Which Way to Do the Squat Exercise?

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COLUMN EDITOR'S NOTE: THIS is the first in a new series of columns designed to address controversial issues on the topic of resistance training. Our hope is that the information herein will foster thought-provoking dialogue between individuals with dissenting opinions. If there are questions you would like to see discussed, or if you would like to contribute to this column, please e-mail me at: lbrown@fau.edu

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Q: What is the better and safer form of squatting? Free weight squats or squats using a Smith machine?

Free Weight Squat

The advantages of free weights over machines have been cited in a number of publications. One advantage is that free weight exercises can mimic the actual movements of sports and everyday activities. Consequently, a free weight squat can be executed according to both Selye's general adaptation syndrome (the body's nonspecific, three-phase response of alarm, resistance, and exhaustion to any stressor) and the specificity-of-exercise principle (training to produce a specific outcome).

In contrast, using a Smith machine in the squat creates a forced or guided two-dimensional movement. This forced pattern does not permit as much individual variation in movement, due partly to differences in hip and knee segment lengths, bone articulations, and muscle attachment sites from one person to another.

A free weight squat, on the other hand, permits a three-dimensional movement and does not hinder the athlete's own movement pattern.

Since the Smith machine supports the athlete while executing the squat, fewer stabilization and balance demands are being made on the athlete during the squat movement. Yet this is in direct contrast to the demands of most athletic and real-life activities that involve hip extension and knee extension while maintaining trunk stabilization.

Therefore, to establish motor skill and overall coordination both inside and outside the athletic arena, the use of free weights vs. a Smith machine for the squat would provide the best transfer of functional performance enhancement.

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Smith Machine Squat

There are many benefits to using the Smith machine when learning to do squats. Since these benefits relate to safety as well as ease of learning, trainers will frequently introduce their clients to the squat with the Smith machine, then later transition them to free weights.

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As with most machines, the novice lifter will not be challenged with the same problems of balance and coordination as when working with free weights. This leaves the lifter free to concentrate on the basics of form and technique while working the principle muscles employed in this core exercise.

Because the lifter can place the feet well in front of the body, the back may be kept perpendicular to the floor as he or she descends to an appropriate level of knee flexion. In this manner the lifter can easily maintain an erect torso and protect the back while still achieving good range of motion with the hip joint, allowing for significant involvement of the gluteus maximus.

Over time, the lifter may bring the feet progressively closer, thereby requiring the gradual inclination of the trunk that will allow for even better involvement of the glutes. This gradual inclining of the trunk enables the lifter to place increasing demands on the erector spinae muscles of the back such as during a free weight squat.

Eventually the lifter will work the feet directly underneath the body, thereby requiring similar ranges of motion and muscular demands as in the free weight squat. Having mastered this skill, the lifter is ready to tackle the challenge of a "real" squat with its more intricate demands.

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