

“Jump Training”: the benefits of adding Plyometric training to your routine

By: Dr. Andreo A. Spina

Plyometric exercise came out of Europe where it was first referred to as “jump training”. Interest in this form of training increased during the early 70’s as Eastern European athletes began to emerge as the powers on the world sport scene. As these eastern block countries began to produce superior athletes in various sports including gymnastics, track and field, and powerlifting, interest regarding their training methods increased. Central to these methods was “jump training” or “plyometrics”. The actual term, coined in 1975 by Fred Wilt, has Latin origin meaning “measurable increases”.

Plyometrics is defined as exercises that enable a muscle to reach its maximum strength in as short a time as possible. This speed-strength ability is known as *power*. Thus plyometric exercise may be thought of as “power training”, however recent evidence is finding that it can be beneficial for much more.

Muscle Contractions

In sport activities, there are three basic types of muscular contractions: isometric, concentric, and eccentric. Isometric contraction occurs when the muscle activity is working against a load that it is unable to move. In other words, the muscle neither lengthens, nor shortens during the contraction, it remains the same length. Concentric contraction occurs when the muscle activation results in muscle **shortening**. The opposite of concentric is eccentric contraction, which occurs when the muscle activation is occurring as the muscle **lengthens**. For example, when performing a bicep curl, as the arm flexes (thus decreasing the angle between your arm and forearm) this is the concentric portion. As the weight is slowly lowered (thus increasing the angle between your arm and forearm), this is the eccentric portion. As the muscle lengthens during the eccentric portion, the connective tissue of the muscle stores elastic energy (similar to what would occur if you stretch an elastic band). At the end of this lengthening, that stored energy can then be utilized to begin the concentric contraction (shortening). This event is termed the “**stretch-shortening cycle**”. The faster the eccentric portion occurs, the more stored energy is attained.

How is Plyometric training performed?

The goal of plyometric training is to maximize the utilization of this stored energy thus producing a stronger, and faster contraction. This is done by training in such a way that the transition between the concentric and eccentric contraction as fast as possible thus training the body to make the most use of the stretch-shortening cycle. An example would be repetitive vertical jumping where the athlete is instructed to perform the landing-to-take off portion as fast as possible. Other examples include rope jumping, triple jumps, box jumping (variations of jumping on and off “plyo boxes”), and hurdle jumping.

What does it do?

Since the 90’s, a great deal of effort has been expended on attempts to verify the effectiveness of plyometric training. It is well known to many trainers and therapists that

the literature strongly supports this type of exercise for increasing both strength, and power, and thus would benefit any athlete who's performance is determined (at least in part) by these parameters. More recently however, research has been demonstrating benefits for endurance athletes, as well as for injury prevention. Research has shown that plyometric training can improve running economy (deals with the ability of your body to spare). Upgraded economy lowers perceived effort at your current race paces and allows you to run for longer periods of time at those speeds. Better yet, enhanced economy lets you run faster than your customary competitive speeds, without feeling that the effort is any harder! As well, some research is surfacing that demonstrates that plyometric training may enhance proprioceptive awareness (the ability of your brain to perceive the position of your body parts) and thus may play role in injury prevention as well as post injury rehabilitation.

If performed correctly, Plyometrics can enhance sport performance for a variety of different sports safely and effectively. Because of the explosive nature of the movements, it is recommended that you seek the advise of a sport therapist or certified strength and conditioning coach before you add plyometrics to your routine.