

THEORY OF THE FIRST TERM PHYSICAL EDUCATION 4TH GRADE

1. - STRENGTH TRAINING.

1.1.- DEFINITION OF STRENGTH.

Capacity that allows us to overcome a weight.

1.2. - TYPES OF STRENGTH.

Basically we are going to talk about 3 types of strength:

- Explosive strength: The aim is to overcome the weight in the shortest possible time. These are usually actions such as jumps and throws.
- Maximum strength: it is a question of overcoming the greatest possible weight. The clearest example would be weightlifting.
- Endurance strength: this involves carrying out strength actions over a long period of time. Examples could be rowing, climbing a mountain pass on a bicycle.

1.3. - EVOLUTION OF STRENGTH

Strength increases progressively until the age of 10, with the arrival of puberty its increase is much greater and it stabilises at around 18. It continues to grow little by little until the age of 30, at which point it stabilises and gradually begins to fall. The explosive strength is not recommended to work it until 14, and the maximum until 18.

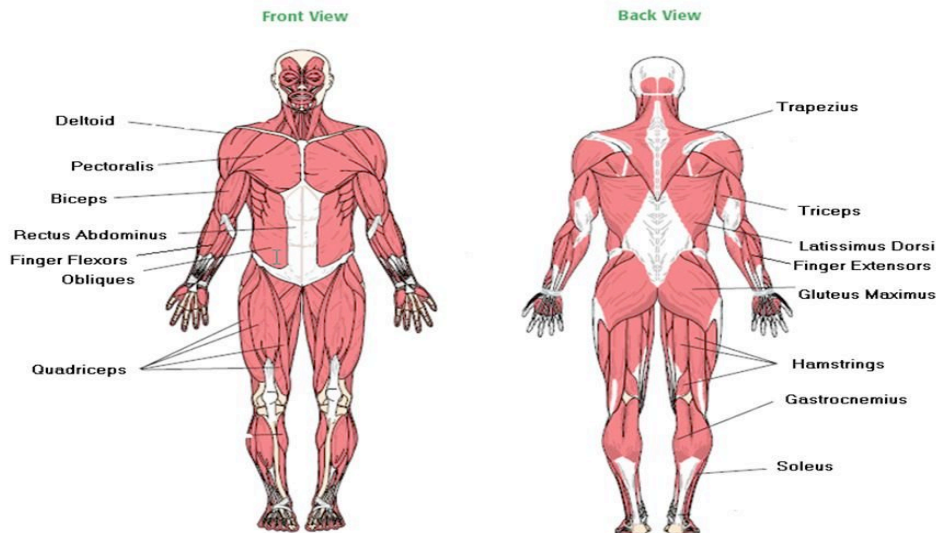
1.4. - METHODS OF TRAINING.

There are many means of training strength, we are going to highlight the most important from the school point of view:

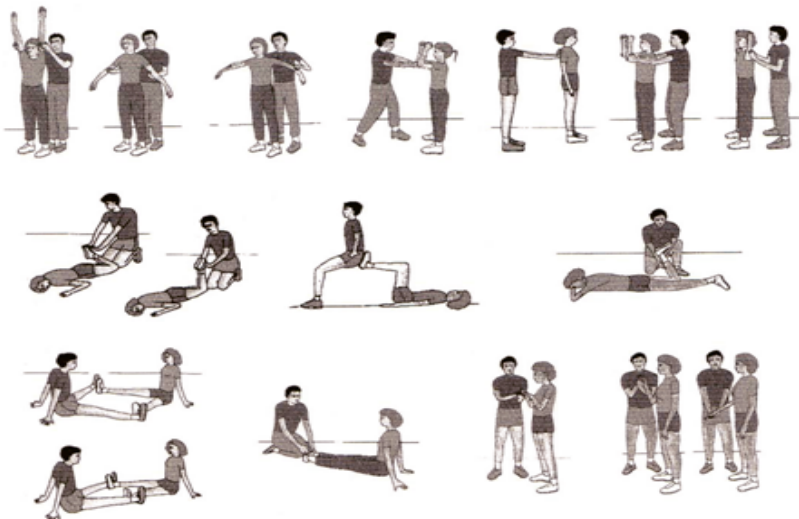
- For strength-resistance work we need forms of work that we can maintain for a long period of time in order to be able to work the part of the force most related to resistance, we have the following means:
- Natural exercises: climbing, suspension, pushing, traction, with ropes, trellises, ladders,...



