

STRENGTH

Strength is the ability to exert a force against a resistance made by a muscle or a group of muscles.

TYPES OF STRENGTH

* **Maximal strength:** is the greatest amount of strength that can be applied to an object. *Example : **weightlifting***



* **Explosive strength or speed strength:** The muscle's ability to work at maximum speed. It's muscular strength used in one short and fast movement. *Example: In Athletics: **sprinters, throwing events or jumps, a spike in volleyball or a shot in soccer.***



* **Endurance strength:** is the strength a person needs to sustain their body over a prolonged period of time, or to able to apply some force repeatedly against an object. *Example: **cycling, endurance runners, rowing,....and we use it a lot in our daily routine***



TRAINING SYSTEMS:

***Maximal strength:** Training takes place overall through weightlifting and muscle machines, with the following features.

series	Repetitions	Intensity	Pause	Execution speed
3-5	1-5	80%-100%	3'-5'	Low

Working this kind of strength we get a muscle hypertrophy, namely, an increase of the muscle's volume.

***Speed Strength:** This type of strength can be measured through **multi-jumps, throws with medicinal balls, plyometric exercises** (jumpings from a height), **belts with weight, weightlifting and muscle machines**. To train it, we must take into account the following variables:

series	Repetitions	Intensity	Pause	Execution speed
3-5	6-12	60%-80%	2'-5'	Maximum

Working this type of strength provokes a lesser hypertrophy than when working maximum strength.

***Endurance Strength:** This is the most interesting type of strength to work, since it allows us to obtain a good physical condition for our daily life. We can develop it through **self-load exercises (with the weight of the body), in pairs, through weightlifting or with muscle machines**. A very useful system is the circuit-training. To train it we will combine the following variables.

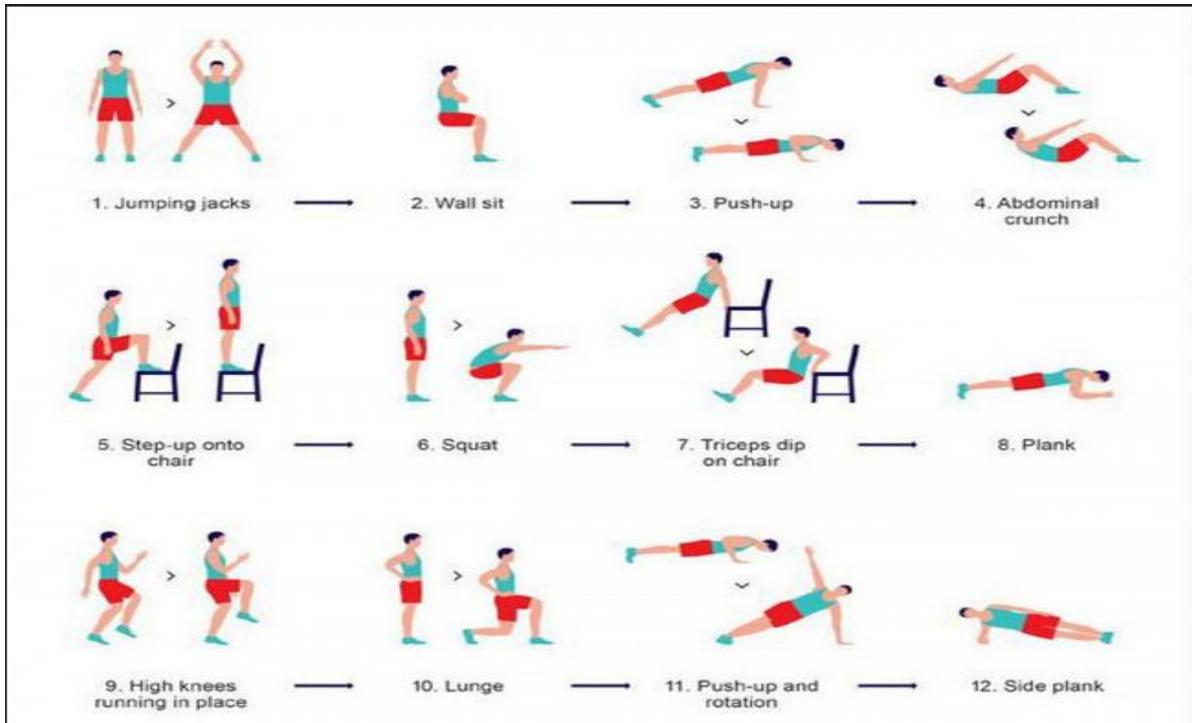
series	Repetitions	Intensity	Pause	Execution speed
3-5	15-30	30-50%	30''-3'	Medium

Endurance strength gives tone to the muscle, but without producing hypertrophy.

