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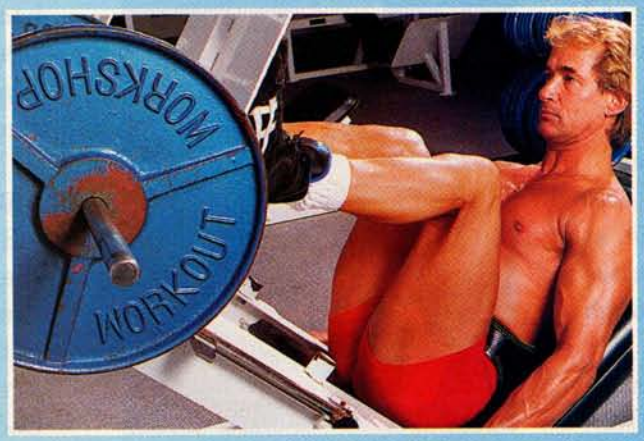
Leap of Faith

by Matt Brzycki

At first glance, plyometrics appear to be an innovative method of training that is based upon fundamental neuromuscular mechanisms. Unfortunately, plyometric training is not without its share of heated controversy.

The notion of being able to train the so-called "stretch reflex" is appealing and well-meaning. It's highly unlikely, however, that the central nervous system—specifically the muscle-spindle-to-spinal-cord reflex loop—can be trained to become more reactive. Likewise, there's no conclusive proof that the elastic properties of muscles and tendons can be trained to become more efficient at storing potential energy.



From a scientific standpoint, there is little unbiased research that definitively proves plyometrics are productive. In reality, a large number of studies have concluded that plyometrics are no more effective than regular strength-training activities when it comes to improving speed, power and explosiveness. Those results were demonstrated in the laboratory. But what about the "real world"?

There's no doubt that a number of highly competitive martial artists perform plyometric drills. However, simply because a martial artist does plyometrics and happens to be characterized as "explosive" doesn't mean that his or her explosiveness was due to plyometrics.

In almost all instances, the martial artist is doing a number of other activities that may have contributed to the explosiveness, such as strength training and skill development. When several variables are involved, it's literally impossible to say with certainty that one variable, such as plyometrics, led to an improvement in explosiveness. Also, remember that while many highly successful martial artists may perform plyometric drills, many highly successful martial artists do not.

Moreover, a growing number of strength coaches and sports medical professionals are questioning the safety of plyometrics. When performing plyometrics, the musculoskeletal system is exposed to repetitive trauma and high-impact forces—the performer is essentially acting as a human shock absorber. This extreme biomechanical loading places an inordinate amount of strain on the connective tissue. When the stress exceeds the tensile strength of the connective tissue, an injury occurs.

The most common plyometric-related injuries are patellar tendinitis, stress fractures, shin splints, and strains of the ankle and the knee. Compression fractures related to the use of plyometrics have also been reported. Other potential injuries include—but aren't limited to—sprains, heel bruises, ruptured tendons and meniscal (cartilage) damage. Dr. Ken Leistner, a former judo player, feels that sciatic conditions and even a loss of motor ability may result from plyometric training.

Matt Brzycki is the coordinator of Health Fitness, Strength and Conditioning at Princeton University. He has authored nearly 150 articles on strength and fitness and three books, including A Practical Approach to Strength Training.

bend your knees slightly and jump forward. While in the air, stretch your body, performing a body extension.

"I like to add forward jumps in my competing routines," says Chaturantabut. "It gives your movement a 3-D effect and is more visually stimulating to everyone. The plyos really work there."

When practicing this forward jump, jump as high and as far as you can. Try to get more height and distance with each jump. Then, jump with a knee in the chambered position. Stage three is the actual front kick. Work on all these factors if you plan to use this kick in competition. Each part should be perfected before it is added to another section of the jump.

• Forward Jump II

This drill is a variation of the previous drill. To make it more difficult, pull both of your knees up to the outside of your chest when jumping. On the way down, thrust your knees down. After you have mastered that, kick out both legs into a split.

Tip: This, obviously, takes more experience in jumping and plyometrics, so be patient. Don't push yourself too hard, or you will do more harm than good. MA

Michael Chaturantabut is hosting Camp Chat International, which is scheduled for July 16-22 in Los Angeles. For more information, call (310) 473-3617.