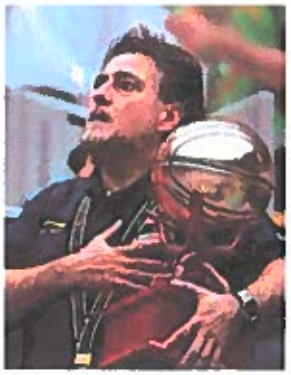
Senda Berenson



Fernando Martín

Antonio Díaz Miguel

Laia Palau



Pepu Hernández

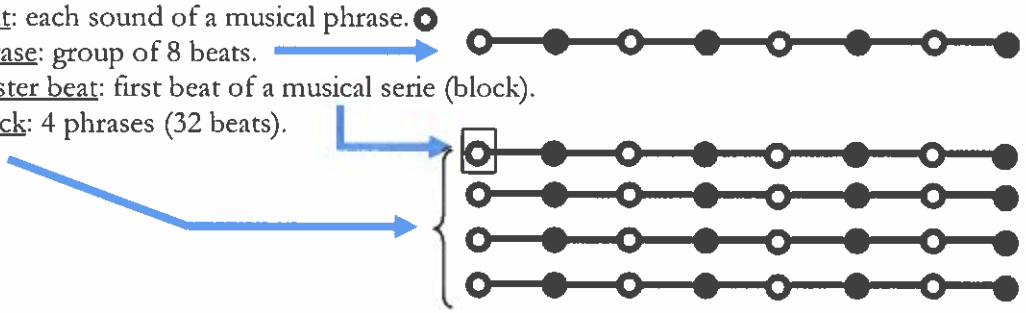
Amaya Valdemoro

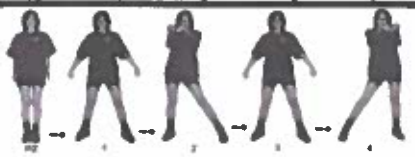
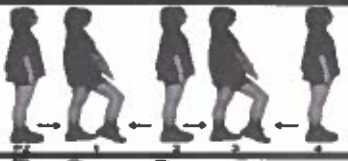
James Naismith

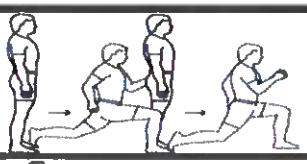
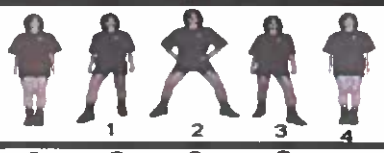
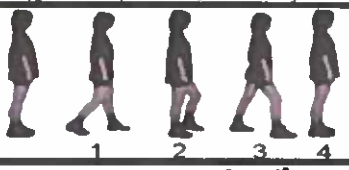
Bill Rusell and Red Auerbach

Sequence of movements which form a choreography and that are performed to the sound of music. It is a long-term activity and (usually) moderate intensity which helps to improve our cardiovascular and respiratory systems.

Beat: each sound of a musical phrase.
Phrase: group of 8 beats.
Master beat: first beat of a musical serie (block).
Block: 4 phrases (32 beats).



STEP		TIMES / ALTERNATIVES
March or walk		2 times Forward; backward
Jogging		2 times
Step		2 / 4 times Right – left; L ; square; diagonally; double step
Side to side		2 times Toes touching the ground; heels back; raising knees. Forward and backward. With spin.
Side touch		2 / 4 times
Jumping jack		2 times
Touch the ground with your toes		2 / 4 times The same with your heels (heel dig)
Knee lifts		2 / 4 times

Lunge		2 times To one side.
V		4 times Jumping (two jumps in 3 y 4)
V reverse		4 times Jumping (two jumps in 3 y 4)
Cross front		4 times L ; square.
Cross back		4 times L ; square
Mambo		4 times
Square		4 times
Kikcs		2 / 4 times
Heel lifts		2 / 4 times
Jumps		
Some examples of combinations		

AEROBICS CHOREOGRAPHY

Guidelines for the preparation and presentation of the choreography:

	Level 6	Level 8	Level 10
Group	4 – 6 people	4 – 6 people	4 – 6 people
Choreography			
Blocks	4 blocks	8 blocks	10 blocks
Phrases	16 phrases	32 phrases	40 phrases
Beats	138 beats	256 beats	320 beats
Number of basic steps performed	At least 12	16 (you can perform each of them in two different phrases)	At least 20
Sentences with arm movements	At least two	At least four	At least eight
Use of different directions	At least two	At least two	Three

→ right-left / forward – backward / diagonally

The following aspects are evaluated:

1. Successful performance of the basic steps and directions.
2. Adaptation of steps to music (sense of rhythm).
3. Move arms correctly and coordinated.
4. Originality in the development (you can make up new movements).
5. Artistic impression (beautiful, effective and coordinated movements are appreciated).
6. Make good use of space.
7. Mark each master beat with a clear movement or sound.

Every group must provide in writing the following information:

a) Name and surname of each member of the group.
b) Difficulty level chosen.
c) Chosen music.
d) Movement or sound chosen to mark each master beat.
e) Group structure during the performance (a row of six people, two of three, 1-2-3, etc.)
f) Steps and arm movements that will be performed in every phrase:

(Example)	Aerobic step	Arm movements
1st phrase	Step (right - left)	---
2nd phrase	V (first step with right foot)	Raise the right arm to the ceiling when the right foot is forward; same movement with the left arm when the left foot is forward
3rd phrase	Knee lifts (2 right – 2 left)	Clap over the head
4th phrase	Square (right)	---
And so on...		

1.- ***Review:***

Orienteering is knowing where we are in relationship to the four cardinal points: north, south, east and west. We can use natural elements (sun, polar star, snowdrifts, moss, felled tree rings, migrations of birds, nesting trees, moon…) and artificial elements (map, compass).

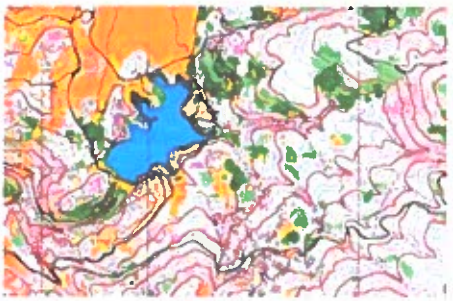
What is a map? A map is a scale representation of reality, which means that the distances on a map and distances in the real world are proportional: if a map has a scale of 1: 25000, it means that a unit of measurement on the map is equal to 25,000 of that same unit of measurement in reality.

Scale 1:25000 → 1 cm in the map = 25000 cm in reality = 2500 decimeters in reality = 250 meters in reality.
Scale 1:100000 → 1 cm in the map = 100000 cm in reality = 10000 decimeters in reality = 1000 meters in reality.

A map uses symbols, signs and drawings to express objects and elements that are in real world. If we don't know what these symbols mean, we need to look at the Map Key.

Map Key: explains the symbols, signs and drawings that we are going to find on the map. To help us, as a rule, every color has a different meaning:

- Green: vegetation
- Brown: mountains.
- Yellow: open ground with good visibility.
- Blue: water.
- Black: constructions made by humans (such as roads, buildings, train tracks…).
- Red: overprinted symbols of an orienteering courses (starting point, control points, control numbers, finish point).



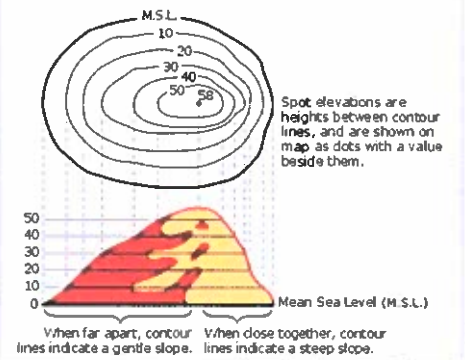
How to use a map? To use a map we need to know both where the real north is, and where the north is on our map. This one (the north on our map) is usually on the top of the page but, in case it isn't there, there is always a sign which shows us where it is. Here are some of these signs: →

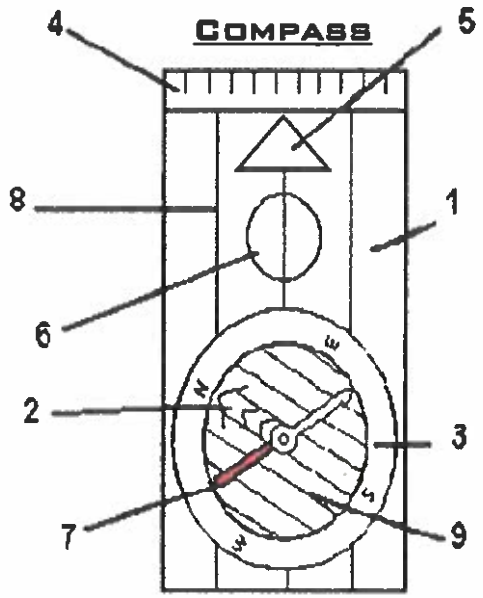
Therefore, when we know where both north in the real world and the north on the map are, what we have to do then is put both of them together (we should point the north on our map towards the real north).

