

## **Plyometrics... The Number 1 Method for Developing Sport-Specific Power**

Plyometrics bridges the gap between strength and speed. If you want to improve your athletic performance, the transition from strength training to power training will play an integral part in your success. Maximum strength takes 0.5 to 0.7 seconds to produce. Yet most explosive, athletic movements occur much more rapidly. Whether your objective is to accelerate faster, kick the ball harder, move around the field more quickly or jump higher, the key to improving your power and performance lies in generating the highest possible force in the shortest possible time.

Plyometrics plays a primary role in this training objective. Ideally you would first develop a high level of maximal strength before starting a plyometrics program. This gives you the greatest potential for peak power.

Plyometric training is no fad. The word "plyometrics" has been around since the 1960's but athletes were using the technique many years before that. So how does plyometric training work exactly?

### **Plyometrics Defined**

The underlying principle of plyometric training is the stretch-shortening cycle. Very simply...

As a muscle stretches and contracts eccentrically (lengthens while it contracts) it produces elastic energy, which it can store. If the muscle then contracts concentrically (shortens while it contracts) this elastic energy can be used to increase the force of the contraction. A good example is jumping, if an athlete jumps vertically they will invariably dip down just before takeoff. Quickly lowering their centre of gravity stretches the working muscle groups allowing them to contract more forcefully for the jump.

In essence a muscle stretched before it contracts will contract much more forcefully.

#### **What role does plyometrics play in all of this?**

Plyometric training places increased stretch loads on the working muscles. As the muscles become more tolerant to the increase loads the stretch-shortening cycle becomes more efficient. The muscle stores more elastic energy. It can transfer from the eccentric or stretching phase to the concentric or lengthening phase more rapidly. This is the key to generating peak power.

Plyometrics has received much undeserved blame for overtraining and injury. Like ANY form of fitness training if used incorrectly and irresponsibly plyometrics is not without risk. The following guidelines will help to make your plyometric training safer and more effective.

### **Guidelines For Plyometrics - The Least You Should Know**

- A solid strength base is required before starting a plyometrics program. As a rule of thumb you should be able to squat twice your bodyweight or leg press 2.5 times your bodyweight.
- It is not recommended that anyone under the age of 16 use plyometrics unless a fully qualified coach believes otherwise. This applies particularly to the more intense plyometric exercises (see table below).

- Warming up is crucial. Spend 10mins jogging or skipping followed by 5-10mins of stretching the muscles involved. Don't forget to stretch your lower back.
- Plyometrics don't tend to leave you feeling tired or out of breath. Even so stick to your program... now is not a good time to employ your "no pain no gain" philosophy!
- Perform plyometric exercises on a soft surface such as grass or a synthetic running track.
- Two sessions of plyometrics per week is ample. Three is the maximum.
- Rest completely between sets, 3-5mins at least. Remember, the idea of plyometrics is not to leave you out of breath. Your goal is to...
- Perform each action, each repetition with maximum speed, effort and technique.
- A plyometric session should never contain more than 120 ground contacts for any muscle group.
- Adding additional load such as ankle weights or a weighted vest will increase training demand. But it will also slow down the movement diminishing the training effects of plyometrics. It is not recommended.
- Try to land on your full foot, rather than the heel or toe. This helps the muscle to absorb the shock rather than bone and joints. And finally...
- Try to keep you torso erect during the movements -- it prevents undue strain on the lower back.

<b>Intensity Of Plyometrics Exercises</b>		
<b>Intensity Level</b>	<b>Plyometrics Exercise</b>	<b>Rest Between Sets</b>
Very high	Shock tension, high reactive jumps	+8 mins
High	Depth jumps +32inches (80cm)	+5 mins
Moderate	Bounding exercises	3-5 mins
Moderate-low	Low reactive jumps	3-5 mins
Low	Low impact jumps and throws	2-3 mins

## **Sample Plyometrics Exercises**

### **Exercise 1.**

Lie on back with your heels touching a line, hold a ball in your outstretched hands and place the ball on the floor. Returning to the line standing with your heels touching it, both feet together jump up and over the ball, as you land walk back to the starting position and repeat 10 repetitions.

### **Exercise 2.**

As exercise 1/.but as you lie down to mark the balls position lie down and put you heels touching the ball ,pick the ball up and extend your hands again (the equivalent of two body lengths + two outstretched arms. This time heels on the line feet together two jumps and over the ball.8 reps.

**Exercise 3.**

As exercise 2/.but three body lengths + out stretched arms, three jumps 6 reps.

**Exercise 4.**

As exercise 3/.but four body lengths + outstretched arms, four jumps 4 reps.

**Exercise 5.**

As exercise 4/. but five body lengths + outstretched arms, five jumps 2 reps.

**Exercise 6.**

As exercise 5/. but six body lengths + outstretched arms, six jumps 1 rep.

N.B. After “plyometrics” a very thorough stretching routine must be undertaken, as the lactic acid build-up in the muscles is considerable.

The onset of local muscle soreness is rapid, normal, and in a “fit” player should last no longer than 48 hours, massage, hot baths, swimming, are amongst the best recuperative remedies.

Plyometric exercises can greatly increase the explosive power of your techniques and in striking the ball more powerfully.