

Plyometrics for Soccer

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While striving for World sports domination, during the Cold War, Soviet physiologists designed the plyometric training method. Yuri Verhoshansky is the most noted researcher on plyometrics and eventually played a huge part in the popularization of this training form. Plyometric training produced evident results in sports that required jumping and agility. The USSR and Eastern Bloc have been employing plyometric exercises since the 1960's, it wasn't until 15-20 years later that the Western World would even hear of them. That was partially due to the discrete attitude of the Eastern Bloc towards their training methods. Some athletes were even required not to discuss training with anyone else, almost as if they were working on a classified military project.

Principles

From a mechanical point of view, there are two types of muscle motion: concentric and eccentric.

A. The process of shortening or tightening the muscle is known as concentric contraction. A classic example is jumping - the legs are propelled upward because their muscles spasm and release force on the floor. The concentric contraction of muscles depends solely on neuroreceptors, called muscle spindle that run parallel to the muscle fibers. During physical activity, neuroreceptors get activated when the muscles are stretched with enough force and cause muscles to contract (muscle stretch reflex) by sending a message through a reflex arc in the Central Nervous System.

B. Eccentric muscle contraction occurs as the body, or a particular part of it, decelerates. When an athlete's leg contacts the ground during running, his leg's muscles contract eccentrically, shortening and absorbing the force generated by the inertia of his entire body. This type of adaptation is extremely hard on the body, particularly the joints. The natural elasticity and need of returning to their resting position contributes to the eccentric contraction of the muscles.

Plyometrics exercises allow your muscles to respond more quickly and fully by stimulating the neuromuscular system. In order to make the most efficient use of the stretch reflex and elasticity, concentric and eccentric contractions must be loaded on a muscle in a rapid consecutive manner. What that means is that more power will be produced when tightening the muscles, right after lengthening them.

Training drills

Most plyometric drills are made up of series of jumps. When executing them, one should strive for maximum "air time" and minimum ground contact. Plyometric exercises improve agility as well as explosive power by incorporating elements from both weight and speed training.

Plyometric training is very dangerous. It should not be practiced on hard surfaces because of the strain it has on joints, especially the knees.

Double hop

Standing with both feet together, jump up as high as you can. While leaping, try to bring your knees up to the chest. Re-launch yourself as soon as you contact the ground.

Agility

Stand beside a soccer ball or cone and leap over it from one side to the other. Try to propel yourself as high as you can. Remember not to spread your feet apart and to leap momentarily each time you touch the ground.

Forward leap

Set up a line of cones, spaced according to your leaping ability. Start from one end, jumping from cone to cone with your feet together. Try landing near each cone while getting as much height as possible.

References

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