2.- Contour lines:

These are lines connecting points of the same height above sea level (altitude). The actual vertical distance between each line is usually 5 meters in the plans and maps of scale 1 / 15,000 (the most used in orientation) and 10 meters in the scale of 1 / 25,000.

The further away the contour lines are from each other, the flatter the terrain; the more together, the greater the slope. To get an idea about how the terrain is (flat, downhill…) it is good to project the curves. It is made as follows:





1 Base plate
2 Orienting arrow
3 Dial with degrees
4 Scales
5 Direction of travel arrow
6 Magnifier
7 Magnetic needle
8 Auxiliary direction arrows
9 Orienting lines (north – south arrows)

The orienting arrow is a magnetised needle always oriented to the north.

HOW IS IT USED?

A) When we have compass, we don't have a map, and we have a direction in degrees:

1. Put the dial with the degrees pointing to the direction of travel arrow.
2. Move the whole compass until the magnetic needle is on the orienting arrow.
3. You have to go towards the place where the direction of travel arrow is pointing.

B) When we have both compass and map, we know where we are in the map and we also know where we want to go in the map:

1. Using the compass draw a line on the map from the point where you are to the point where you want to go. Take care that the direction of travel arrow is pointing to the place where you want to go (otherwise, in the end, you will go in the opposite direction.)
2. Move the dial with degrees until the position in which the orienting arrow is pointing to the north of the map.
3. Now you can see how many degrees marks the direction of travel arrow.
4. Move the whole compass until the magnetic needle is on the orienting arrow.
5. You have to go towards the place where the direction of travel arrow is pointing.

C) When we have both compass and map, we know where we are in the map and we have a direction in degrees:

1. Put the dial with the degrees pointing to the direction of travel arrow.
2. Put the compass on the map, with one of its long sides on the point of the map where you are.
3. Move the compass around that point until the orienting arrow is pointing to the north of the map.
4. Using the long side of the compass that is on the point where we are, draw a line on the map from the point where you are towards the direction at which the direction of travel arrow is pointing. Now you can see in the map where are you going.
6. To know where you should go in the real world, move the whole compass until the magnetic needle is on the orienting arrow.
7. You have to go towards the place where the direction of travel arrow is pointing.

Orienteering map. How to interpret

Control description: a card that provides information to the runner about the characteristics of the race and controls.

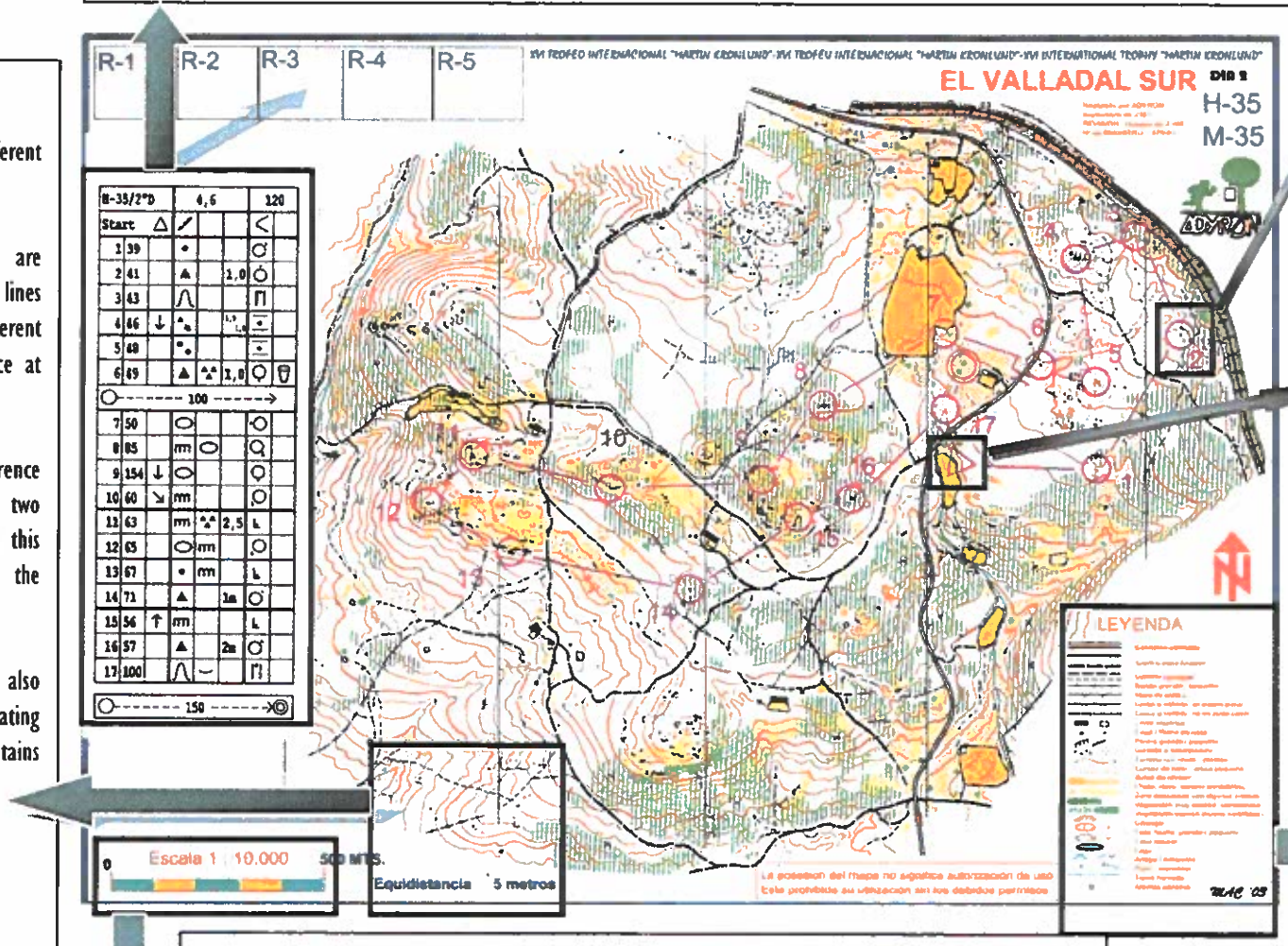
Land relief

We can see it by different elements:

- **Level curves**: they are imaginary lines connecting different points on the surface at the same height.

Equidistance is the difference in elevation between two adjacent level curves. In this map, as you can see, the equidistance is 5 meters.

- Sometimes there are also black points indicating the altitude of mountains or important places.



Beacon (control)

It marks the place where is a control point. It is an orange and white square.

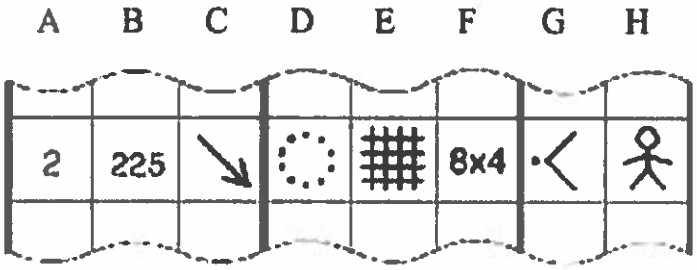
The starting point is represented by a triangle

Map legend

(Or map key): explains those symbols, signs and drawings that we are going to find in the map. To help us, as a rule, every color has a different meaning (read again previous pages)

Map scale: relationship between distances in reality and distances in the map.
1:10.000 means that 1cm in the map are 10.000cm. in reality (10.000cm=100m.)