- Self-loading: Working with one's own body weight. Planks, abdominals, lumbar, squat, triceps,... it is essential to know how to perform them correctly to avoid risks derived from their practice.



Exercises with external load: A weight or the opposition of a partner. Ideally with partners of similar physical condition. It is very useful to work with pikes and ropes (being able to simulate almost all the machines that we find in a gym).



Circuit-training: Go through several stations arranged in a circle. Advance in an counter-clockwise direction. It must have 6 to 12 stations, working time from 30 to 60", with 30" of rest between stations and 2-4' between circuits.

This is a mixed work system, which allows us to develop both resistance and strength.



For explosive strength work, mainly small oppositions are used in order to be able to overcome them at high speed and thus to be able to work the explosive part of the force:

- Multi-launches: Different exercises. The ideal is to work in pairs, combining all possible forms of throwing, both seated and standing.



- Multi-jumps: Successive repetition of a jump. On foot together, on one leg, alternately, horizontally, vertically,... It is good to cushion the fall, that they do not make noise in order to not overload the ankles, knees and back.



- Weights: We can make ourselves some homemade weights with water bottles full of sand and also with backpacks that we can graduate their weight taking out and putting in books.

For maximum strength work, we basically use weight work and very high loads, between 70 and 95% of the individual's maximum capacity. Work is done with few repetitions and with a lot of recovery, because it is necessary to be almost at full capacity for each new series.

Tips for power work:

As a general rule for power work, we will say that it is usually grouped in series with a certain number of repetitions. For example, quadriceps work with squat, 2 series of 10 repetitions with 30" recovery. This means that we lift 10 times the weight or the partner, recover 30" and another 10.

In order not to decompensate the spine whenever we work on the abdominals we must work on the lower back, at least in a proportion of 70-30.

When working on the lower back and in general, we should not force the lower back too much.

The position is very important. For example, in squatting exercise, we can go from working on quadriceps to ruining our back very easily.

1.5.-BENEFITS OF POWER WORK.

- It protects and stabilises the joints to avoid muscular decompensation and injuries due to lack of muscle tone.
- It protects the spine by developing the muscles of the back and the abdomen.
- It allows us to transport loads and objects more easily.

2.- SPEED TRAINING.

2.1. - DEFINITION.

It is the capacity to carry out an action in the shortest possible time.

2.2.- TYPES OF SPEED.

- Speed of reaction: To respond motorically in the shortest time possible to the presence of a stimulus. Visual, auditory and tactile.
- Acceleration speed: Time that passes from the moment we react until we acquire the maximum speed.
- Movement speed: ability to move at maximum speed.
- Resistance speed: maintaining maximum speed for as long as possible. More than 8".
- Gesture speed: is the capacity to carry out a certain motor action in the shortest time possible. It is usually closely related to sports technique and its efficiency.

2.3. - EVOLUTION OF SPEED

It increases progressively until the age of 7, from which point the growth is much greater until the age of 12, and continues to grow but less until the age of 18. Until the age of 30 it remains stable and from this point on it begins to worsen.

2.4.- SPEED TRAINING METHODS

For the speed of reaction, outputs from different positions are used, in the face of different stimuli (visual, auditory, tactile).

- For the speed of acceleration, multi-jumps are used, series where 5 to 20 m are measured.
- For travel speed, dragging is used, downhill, in series of 50 metres.



- For speed resistance series of more than 8" duration.
- For the gesture speed, we usually use gestures or specific actions of the sport technique trying to develop them at the highest possible speed.



As a basic rule for speed work, we could say that it is usually grouped in series where several repetitions are included. For example, 3 series of 5 repetitions of 10m races, meaning that we do 1 race of 10m, we come back walking recovering and do another, thus up to 5, at which point we introduce a somewhat longer rest period or take advantage of the time to stretch and thus unload the legs from the work done.

1 series of 5 repetitions.

1' of recovery, which can be with stretching work.

1 series of 5 repetitions.

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It requires a good warm-up because it usually causes quite a few muscle injuries.

For its improvement it is always necessary to work it at 100%.

It is usually worked at the beginning of the week of training to have the musculature rested and in case of working several capacities in one session, it is the one that is worked first (unless we want to improve it in fatigue).

Nowadays, when you want to improve your speed, you work on your strength a lot because of the great relationship between the two.

2.5.- BENEFITS OF SPEED TRAINING

- It develops the fast fibres of our muscles.
- Improves general and specific coordination.
- Improves muscular intervention by making the muscles involved in the movement work and the others relax.