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SPORTS CLINIC

PLYOMETRICS by Jason Swan

Strength and power are considered to be essential elements for the successful participation in most sports, together with the athletes ability to learn, perform and master the skills specific to that sport. Plyometrics is based on the fact that a muscle's contraction is greater **immediately** after a quick elongation or stretch is applied to that muscle. This is called the "Stretch shortening cycle". This action occurs naturally in a lot of sports but can be incorporated into training techniques to increase the strength gained by those muscles in a functional exercise. It is argued the strength gain potential in a muscle is greater with plyometric exercises than simple gym exercises alone.

Plyometric training was made popular by the East Germans in the 1970's. Since then they have become part of most "power" sports training programs and have been included in the rehabilitation of individuals, recovering from injury as well as post surgery for those planning to return to sport. As stated earlier, plyometric exercises constitute a natural part of most sport movements, as they involve jumping, hopping and skipping. Plyometric exercises are implemented in various forms depending on the purpose of the training program .Typical plyometric exercises include the counter movement jump, the drop jump and the squat jump . These exercises can either be combined within a training program or can be applied independently. Plyometrics can be performed at various intensity levels, ranging from low-intensity double-leg jumps such as rope skipping, to high-intensity unilateral drills such as hops. Research indicates plyometrics improve not only strength but power output, coordination, and athletic performance, especially when incorporated with high intensity resistance training such as weight training, it also suggests the

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best result are obtained from sessions which are of high intensity (strength dependent) and > 40 reps performed over 8 sets or so. Training blocks are typically < 10 weeks in length comprising 1-2 sessions per week, thus allowing adequate recovery between sessions.

Before high intensity plyometric training is undertaken, it is suggested the individual has developed adequate core stability to cope with the work load as well as have the strength in lower limbs (LL) to squat 1.5-2 times body weight and upper limbs (UL) to bench press their body weight. Other factors which should be taken into account to minimise the chance of injury are:

- Adequate joint ROM and proprioception.
- Surface on which training is being performed.
- Training age of the individual/injury.
- Chronological age of the individual.
- Technique when performing the drill and landings.
- No. of sets and reps plus the graduation of exercises.

Below are some suggestions of exercises and intensity levels for both lower (LL) and upper limb (UL).



Low Intensity LL
Skipping, DL squat jumps, DL jump to box , Lateral jumps to box
Moderate Intensity LL
Split jumps, Tuck jumps , lateral push off box,
Moderate/High Intensity LL
Bounding, DL jumps for distance/speed, Lateral box jumps
High Intensity LL
Bounding for distance/speed, Hopping distance/speed, lateral hopping, Drop off box and hop (SL)/jump (DL) x 5.

Low Intensity UL
Wall pushup, Partnered ball pass, Ball push and catch.
Moderate Intensity UL
Floor pushups, Ball drop/catch/push, Ball tramp throw/catch, over head throws, side throws, over back throw, Squat throws, Explosive start throws, slams
High Intensity UL
As Above but greater speed and weighted ball. Pushup + clap

It is strongly advised that you see your physiotherapist and discuss an appropriate plyometric program with them before you decide to start one.



About the author: [Jason Swan](#)

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He is currently the Physiotherapist for the Australian Beach Volleyball Team and the AIS Beach Volleyball Program based here in Adelaide. He is also an active member at Grange SLSC acting as age group instructor for the nipper program and as a Masters competitor. He has particular physiotherapy interest in shoulders; knees; tendinopathies; sports rehab and acupuncture. He currently takes sessions at Next Generation and Wakefield St.