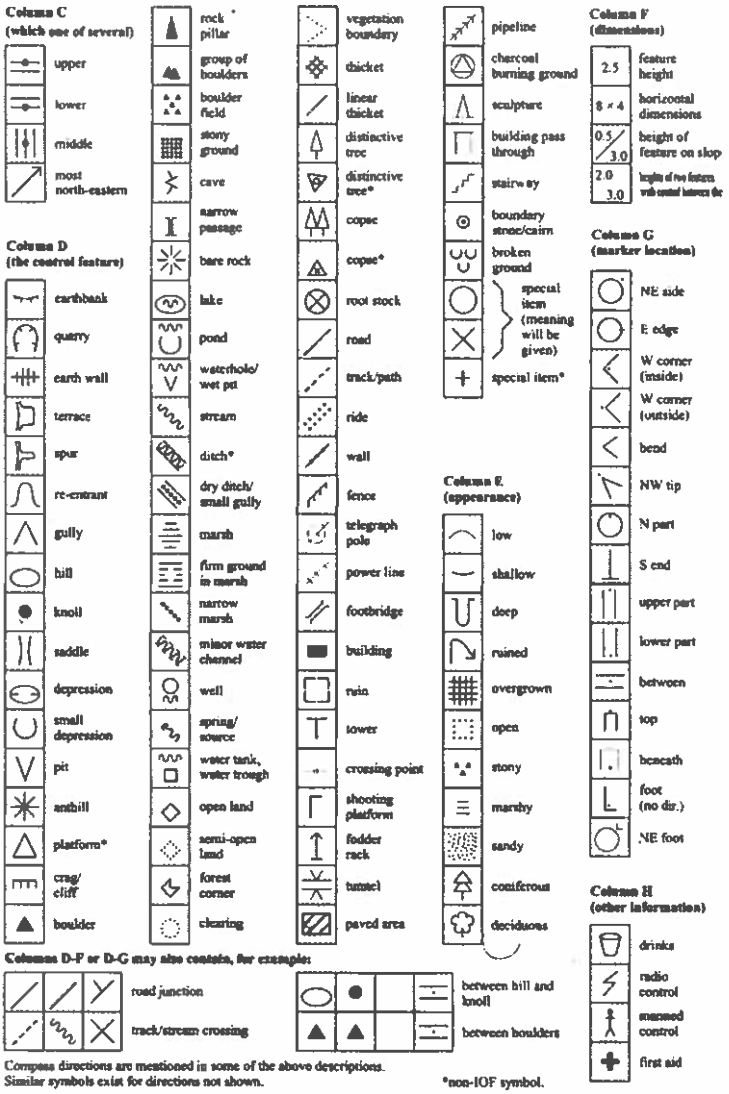
CONTROL DESCRIPTION SHEET

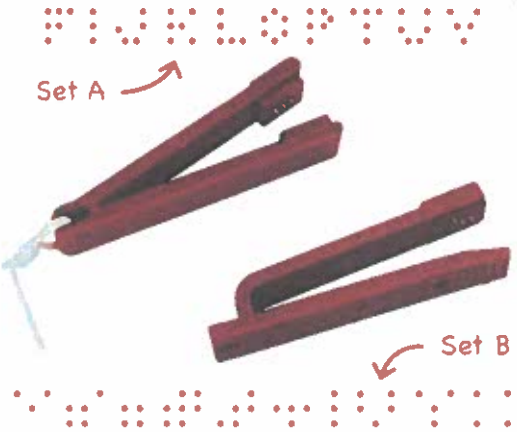


A Control number
B Control code
C Which one between similar objects
D Element of the control
E Appearance
F Dimensions
G Location of the mark
H Other information

CONTROL CARD

When we find the control, we have to pierce it with small object which has a kind of thumbtacks, in the place corresponding to the control number.



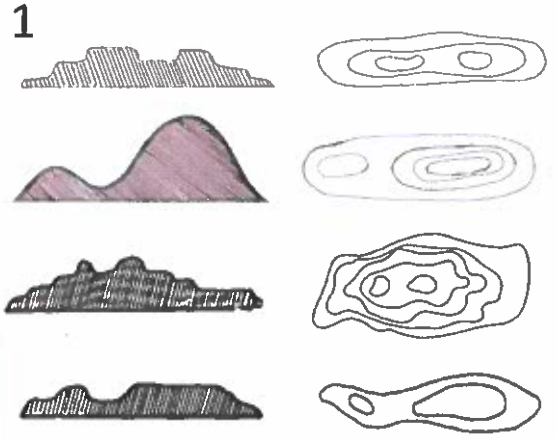


Orienteering assessment I

Name: _____

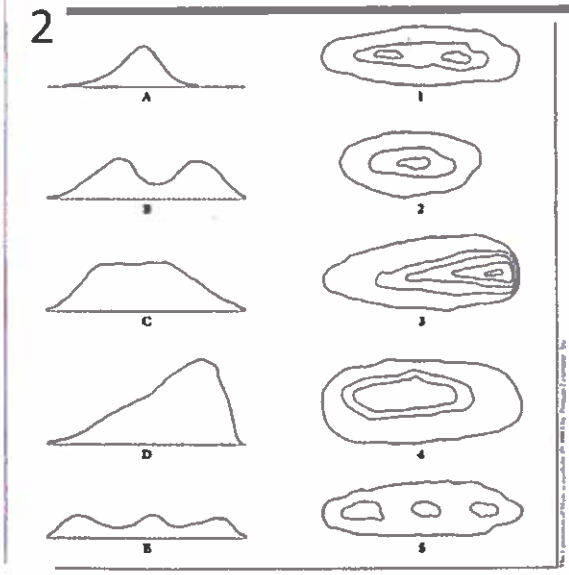
Match the contour patterns with the blocks:

1



1___
2___
3___
4___

2



1___
2___
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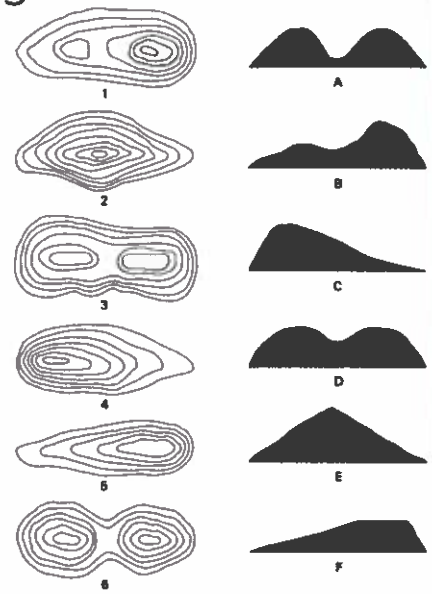
3



1___
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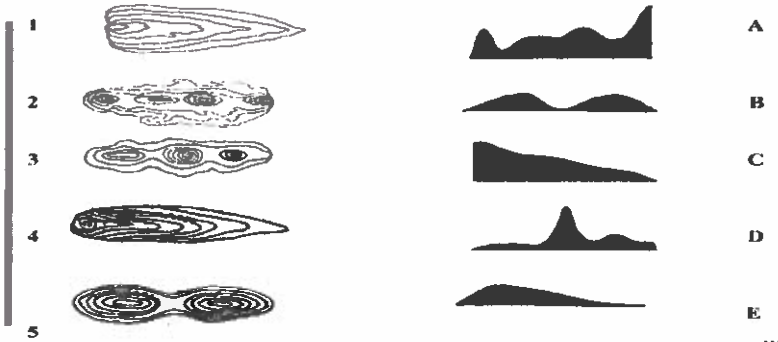
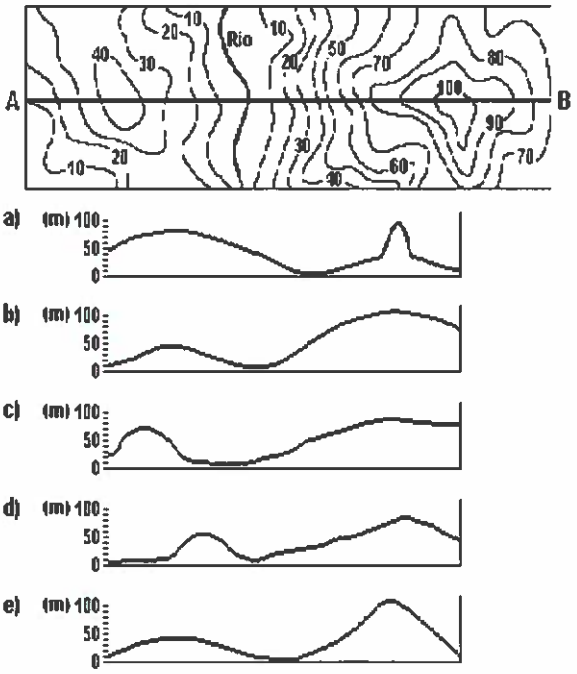
4