“CIRCUIT-TRAINING” SYSTEM.

- Load: variable, according to machines or self-loads.
- Objective: endurance strength
- Number of exercises: 6-12
- Series: 2-5 circuits
- Repetitions: 15-30 or period 15''-1'
- Pause: 0' between exercises; until 120-130 ppm after circuit.
- Important: vary a muscle group in each session.

CIRCUIT TRAINING EXAMPLE



HIIT TRAINING SYSTEM

High Intensity Interval Training system is similar to circuit training but we usually do the exercises with a higher intensity.

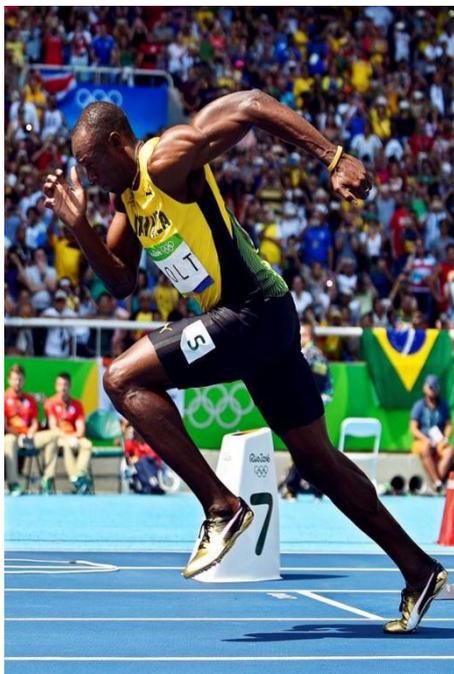
HIIT: 22-MINUTE WORKOUT

- 1 min warm-up, run in place
- 2 min squats
- 2 min running in place
- 2 min squat jumps
- 2 min run in place
- 2 min side jumps
- 2 min push-ups
- 2 min burpees
- 2 min split-jumps
- 2 min mountain climbers
- 2 min planks
- 1 min cool-down, run in place

@GYMBENEFITS

SPEED

Speed is not just about how quickly you can cover a distance (running, swimming, cycling...) it's also about with how quickly you can perform a particular movement.



TYPES OF SPEED

***Reaction speed:** is how quickly a person can respond to an external stimulus. It can be tactile, visual or auditory. Reactions can be simple or complex:

- **Simple:** the performer is involved in only one stimulus and one response, both known in advance (**the start in a race** responding to the starting pistol).

- **Complex :** the performer must react to different types of stimulus and choose between different reactions using the most suitable in each situation (**goalkeeper actions, combat sports actions**)

***Movement speed:** is how quickly a person can carry out a movement or perform a skill (**tennis serve, kicking a ball, hitting a baseball**). Coordination is a very important factor in this type of speed, it's also related to a correct learning in the specific sport movement or technique.

***Displacement speed:** the ability to cover a certain distance as fast as possible. (**How fast the runner can run, or the swimmer can swim**). It depends on: range of movement, strength of muscles involved, frequency of the movement and correct technique.

TRAINING SYSTEMS

***Reaction speed:** You have to **train the specific actions** you have to do in your sport as fast as you can: starts in races or games (e.g.: game we did in class “sky-hell” or “white-black”,...You can also improve your reaction time by training yourself to react to things that move faster than the needs of your sport. A baseball player might take batting practice while using a special pitching machine that throws pitches at 130 to 150 miles per hour.

***Movement speed:** we have to **repet the specific technique** we want improve. **Example: tennis serve**

***Displacement speed:** Speed training is based in **fractional training methods** . These training systems divide the training session in parts, with complete or incomplete resting periods between them, depending on the training objective.

***Interval training:** It consists of exercising through relatively short distances followed by incomplete resting periods . Intensity can be high, between **70-95 %** of the maximum. **Distances are from 100 m to 400 m** if running or efforts lasting between 15”–4’; **repetitions** are between **10-30**, and the resting periods can be done, resting, walking or with very easy running, until the heart rate reaches 120-140 bmp.

***Repetitions training:** It consists of exercising through relatively short distances (**50-150 mts.**) or time followed by complete resting periods . This allows a higher intensity of workout. Intensity is very high, between **85-100 %** of the maximum; it can be done using series (**3-5**) and repetitions (**3-5**). Recovering between repetitions and series should be until the heart rate reaches around 90-bmp.

***Other complementary methods** to develop speed are:

- **Plyometrics** to develop explosive hopping, jumping, bounding, hitting, and kicking.

- **Specific sport loading movements** to develop specific speed. (Parachute, belts...)

- **Weight lifting** to improve muscle strength.

- **Running uphill and downhill** to work on muscle strength and running technique.