

Plyometrics

Ask any athlete what are the most important qualities required to make them a successful athlete and the majority will answer speed and agility. Well plyometrics is a key component in training for these qualities and it is a training method that is used to improve the relationship between maximum strength and explosive power in conjunction with other power training methods in a complete training program (Gambetta, 1998).. The purpose of plyometrics is to increase the power of subsequent movements by using both the natural elastic components of muscle and tendon and the stretch reflex (Essentials of Strength Training and Conditioning, p428). This leads to the fundamental principle of plyometric training: the rate, not the magnitude of the stretch, is what determines the utilization of elastic energy and the transfer of chemical energy into mechanical work (Gambetta, 1998). Therefore the focus of plyometric training is on generating the highest possible force in the shortest period of time

Plyometric exercises use the force of gravity to store energy in the muscles, and then immediately release the energy in the opposite direction (Sports Speed, p123)

Important Considerations (Gambetta, 1998)

- 1) **Displacement of centre of Gravity**
 - Horizontal displacement is less stressful than vertical displacement
- 2) **Limb involvement**
 - Single leg exercises are more stressful than double leg exercises
- 3) **Speed of execution**
 - Needs to be explosively fast
- 4) **External Load**
 - Eg a weight vest can be used but no more than 10% of body weight otherwise the movement will slow down
- 5) **Volume and Intensity**
 - The higher the volume, the lower the intensity and vice versa
 - The younger the athlete the lower the volume and intensity
- 6) **Frequency**
 - Include no more than 3 plyometric sessions in a 7 day cycle
 - Ensure 48hours between sessions
- 7) **Basic Strength**
 - A base level of strength in the stabilizing muscles is required before you begin plyometrics in order to prevent injury
 - Eccentric strength is important as it is the limiting factor in high intensity activities

8) Skill

- Quality in the execution of the exercise is more important than volume and must be continually stressed

9) Sport Specific

- It is important to use exercise that are specific to your sport in order to maximize transference onto the playing field

10) Progression

- Start with low intensity exercise, eg 2 leg jumps and progress to high intensity exercise, eg, depth jumps.
- The progression is as follows:
- Step 1: Use 2 limb exercises
 - i. To lower the risk of injury
 - ii. Eg standing long jump with a 2 foot landing
- Step 2: Use 1 limb exercise
 - i. Eg single leg bounding
- Step 3: Use External Loads
 - i. Add a resistance but no more than 10% of body weight

Plyometric training is a vital component of any athlete that requires explosiveness. It does however have a high risk of injury so be sure to follow the above considerations and progress correctly in order to minimize the potential for injury.

Good Luck!

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References:

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Dintiman G, Ward B and Tellez, T (1998) Sports Speed (2nd ed). USA: Human Kinetics

Gambetta V, 1998, *Sports Coach*, Summer 1998, p7-12

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