1___ 2___ 3___ 4___ 5___ 6___



5

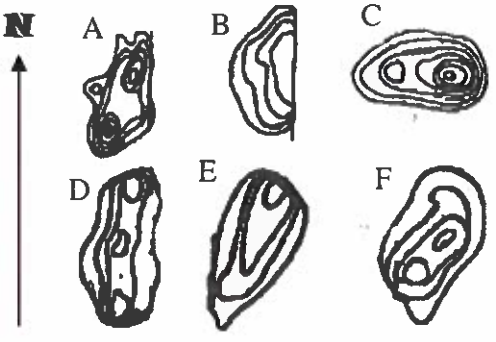
Indicates which of the following profiles corresponds to the map



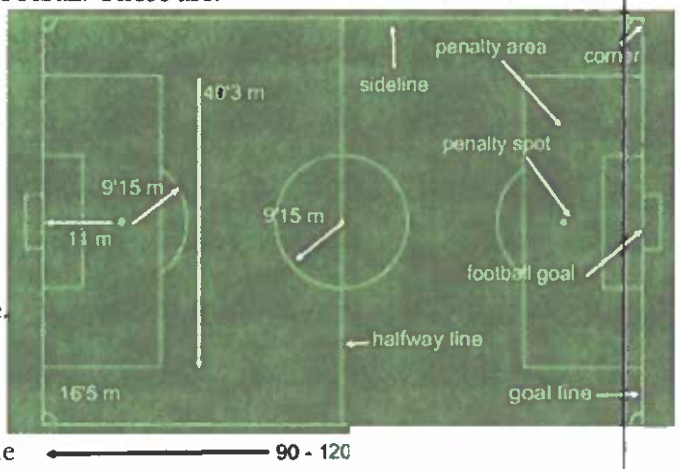
6 *Relates each description to its corresponding contour lines:*

1 It is better to avoid ascending this hill from the east.
2 The north and south faces of this hill have a great slope.
3 The highest peak of the two is the eastern.
4 This hill has its biggest slope to the northeast.
5 Only the northeast face of this hill is not of considerable slope.
6 This hill has two peaks. The south is higher.

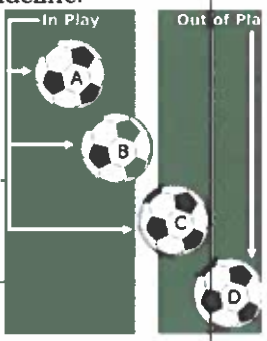
A ___
B ___
C ___
D ___
E ___
F ___



1.- Football rules: there are only seventeen rules in football. These are:



1. Field of play: it must be rectangular (length between 90 – 120 meters, width between 45 - 90 meters), with natural or artificial grass, green color.
2. The ball: it must have a circumference of 58 - 71 cm.
3. Number of players: each team has eleven players on the field (three substitutions are allowed).
4. Player's equipment: players must wear a jersey, shorts, stockings, shin guards and footwear.
5. The referee: responsible for enforcing the rules of the game.
6. The assistant referees: there are two, each one in the opposite sidelines. Of course, they help the referee.
7. Duration of the match: two halves of 45 minutes.
8. The start and restart of play: from the center of the field (the same after a goal). Every team has to stay on their own midfield.
9. The ball in and out of play: it is is out of play when it completely crosses the goal line or the sideline.
10. Scoring: a goal is scored when a ball completely crosses the goal line, between the goalposts
11. Offside: a player is offside when receiving a pass from a teammate if these two situations occur simultaneously:
    - ✓ At the time the pass is made this player is closer to the goal that the ball.
    - ✓ This player doesn't have at least two opposing players between their position and the goal.
12. Fouls and misconducts: kicking, grabbing or pushing another player, touching the ball with your hands (except goalkeeper), etc, are penalized with free kicks.
13. Free kicks: the ball is stopped. The player cannot touch the ball again until another player touches it. All opponents must be at least 9.15m away from the ball.
14. Penalty kicks: if there is a foul inside the penalty area, the sanction is a penalty kick.
15. The throw in: it occurs when a ball crosses the sideline. The player catches the ball with both hands and throws it over their head.
16. Goal kick: it occurs when the ball crosses the goal line (not through the football goal) and last player touching it was an attacking player.
17. Corner kick: it occurs when the ball crosses the goal line (not through the football goal) and last player touching it was a defender player.



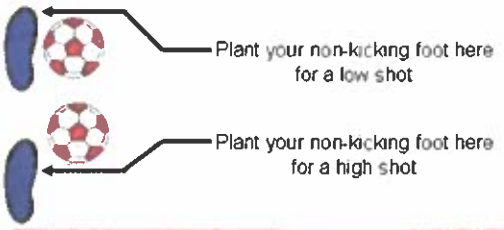
2.- Basic football skills:

3.1.- Control of the ball: it is the action by which a player takes the ball leaving it in a position to be played in the way they wish to. To do it we use our feet, tights, chest and head

3.2.- Displacements with the ball: to go from one place to another while retaining control of the ball.

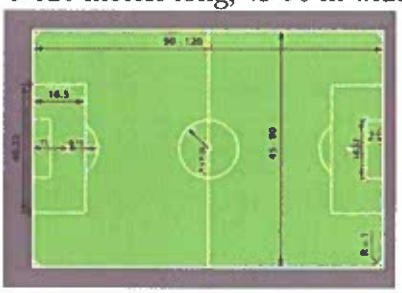
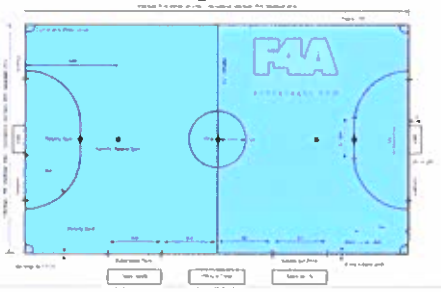
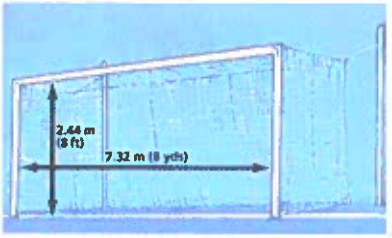
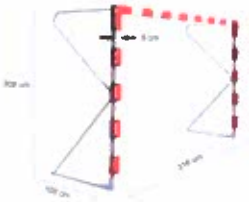
3.3.- Passing: action that allows to establish a relationship between two or more game players by striking the ball.

3.4.- Shotting (on target): it is a hit of the ball that is done with the intention of scoring.



Spanish Football Federation
C/Ramón y Cajal s/n. 28230. Las Rozas (Madrid).
Telephone number: 91 495 98 00.
Web site: www.rfef.es

Madrid Football Federation
C/ Benjamín Palencia 27. 28038. Madrid.
Telephone number: 91 779 16 10
Web site: www.ffmadrid.es

	FOOTBALL	INDOOR FOOTBALL
Number of players	11 per team	5 per team
Dimensions of the playing field	90-120 meters long, 45-90 m wide 	40 meters long, 20 meters wide 
Dimensions of the goal	2'44 x 7'32 meters 	2 x 3 meters 
Duration of the match	2 times of 45 minutes each	2 times of 20 minutes each
Extra time (if needed)	2 times of 15 minutes each 15'	2 times of 5 minutes each
Ball 	It must be spherical, made of leather or some other suitable material; circumference of not more than 70 cm and not less than 68 cm. Its weight should not exceed 450 grams, or being less than 410 grams at the beginning of the game.	It must be spherical, made of leather or some other suitable material: circumference of not more than 64 – 62 cm. Its weight should not exceed 440 grams, or being less than 400 grams at the beginning of the game. It must not bounce less than 50 cm nor more than 65 cm in the first bounce, made from a height of 2 meters
Substitutions	3 per match (one more in extra time)	Unlimited
Throw – in	The throw-in is done with the hands	The throw-in is done with the foot
Off - side	Yes	No
Cards	Red: the player is sent off, their team plays with one less player. Yellow: warning, a second yellow card means red card and expulsion.	Red: the player is sent off, their team plays with one less player. Yellow: warning, a second yellow card means red card and expulsion. Blue: the player must leave the court, but is replaced by another player.
Surface on which it is player	Usually natural grass (sometimes artificial grass, and earth in lower categories)	It must be made of wood or synthetic material, smooth, non-abrasive and free of roughness
Sports shoes		
Referees on the field	1, plus 2 lineman	2
Penalti point	11 meters to goal	6 meters to goal

Do you really know as much about football as you think?

