

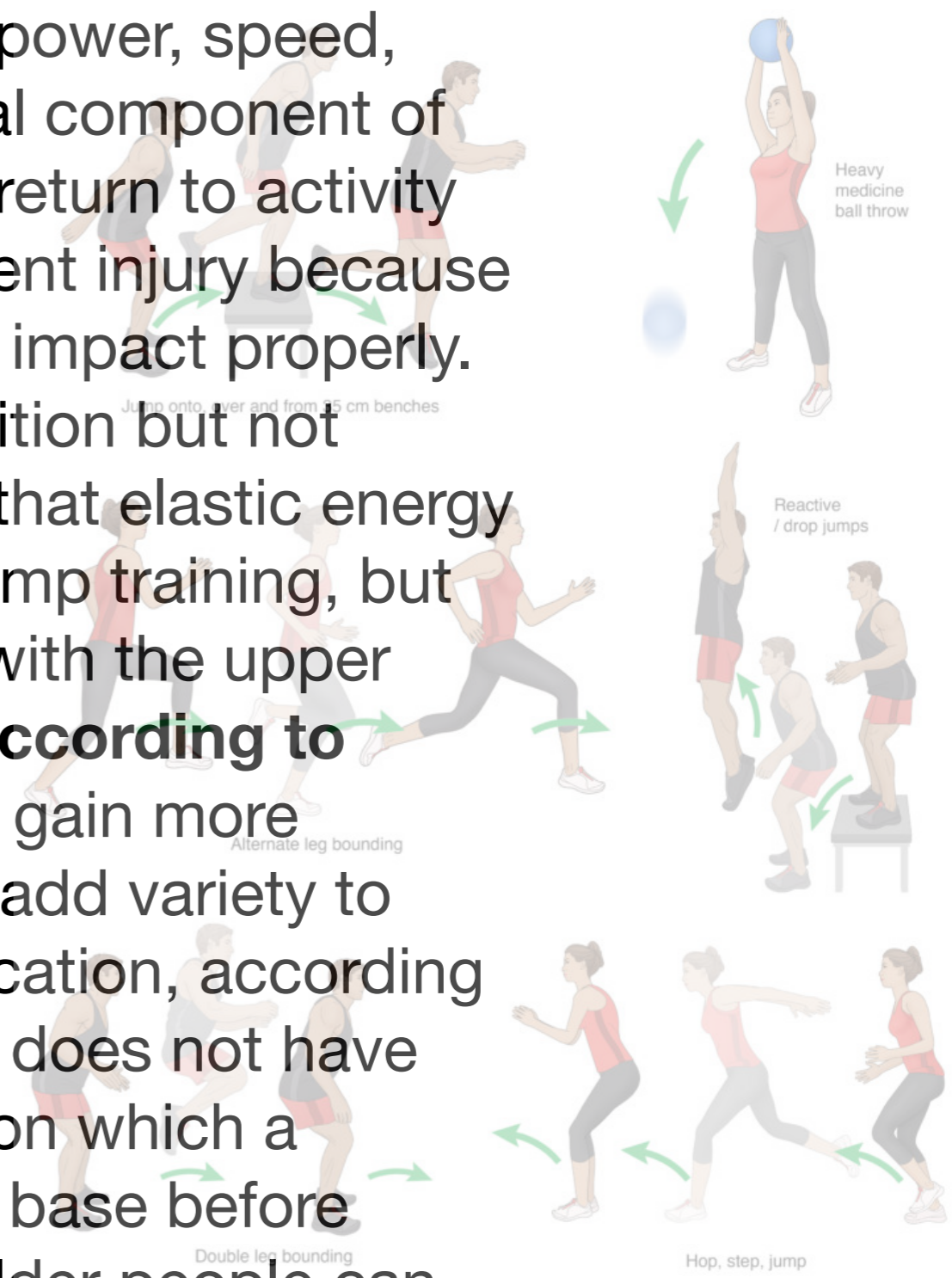
Plyometric

GREAT ATHLETIC TRAINING EXERCISE SERIES

Do it Right!
Exercises you Should Do

Summary: Simply put plyometrics increases athletic performance. It assist in the development of power, speed, and quickness. It has also become an integral component of late phase rehabilitation as the athlete nears return to activity after an injury. It has been suggested to prevent injury because it helps people learn how to land and absorb impact properly. An example is going quickly into a squat position but not stopping at bottom portion, but rather using that elastic energy to explode out of it. It has also been called jump training, but the type of elastic training can also be used with the upper body. **It makes athletes resilient to injury according to research.** It will also help general exercisers gain more explosive power, maintain bone density, and add variety to their training. The most significant contraindication, according to Davies et al., is when the athlete/exerciser does not have the foundational strength or training base upon which a plyometric program can be built. So create a base before doing them. There is some suggestion that older people can do them, but must be done with caution and no osteoporosis.

