

# Fit Facts™

FROM THE AMERICAN COUNCIL ON EXERCISE®

## Quality, Not Quantity

A safe and effective plyometric program stresses quality, not quantity of jumps. Safe landing techniques, such as landing from toe to heel from a vertical jump, and using the entire foot as a rocker to dissipate landing forces over a greater surface area, also are important to reduce impact forces. In addition, visualization cues, such as picturing yourself landing “light as a feather” and “recoiling like a spring” after impact promotes low-impact landings. When landing, avoid excessive side-to-side motion at the knee. Landing forces can be absorbed through the knee musculature (quadriceps, hamstrings, gastrocnemius or calf muscle) more effectively when the knee is bending primarily in only one plane of motion.



## Plyometrics: Controlled Impact/Maximum Power

### IT MAY SOUND LIKE THE LATEST

Van Damme film, but controlled impact and maximum power are the aims of a training technique called plyometrics. Also known as jump training, plyometrics involve stretching the muscles prior to contracting them. This type of training, when used safely and effectively, strengthens muscles, increases vertical jump and decreases impact forces on the joints.

Plyometrics mimic the motions we use in sports such as skiing, tennis and basketball. If you enjoy dodging moguls, chasing down ground strokes or charging the net, plyometrics might be an appropriate training option as these exercises are designed to increase muscular power and explosiveness. Plyometrics are not, however, for those who are in poor condition or have orthopedic limitations.

### Olympic Secrets

The Eastern Europeans first used plyometrics in the 1970s to develop greater strength and power in their Olympic athletes. They based their programs on scientific evidence that stretching muscles prior to contracting them recruits the “myotactic” or stretch reflex of muscle to enhance the power of contraction.

This prestretching of muscles occurs when you perform jumps one after the other. For example, when you land from a jump, the quadriceps muscles at the front of your thigh stretch as your knee bends, and then quickly contract with the next leap. This prestretch enhances the power of the second jump.

### Proceed with Caution

Plyometric training has received its share of criticism due to reported cases of injury following “plyometric” programs of depth jumping and drop jumping, which involve jumping up to, and down from, boxes or benches that are as high as 42 inches. The forces sustained from these types of jumps onto hard surfaces can be as much as seven times one’s own body weight. However, carefully considering the type of jumps selected for the program, enlisting a coach or

trainer for supervision, and gradually increasing to more difficult exercises can make a plyometric program both safe and effective.

Jumps should always begin from ground level, off and onto padded surfaces such as grass or a gym mat over a wood gym floor. These types of jumps are both safe and easy to perform. Other training techniques include jumping over cones or foam barriers, and travelling bounding. One study found that participants in a well-designed program of stretching, plyometric training and weight training reduced their *landing forces* from a jump by 20 percent, and increased their hamstrings strength by 44 percent. Both of these factors contribute to reducing an individual’s potential risk of injury. In addition, some studies have shown plyometrics to have a positive effect on bone density in younger participants.

### Use This Tool Wisely

If you are considering plyometrics, proceed with caution. A sports medicine physician or therapist can advise on whether or not this training technique is suitable for you, and may even help you get started, or recommend someone who can. But, if improving athletic performance is not a high priority, the additional risk associated with this activity may not be worth the potential benefits.

You will have a more rewarding training experience if you follow the recommendations outlined above. Please use only simple ground level jumps from soft surfaces, and train under proper supervision. Plyometric training can be a smart addition to a healthy individual’s training program as long as it is used wisely.

Compliments of:  
Put your name and logo in this area,  
then make handout copies.

Reprinted with permission from the American Council on Exercise.

If you are interested in information on other health and fitness topics, contact: American Council on Exercise, 4851 Paramount Drive, San Diego, CA 92123, 800-825-3636; or, go online at <http://www.acefitness.org> and access the complete list of ACE Fit Facts.