1. If a defender mistakenly passes the ball to an opponent player who is alone in front of the goalkeeper, is it offside?
2. There is a semicircle in the area. Why?
3. What if, in a goal kick, the defender touches the ball before it leaves the area?
4. We know that if a team has six players the game has to be suspended. Now, if a player on a team that has only seven players on the field must leave the pitch for medical care, what happens then?
5. If a player hits another inside the area while the ball is played in midfield, what should the referee decide?
6. In a penalty shoot, is it possible that the same player kick three penalties?
7. Is there any situation in which a defending player catches the ball with their hands inside their own area, and not be a penalty?
8. Can a player play the ball again if after kicking a foul ball it bounces in the referee?
9. Should we let game continue if after being the subject of a penalty, a player finally is alone, the empty goal, half a meter away of the goal line?
10. After a foul in a First Division match when the referee is going to show the yellow card to a player he realizes that he has forgotten cards in the locker room. What should you do?
11. In a free kick, the opposing team players must be normally at a distance of 9.15 meters from the ball. However, sometimes a wall can be placed only 5'5 meters, when?
12. The minimum length of a football field is 90 meters; the maximum width of a football field is 90 meters. Can be a square football field, according to the regulations?
13. A defense performs a goal kick directly to a teammate located just on the edge of the area of the opposite team, without any player between him and the goal. The player controls the ball and scores a goal. Is it offside?
14. What should the referee decide if a player from the bench enters in the field and takes the ball with his hands avoiding a goal?
15. Before starting a match the referee tosses a coin to decide which team starts to play in which side of the field. If one captain chooses a court, what can the other captain choose? (What options do they have?).
16. In a corner, can a player stand in front of the goalkeeper, blocking their vision?
17. If a defense passes the ball to his goalkeeper by hitting the ball with their knee, can the goalkeeper catch the ball with their hands?
18. Before a penalty kick, the goalkeeper marks with their boot a line on the ground in the center of the goal, while the striker makes a mound of earth to place the ball. What should the referee do?
19. Could there be a situation in which, while the ball is in play without the referee blows the whistle anything, a defender takes the ball with his hands inside his own area and the referee doesn't decide that it is penalty kick?
20. What happens if a player kicks a penalty kick before the referee would have authorized?
21. Can a throw-in be done three meters away from the touch line?
22. Is it goal, if after a throw-in and without any player touching the ball, it goes into the opposing goal?
23. What if, in the same situation, the ball enters the own goal?
24. If a player takes a throw-in, but the ball does not enter in the field, what should the referee decide?
25. What if in a "goal kick" a player kick the ball into their own goal?
26. Why are the referees named in Spain by using their two surnames? (Ramos Marcos, López Gil...)

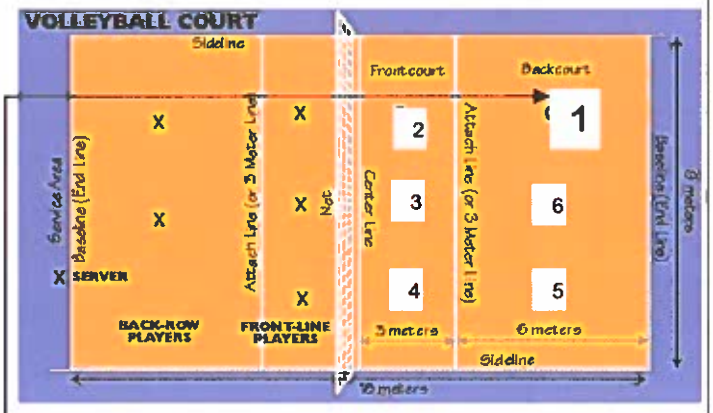
VOCABULARY

Saque de portería: goal kick	Saque de falta: free kick	Saque de banda: throw-in
Saque de esquina: corner kick	Penalti: penalty kick	Saque inicial: kick-off

1.- A bit of history:

Created in 1895 by William P Morgan, was initially a recreational activity for businessmen, popularizing rapidly throughout the United States thanks to the YMCA. Originally (until 1913) there was no player limit or touches of the ball. Volleyball arrives to Europe in 1914. Until 1947 the rules are not unified in America and Europe, and since 1964 it is the official sport of the Olympic Games.

2.- Basic rules:



Volleyball court: it is played on a court 18 m long and 9 m wide. This court is divided by a net (2'43 high for men, 2'24 high for women).

Players: there are two teams of six players each, three back – row players and three front – line players. Back – row players within the line of three meters can not touch a ball that is above the height of the net; Thus, they can not make a blocking, and to do a smash they must jump from behind that line.

Players are not always in the same place, they rotate clockwise each time their team recovers the serve. The player who is in zone 1 after the rotation is the player who performs the serve: this is done from behind the baseline.

Time and points: time is not fixed, it varies on every match. A match ends when a team wins three sets. The minimum number of sets in a match is three (3 – 0), and the maximum is five (3 – 2).

A team wins a set when scores 25 points (by a two points margin, up to 30 points: if the score is 29 – 29, then the winner of the following point is the winner of the set). The fifth set is played until 15 points, always by at least a two points margin, with no limit.

How to get a point: when the ball falls into the opponent court, or when the other team throw it outside of the court, or when the opposing team commits a foul. The team that wins the previous point, get the following serve.

Ways to play the ball: in volleyball you can't catch or push the ball, you can only hit it. It is allowed to hit the ball with any part of your body, even with your feet or your head. But here, in the high school, this is forbidden. So, we are only going to hit the ball with our arms.

Every team can hit the ball up to three times before sending it to the other side of the court. No player can hit the ball twice in a row (except after blocking a ball: it does not count as a touch). (It is forbidden to block a serve).

Technique: this year we will practice setting (pass with your fingers), digging (pass with your forearms) and servin.

Volleyball assessment I: setting

Performer: _____ Observer: _____

	YES/NO	OBSERVATIONS
PREPARATION		
- They move by going under the ball, facing the direction of the pass.		
- Place the thumbs inwards, and the indexes up.		
- Fingers apart (non tense).		
- Hands projected backwards.		
- Arms semi-flexed, elbows slightly in front of the shoulders.		
- Straight trunk, slightly inclined forward.		
- Bent legs 90 - 100°.		
CONTACT WITH THE BALL		
- It is produced with the pads of the fingers.		
- The ten fingers of the hand contact with the ball at the same time.		
- The fingers hit the ball, they do not push it.		
- Simultaneous extension of legs and arms at the moment of contact.		
- Contact with the ball in front of the face and at the height of the forehead.		
- The movement is continued after hitting the ball.		
- The ball does not spin in the air		
POSSIBLE MISTAKES		
- Hitting the ball with the palm of the hand.		
- Keeping your fingers stiff.		
- Bringing your fingers together.		
- Bringing your hands flat.		
- Bending your wrists forward.		
- Hitting the ball at the level of the chest or head.		
- Elbows excessively open.		
- Hitting the ball with one hand before another.		
- Taking your hands off the body axis (left and right) after hitting the ball.		
- Separate hands (before or after touch).		
- Having your arms too much extended.		
- Do not coordinate the movement of extension of legs with the extension of arms.		