READ ON



Plyometrics

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Simply put plyometrics increases athletic performance. It has been used for years, since the 60s and 70s. It assist in the development of power, speed, and quickness. It has become an integral component of late phase rehabilitation as the athlete nears return to activity after an injury. It has also been suggested to prevent injury because it helps people learn how to land and absorb impact properly ([study on ACLs, review](#)). **Simply put, it makes athletes better and resilient from injury.** But what is it? Plyometric training utilizes the *stretch-shortening cycle* (SSC) by using a fast lengthening movement (eccentric), which is quickly followed by a shortening movement (concentric) ([please see excellent detailed review](#)). The time between lengthening and contracting is very short and is the key to plyometric training. This is the amortization phase. When plyometrics are done quickly, as intended, the amortization phase should last less than one-quarter of a second (0.00:25). The shorter the amortization phase, the quicker a muscle goes from a long muscle to a short muscle, which allows for increased force production from the stored elastic energy of the tendons and fascia. An example is going quickly into a squat position but not stopping at bottom portion, but rather using that elastic energy to explode out of it or jumping in the air and going down into a squat position and exploding out of it. It has also been called jump training, but it can also be used with the upper body. Some speculate there is neural involvement that increases performance, but the elastic energy (stored in tendons and fasciae) from the quick lengthening to shortening action contributes a great deal to increased performance from plyometric training

Can it be used by non athletes? Yes, it will help general exercisers gain more explosive power, maintain bone density, and add variety to their training. Plyometric training positively affects muscular strength, jump performance, and physical performance in older adults as well. A research study found that plyometric training was demonstrated to be a safe training option in older adults when properly programmed, especially when administered in a supervised setting ([research](#)).

Great Starter Plyometric Exercise:

Jump Squats: After warming hold onto a strong vertical support lower into a partial squat fast. At bottom of partial squat push off the balls of your feet and jump, fully extending your legs while holding on to support. On return to floor make sure knees are bent and knees are over toes to absorb impact. Land softly on the balls of your feet as knees bend back down into the squat position and explode out of it, repeat for a 5 to 10 reps. Some suggest pointing toes down to make sure you land on balls of feet. It is essential that knees are bent on landing, because many ACL injuries occur when knees are locked after jumping. So keep knees bent and over toes. As you progress with this exercise you can try not holding on and using the arm swing for greater momentum. [See some examples of plyometrics here.](#)

Much can go wrong with plyometrics. Therefore, easing into must be done along with using proper biomechanics. I would not do it more than twice a week. It is best used in combination with other workouts and not as a replacement for traditional strength training or cardio exercise. Traditionally, the more explosive the movement, the shorter the work period should be, followed by a longer rest period. Rest is important for ensuring proper biomechanics and mental focus. A general rule, rest five to 10 times more than it takes you to perform the set of plyometrics according to the NSCA. The work phase can be as short as three reps or 10 seconds, while rest can be as short as 20 seconds or as long as two minutes. See the progression box below, I would be even more cautious than what the box suggests. I learned the hard way. I could not walk after my first day of doing my first plyometric session back when I was a sprinter in college. I would suggest that exercises should be performed on a surface that has shock absorbing properties, such as a rubber mat. According to Ace Fitness more is not better when it comes to plyometrics. Because of the intensity and ground contacts involved with these types of exercises participants must be physically prepared for this new challenge.

Plyometric Volume Guidelines (Given in Contacts per Session)			
Athletic Level	Low-intensity Drills	Moderate-intensity Drills	High-intensity Drills
Beginner (no experience)	80–100	60 (100–120 total*)	40 (100–120 total*)
Intermediate (some experience)	100–150	80–100 (150–200 total*)	60–80 (150–200 total*)
Advanced (vast experience)	140–200	100–120 (180–220 total*)	80–100 (180–220 total*)

*Includes some low-intensity drills as movement preparation for the more advanced drills

Contraindications (*in other words do not do*) for plyometric training are pain, inflammation, acute or sub-acute sprains, acute or sub-acute strains, joint instability, and soft tissue limitations based on postoperative conditions. However, probably the most significant contraindication, according to Davies et al., is when the athlete/exerciser does not have the foundational strength or training base upon which a plyometric program can be built. I always suggest this and that is why I suggest testing yourself and making sure you have an intermediate level of ability to do simple plyos and advanced level if you are aggressive plyometrics (see testing).