

Strong and reactive feet and ankles.

Before anything, it is necessary to clarify some concepts in a simple way.

Whatever the gesture is, throwing a baseball or running a marathon involves force.

The strength in individuals is the ability to overcome or counteract a resistance through the muscular activity. It can manifest as Isometric (static) that is when during the work the muscles do not vary their length. Isotonic (dynamic) which produces a change in length of the muscles when they are in tension, there are two variants: the concentric, which is the most common type of muscle contraction. For example when you flex the biceps. The concentric movement is what you do when lifting weights; there you will notice an enlargement of the muscle, which is due to the approximation of the contractile units of the muscle. Excentric, when an action is taken against a resistance with an extension simultaneously the muscle are lengthened.

From the perspective of training theory, the different types of strength are:

- Maximum strength. It is the maximum tension that our muscles are capable of producing. An example of it would be the squat movement.
- Explosive force: Is the ability to contract quickly our muscles or accelerate a body. For example, jump with feet together starting from a static initial position with flexion of legs of 90° where we tried to reach the maximum possible height.
- Reactive-Explosive Force: The ability to stopped and accelerate rapidly in the opposite direction in a movement. The maximum expression of this type of force can be observed in the jumpers of height, length and triple jump.

When we jump from the squat position, we can generate more strength and to push us higher if we previously come from a movement that generates a muscular eccentric phase. This is due to the fact that our tendons (elastic structures that join muscles and bones) stretching in the phase of cushioning causes energy to accumulate elastic in them, this energy is released in that phase, adding that energy to those which they produce muscles with their contraction.

We have a reflex mechanism that generates a rapid contraction of the muscles when detects a very sharp stretching of the muscle that produce more muscle fibers to be activated in a faster way than a purely voluntary contraction.

Very often the concept of reactivity, reactive force, feet (or ankle) is used.

Some studies suggest that reactive force is the ability to suddenly change from an eccentric action to a concentric action. That is to move from a cushion action to an impulse or acceleration action.

When we step, at the moment when the foot contacts the floor the muscles of the foot and legs enter a first phase in which the impact is cushioned and the muscles stretch in a movement contrary to the direction of the force, to then quickly move to a contracting movement to generate the driving force.

Why is the reactive force for the runner of great importance?

Each step we take is a reactive gesture, since the foot hits the ground and the called the cushioned phase and the subsequent acceleration phase. The ankle as an articulation near to the point of impact receives greater forces and from it depends to take an efficiently advantage of it. That is why it is necessary to have ankles capable of support many impacts and take advantage of the reactive capacity provided by the tendon of Achilles, which will make our career more efficient, with a higher speed spending less energy

One of the main factors that intervene so that there are runners faster than others and with better results in long distance races is the economy of movement and of course those runners are able to take off their feet faster from the floor at the time of contact, and they reach the best times. For that reason it is necessary to strength the muscles.

For the above said, I invite you to work reactive force, train your feet and ankles through exercises that facilitate the improvement of this capacity. However, also I recommend to be cautious in order to avoid that the impacts of these movements can lead to Injuries

Usually, on Saturday sessions of training along with coaches Nelson Plaza, Daniel Cordero, Federico Pisani and myself make a lot of emphasis in our sessions of training to develop that quality among the participants.