Volleyball assessment II: digging

Performer: _____

Observer: _____

	YES/NO	OBSERVATIONS
PREPARATION		
- Position is adopted only for balls that reach below the shoulders.		
- Arms extended and away from the body.		
- Forearms at the same height and close together.		
- Wrists projected forward.		
- Shoulders directed forward.		
- Straight trunk and slightly inclined forward.		
- Legs flexed (body weight divided between both).		
- Feet separated slightly beyond the width of the shoulders.		
CONTACT WITH THE BALL		
- The ball is cushioned, not hit.		
- The ball is cushioned with the inner part of the forearms.		
- The ball is cushioned with the middle or distal one third of the forearms.		
- The arms remain on the same level		
POSSIBLE MISTAKES		
- Hold hands badly.		
- Hitting the ball, giving it more momentum.		
- Cushion the ball with the wrists.		
- Bend your arms when you touch the ball.		
- Separate your arms.		
- Do not flex knees and flex hip.		
- Let the ball roll by the arms.		
- Hitting the ball at shoulder or chest height.		
- Take a leap back at the time of contact		

Volleyball assessment III

Say whether are true or false the following questions (explain the why of your answer, give examples):

a) A volleyball match could last more than four hours.

b) Through one set, there could be one single player serving.

c) There is not any situation in which a player can hit the ball twice.

d) All players can do a smash in every point.

e) The minimum number of points in one single set is 15.

f) The maximum number of points in a single set is 59.

g) A player placed in zone 2 rotates to zone 3 when their team recovers the serve.

h) A team can only get a point if the other team make a fault or throw the ball outside of the court.

i) A block can be done by four players (of the same team).

j) A match always finishes when a team win three sets.

k) When a team win a point, their players must rotate clockwise).

l) When a team has two points of advantage over the other team, then win the fifth set.

m) In an international volleyball match it is allowed to hit the ball with your feet.

n) We can try to block all the balls.

o) Digging is ok to throw the ball really high.

p) We can push the ball if we are close to the net.

q) It is possible that the team that wins the most points in a match loses the match.

r) It is mandatory that 1st touch of a team is setting, the 2nd digging, and the 3rd a smash.

s) In the serve, if the ball touches the net then it is one point for the opposite team.

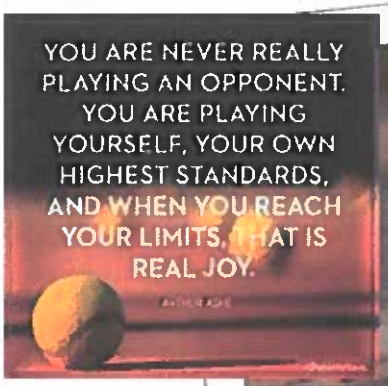
t) When a team gives three touches to the ball, it is mandatory that the three touches be done by three different players.

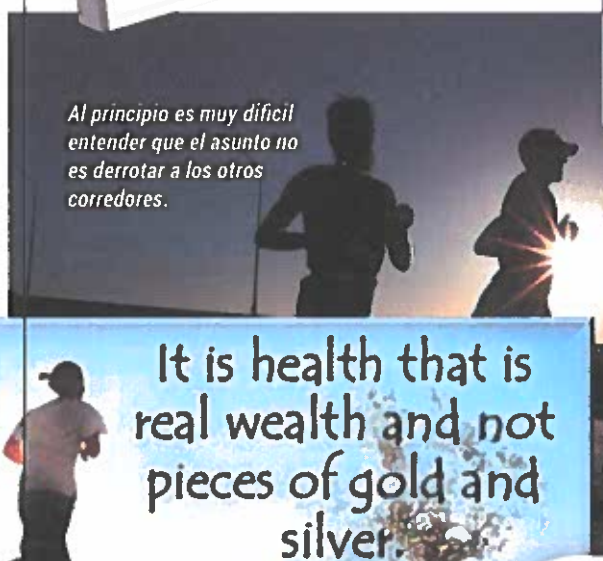
"*You can not climb that summit.*" And Pasabán became Pasabán because instead of putting a red carpet they put a challenge on her. Because she did what she wanted, not what others forced her to do. Pasabán is Pasabán because he dared to climb two mountains, the physical and the emotional.

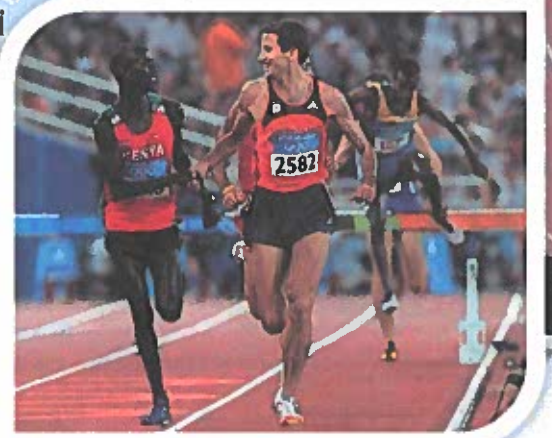
It was a trauma, but I always had that challenge. The goal is to be happy in the path you are going to travel. There are days that are going to be hard and days that are going to be less hard, but what you do must be done with passion. We all arrive at a time when we are seven thousand meters high and we can not go down, either in eight thousand or in life. Ask for help. Nobody knows everything. This is what we also have to inculcate children. One of the most important values of the mountain is the importance of the team, the importance of sharing, and I think that is why it is very good for children. We have to inculcate in them that it does not matter who gets the goal, that the important thing is that that team wins, because they want to take the individual glory. Many times the mountain puts you in your place. As you are facing a nature, an environment that you can not control, you start to value more the person next to you and that helps you climb a rock. And you know that without that person you can not go up there. You begin to see that the child who has passed the ball to you to score the goal is as important as the goal you have scored".

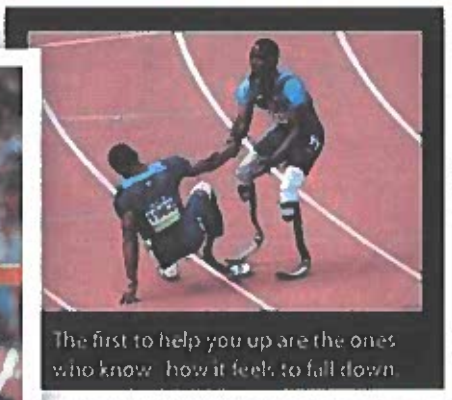
Edurne Pasabán, first woman ever to climb the 14 eight-thousanders in the world: Mount Everest (8,848 m), Makalu (8,465 m), Cho Oyu (8,201 m), Lhotse (8,516 m) Gasherbrum II (8,035 m), Gasherbrum I (8,068 m), K-2 (8,611 m), Himalaya, Nanga Parbat (8,125 m), Broad Peak (8,047 m), Dhaulagiri (8,167 m), Manaslu (8,156 m), Kangchenjunga (8,586 m), Annapurna (8,091 m) and on 17 May 2010 she summited the Shisha Pangma (8,013 m), thus completing the 14 eight-thousanders.

In 1850, Punch magazine defined what an athlete was: "Athletes are those who have not only invigorated their muscles and developed their resistance to the exercise of a sport, but in the practice of that exercise they have learned to repress their anger, to be tolerant with their companions, not to take advantage of a vile advantage, to feel deeply as a dishonor the mere suspicion of a trap and to carry with height a cheerful countenance under the disenchantment of a setback".







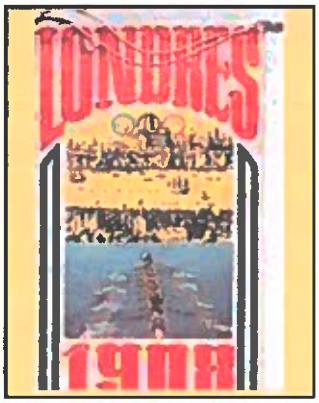


Summer Olympic Games

Athens 1896

París 1900

Sant Louis 1904



London 1908

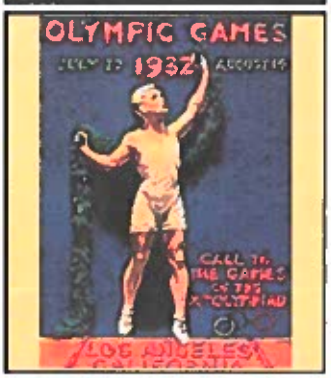
Stockholm 1912

1916 World War I

Anvers 1920

París 1924

Amsterdam 1928



Los Angeles 1932

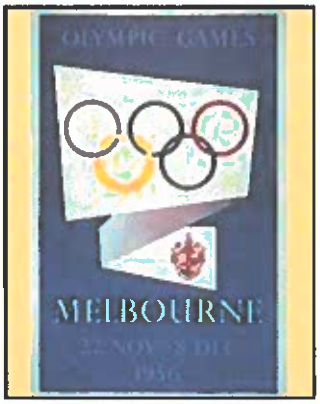
Berlin1936

1940 World War II

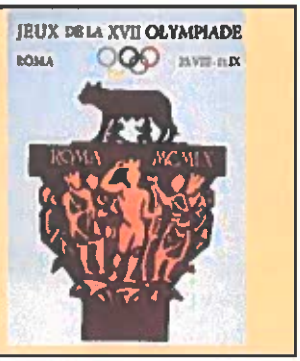
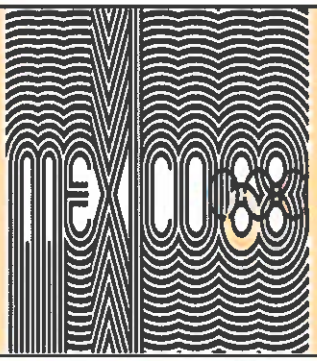
1944 World War II

