

Plyometrics

What is it?

Plyometrics is a type of training that helps athletes with their athletic performance, especially in their prospective sports. Plyo is a type of training that trains the muscle to produce power (strength + speed). For instance, let's look at the physics behind this to it into further context. According to Dr. Myers, the amount of force and drive you can produce by pushing into the ground (for example jumping) can result in you jumping higher. Say if you are a basketball player there are two actions you do while jumping, and they are called eccentric concentric work.

Eccentric Work:

Eccentric work is making the muscle lengthen, meaning the largest forces that the muscle capable of producing when an external force transcends. An example is athletes who are using Eccentric work are runners and jumpers, as eccentric work primarily decelerates and dampens the body before contacting this ground. This is very important as it prevents injury, and not only that gives you longevity in the sport you may play. Eccentric work is essential for any athlete to have a healthy and long career. Few examples below of some exercises for eccentric work:

Assisted Hamstring Curl

Eccentric go down slowly, then with the assistance explode back up (but do not worry as much exploding up, as we are trying to focus on the eccentric part).

Squat Jumps

Eccentric go down slowly, go deep enough there is a flexion of the knee, and hips, to check this you should be able to touch the ground. Explode as high as possible (but do not worry as much exploding up, as we are trying to focus on the eccentric part).

Isometric Work:

Isometric work is not visible, meaning no visible movements occur during this stage. In this stage, the muscles do not lengthen or shorten, making the muscles go into a "static" state. For instance, in running and jumping the coupling state comes from when the body stops for a brief period of time. During the coupling state little to no joint movement happens, making it go into an isometric state. For example, say if your benching gets stuck your body goes into a static state, and this is the reason why it is important to do isometric work to get over the gap. Few examples below of some exercises for isometric work:

Dead Hangs

Go to a pull-up, go shoulder-width apart, cross your feet, and hang off the bar. Lastly, make a scapular adduction contract.

Single or Two Leg Balance

Honestly, there are many different balancing exercises so feel free to replace this one with a different one, perform this on a balancing device that provides an unstable position once done, slightly bend the knee into a quarter squat, and hold the position as long as you can.

Concentric Work:

Concentric work is making the muscle shorten, you could kind of think of this as pay off during the unloading phase (unloading phase was the eccentric part). In the eccentric work, all of your energy is being stored and propelled while jumping or running this part is the concentric portion. Think of eccentric and isometric phases as an investment to a piece of land, and concentric being the return to that investment. Few examples below of some exercises for concentric work:

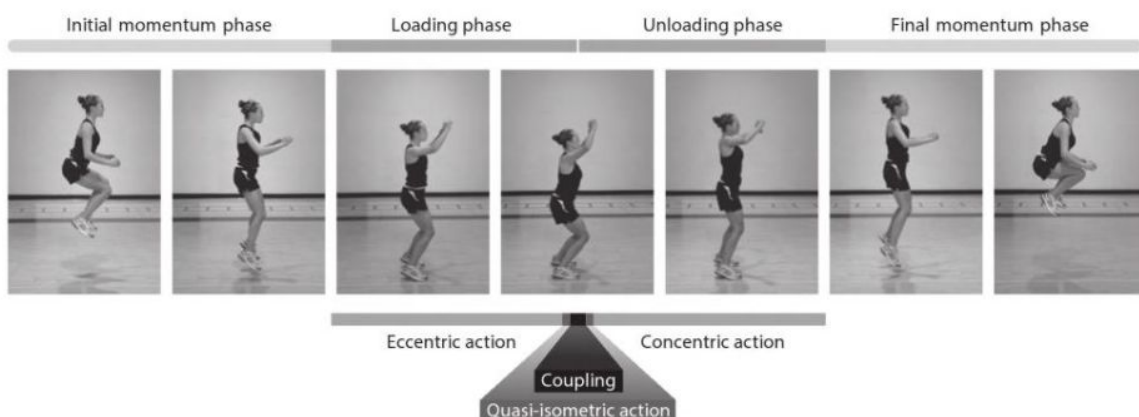
Backward Throw From Squat

The object you throw can be a basketball or medicine ball, it honestly depends on the person! If you are a beginner I suggest you start with a basketball, as a medicine ball may provide too much resistance. First, get into a squat position, and then explode while releasing the ball backward.

Wall Jumps

First, since this is concentric make sure you arm up at all times, also be sure you keep knee flexion minimal (meaning not as a bent). First, get into the position and explode!

Diagram Below Helping to Explain/Summarize.



There is much more to plyometrics when it comes to learning but, that was a few things that I wanted to talk about.