London 1948

Helsinki 1952

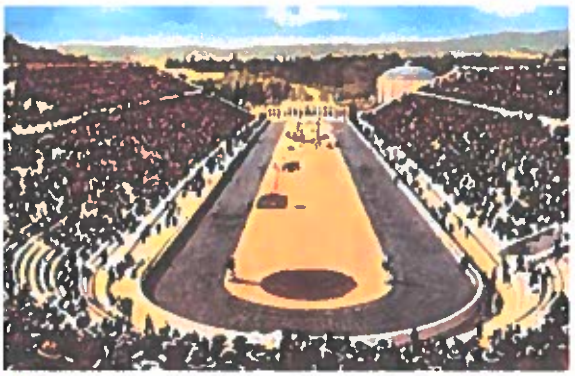


Melbourne 1956

			
Roma 1960	Tokio 1964	Mexico 1968	Munich 1972
			
Montreal 1976	Moscu 1980	Los Angeles 1984	Seoul 1988
			
Barcelona 1992	Atlanta 1996	Sidney 2000	Athens 2004
			
Beinjing 2008	London 1912	Rio 2016	Tokio 2020
			
Paris 2024	Los Angeles 2028		

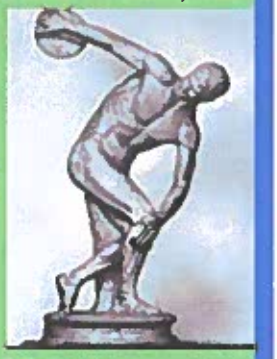
Some information about Ancient Olympic Games

They took place for more than one thousand years, from 776 BC to AD 395, and they were sacred ceremonies held in honour to Zeus, the most important god of Greek mythology. The Games were celebrated once every four years.



Originally there were only a race to light the altar of Zeus, but over the years events were:

- Running



- Discus-throwing
- Long-jump (carrying with weights called *halters)*

- Javelin-throwing

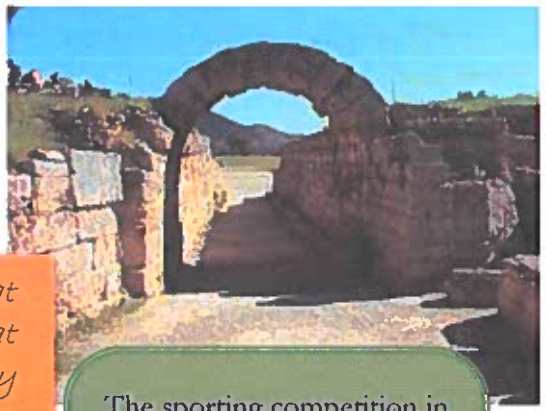
- Combat (wrestling, pankration and boxing)
- Equestrian events (chariot races and horse races).

To ensure that pilgrims and athletes travelling to and from Olympia would have a safe journey, during the Olympic Games a Truce (known as ἐκεχερία, or *ekecheiria*) was declared between all the Greek cities. It was a period during which athletes and spectators were able to go to Olimpia and return at home without being attacked (violators of the Truce were heavily punished).

The Olympic Truce was a major instrument of unification for Greek cities, as language or religious beliefs.

Conditions to participate as an athlete

To be Greek, free men, to be the legitimate children of Greek parents, to have committed no crime, and to have trained at least ten months before the tests, the month before the Games at Elis 57 km from Olympia).



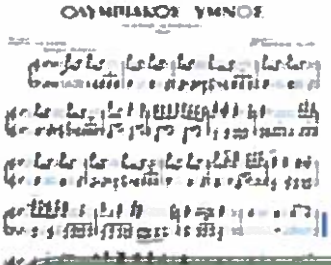
You say, "I want to win at Olympia.". But wait. Look at what is involved... You will have to obey instructions, eat according to regulations, keep away from desserts, eat only at set hours, exercise on a fixed schedule at definite hours, in both heat and cold; you must not drink cold water nor can you have a drink of wine whenever you want. You must hand yourself over to your coach exactly as you would to a doctor. Then in the contest itself you must gouge and be gouged, there will be times when you will sprain a wrist, turn your ankle, swallow mouthfuls of sand, and be flogged. And after all that there are times when you will lose. *Epictetus, Discourses 15.2-5*

The sporting competition in which the fight against the adversary subject to rules always supposes the glory of the victor, but at the same time the consideration and respect for the vanquished, is a part more of the historical baggage bequeathed by Greece.

Some information about Modern Olympic Games

At the proposal of Pierre de Coubertin, the first Olympic Games of the modern era were celebrated in Athens in 1896. As an educator, pedagogue, philanthropist and humanist, he tried to create through sport a large integrated and stable human family.

Olympic flag: created by Pierre de Coubertin in 1913. Waved for the first time in 1920, at the Olympic Games in Antwerp. The colors of the five intertwined rings represent the five continents of the world united by the Olympism. In those five colors, plus the white of the background, are included all the colors of all the flags of the world



Olympic anthem: first performed at the Olympic Games in Athens in 1896, official since 1958. Officially only Greek, English and French are sung, the official languages of the International Olympic Committee.

The Olympic torch makes a journey through relays from Olimpia (where it is lit) to the city that organizes the games. The fire arrives to the Olympic stadium in the opening ceremony of the Games, and is turned off in the closing ceremony.

Athletes Oath (it is performed in the Opening ceremony, by a leading athlete from the organizing country).
In the name of all competitors, I promise that we shall take part in these Olympic Games, respecting and abiding by the rules that govern them, committing ourselves to a sport without doping and without drugs, in the true spirit of sportsmanship, for the glory of sport and the honour of our teams.

Olympic medals: from 1904 the first second and third classified respectively were awarded with a gold, silver and bronze medal. From 1928 the design on one side of the medal is usually the traditional design of the goddess of victory, holding a palm in her left hand and a winner's crown in her right hand.

CITIUS, ALTIUS, FORTIUS

It means faster, higher, stronger. Accepted as Olympic slogan in 1894, symbolizes improvement through sports practice. We can also find this idea in another Olympic slogan, *"the important thing is not to win, but to participate"*, heard for the first time by the participants of the IV Olympiad, in 1908. It encourages athletes to fight nobly for the triumph with the idea that, regardless of the final result, whoever fights all the way also wins.

CRITERIOS DE CALIFICACIÓN DEL DEPARTAMENTO DE EDUCACIÓN FÍSICA

La calificación final será la media obtenida entre los siguientes apartados, según el porcentaje atribuido.

Evaluación de los aspectos cognitivos o conceptuales: 30%

* Pruebas teóricas (exámenes y controles). Para poder hacerse media con los restantes apartados, cada alumno ha de obtener al menos un 3,5 (si no es así, la evaluación estará suspensa al considerarse que el alumno no ha asimilado los conocimientos mínimos necesarios).

* Fichas y trabajos escritos.

Evaluación de los aspectos procedimentales: 40%

* Pruebas prácticas/ habilidades de cada Unidad Didáctica

En caso de NO realizar una prueba práctica y justificarla adecuadamente ésta se llevará a cabo con otro grupo, o bien se utilizará la hora del recreo previo acuerdo con el profesor/ a (es responsabilidad del alumno/ a la solicitud de una nueva fecha).

ALUMNOS LESIONADOS

En el caso de no poder realizar la clase o alguna prueba por prescripción médica, el profesor evaluará al alumno de todos los contenidos que estén en condiciones de realizar, con un nivel de exigencia adaptado a sus posibilidades, con ayuda del departamento de Orientación en caso necesario. En cualquier caso, los alumnos deberán: acudir a clase; realizar aquellas actividades prácticas que le sea posible realizar sin perjudicar su estado; tomar nota de los contenidos teóricos que se expongan; realizar el trabajo teórico que el profesor le solicite (tomar nota de la clase, lecturas, fichas, etc); asimismo, deben colaborar con la clase en los momentos en que se precise su ayuda (para la utilización del material, arbitraje, música, toma de tiempos, medidas, etc).

Evaluación del aspecto actitudinal: 30%

* Comportamiento, participación, interés, constancia y esfuerzo.

* Asistencia a cada sesión con la indumentaria deportiva adecuada (ropa y calzado). Cambiarse de camiseta y asearse al finalizar cada sesión.

RECUPERACIÓN DE EVALUACIONES PENDIENTES

Si se suspende alguna evaluación ésta podrá recuperarse de la siguiente forma mediante la repetición de las pruebas suspensas (caso de las pruebas prácticas o el examen escrito) o la mejora en su actitud, esfuerzo y trabajo (caso de la parte actitudinal).

RECUPERACIÓN DE MATERIAS PENDIENTES DE CURSOS ANTERIORES

Los alumnos que hallándose en 2º, 3º o 4º E.S.O. con la materia suspensa de uno o varios cursos precedentes aprueben el curso en el que se encuentran recuperarán asimismo el precedente y, por tanto, dejarán de tener la materia pendiente. Podrán asimismo recuperar dicho curso precedente si aprueban las dos primeras evaluaciones del curso en el que se hallen.

No obstante, los alumnos que tengan la materia pendiente (y no hayan aprobado las dos primeras evaluaciones del curso actual) tendrán la oportunidad de realizar un examen teórico en la última semana de abril o principios de mayo para superar los contenidos teóricos mínimos del curso anterior, siendo evaluada la parte de procedimientos con los resultados obtenidos en el curso donde se encuentre, pero baremados a niveles de exigencia del curso pendiente.

Finalmente, todos aquellos alumnos que no superen la materia por la vía ordinaria deberán presentarse a las pruebas de carácter extraordinario en el mes de junio.

PRUEBA EXTRAORDINARIA DE JUNIO

Los alumnos que no hayan aprobado la asignatura de Educación Física tras las tres evaluaciones ordinarias deberán realizar una prueba extraordinaria en junio. Ésta constará de un examen escrito (cuya nota mínima para hacer media con la prueba práctica habrá de ser de 5), la prueba de flexibilidad de flexión anterior de tronco y una prueba práctica de resistencia aeróbica de carrera continua durante un determinado tiempo previamente estipulado (y durante el cual no se permite la mera marcha: en el momento en el que el aluno deje de correr se dará por finalizada dicha prueba). Las calificaciones se obtendrán de acuerdo con los siguientes baremos:

PRUEBA DE RESISTENCIA						
NOTA	Nacidos en 2006	2005	2004	2003	2002	2001
0	<5'	<5'	<10'	<10'	<15'	<20'
1	7'	8'	13'	14'	19'	24'
2	9'	11'	16'	18'	23'	28'
3	11'	14'	19'	22'	27'	32'
4	13'	17'	22'	26'	31'	36'
5	15'	20'	25'	30'	35'	40'
6	17'	22'	27'	34'	39'	44'
7	19'	24'	29'	38'	43'	48'
8	21'	26'	31'	42'	47'	52'
9	23'	28'	33'	46'	51'	56'
10	25'	30'	40'	50'	55'	1 h

PRUEBA DE FLEXIBILIDAD (hombres)						
NOTA	Nacidos en 2006	2005	2004	2003	2002	2001
0	-12	-11	-10	-9	-8	-7
1	-10	-9	-8	-7	-6	-5
2	-8	-7	-6	-5	-4	-3
3	-6	-5	-4	-3	-2	-1
4	-4	-3	-2	-1	0	1
5	-2	-1	0	1	2	3
6	1	2	3	4	5	6
7	4	5	6	7	8	9
8	6	7	8	9	10	11
9	8	9	10	11	12	13
10	10	11	12	13	14	15

PRUEBA DE FLEXIBILIDAD (mujeres)						
NOTA	Nacidos en 2006	2005	2004	2003	2002	2001
0	-8	-7	-6	-5	-4	-3
1	-6	-5	-4	-3	-2	-1
2	-4	-3	-2	-1	0	1
3	-2	-1	0	1	2	3
4	0	1	2	3	4	5
5	2	3	4	5	6	7
6	5	6	7	8	9	10
7	9	10	11	12	13	14
8	12	13	14	15	16	17
9	14	15	16	17	18	19
10	16	17	18	19	20	21

- -

Recibí criterios de calificación del Dto. De Educación Física

Familia del alumno/a: Fdo:

FICHA MÉDICA

APELLIDOS_____**NOMBRE**_____**CURSO:**____

EN LA SIGUIENTE FICHA (DE CARÁCTER CONFIDENCIAL Y USO EXCLUSIVO POR EL *DEPARTAMENTO DE EDUCACIÓN FÍSICA*), DEBE SEÑALAR **SI O NO**. *SOLO SI LA RESPUESTA ES AFIRMATIVA, ROGAMOS CONTESTE A LAS PREGUNTAS*. ¡GRACIAS POR SU COLABORACIÓN!

1ª¿ PADECE SU HIJO/A ALGÚN TIPO DE ENFERMEDAD O PROBLEMA CARDIOVASCULAR? **SI NO**
EN CASO AFIRMATIVO, SEÑALE CUÁL Y DE QUÉ TIPO

2ª ¿ PRESENTA SU HIJO ALGÚN TIPO DE ALERGIA (DE PRIMAVERA U OTRO TIPO) ? **SI NO**
SEÑALE CUÁL

3ª¿PADECE SU HIJO/A ALGÚN TIPO DE ASMA O PROBLEMA RESPIRATORIO? **SI NO**
EN CASO AFIRMATIVO SEÑALE CUÁL Y DE QUÉ IMPORTANCIA

4ª ¿PADECE SU HIJO/A ALGÚN TIPO DE LESIÓN O ENFERMEDAD DEL APARATO LOCOMOTOR EN MÚSCULOS, HUESOS Y ARTICULACIONES **SI NO**
EN CASO AFIRMATIVO, SEÑALE CUÁL

5ª ¿PADECE SU HIJO/A ALGÚN TIPO DE DESVIACIÓN O PROBLEMA EN LA COLUMNA? **SI NO**
SEÑALE DE QUÉ TIPO Y GRADO:

POR ÚLTIMO **¿EXISTE EN LA ACTUALIDAD ALGÚN OTRO TIPO DE PROBLEMA DE SALUD QUE HAGA QUE SU HIJO/A DEBA ACCEDER A UNA ADAPTACIÓN CURRICULAR POR PARTE DEL DEPARTAMENTO DE EDUCACIÓN FÍSICA, PARA CURSAR LA ASIGNATURA DE EDUCACIÓN FÍSICA? SI NO**

EN CASO DE RESPUESTA AFIRMATIVA EN ALGUNA DE LAS CUESTIONES ENUMERADAS ANTERIORMENTE, Y CON EL OBJETO DE ACCEDER A UNA ADAPTACIÓN QUE PERMITA AL ALUMNO/A CURSAR LA ASIGNATURA EN LAS MEJORES CONDICIONES, DEBE PRESENTAR ANTE EL DEPARTAMENTO DE EDUCACIÓN FÍSICA ***UN CERTIFICADO MÉDICO OFICIAL*** *EN EL QUE CONSTE: -PATOLOGÍA Y/O ENFERMEDAD -CONTRAINDICACIONES HACIA EL EJERCICIO FÍSICO (QUE TIPO DE EJERCICIOS, DEPORTES Y A QUE INTENSIDAD PUEDE REALIZARLOS) - Y DURACIÓN (SI ES TRANSITORIA) DE LA PATOLOGÍA QUE PROVOCA LA ADAPTACIÓN CURRICULAR.*

OTRAS CONSIDERACIONES A EXPONER:

NOMBRE DEL PADRE/MADRE O TUTOR_____
DNI:_____

(EL ABAJO FIRMANTE CERTIFICA QUE TODOS LOS DATOS REFLEJADOS EN EL PRESENTE DOCUMENTO SON VERDADEROS) FIRMA (DEL PADRE/MADRE O TUTOR)

EN_____A ____DE_____DE _____