

Improve Speed by Increasing Stride Length

Florida A&M University
College of Education
Brian M Hickey, PhD

Speed is often the deciding and prime factor in athletic competition. It is the result of flexibility and power. When force is applied over a greater range of motion – the potential for power and speed is multiplied.

The Math of Speed

Speed is a product of stride length and stride frequency. It can be represented by the mathematical formula: speed = stride length X stride frequency. As its name implies, stride length is the distance covered in each stride, or step. The number of strides taken per unit of time may be used to define stride frequency. Generally, stride frequency is expressed in total steps per minute or gait cycles per minute. Steps per minute would count both left and right steps. However, a complete gait cycle would begin with the right foot making contact with the ground and would end when the right foot returns to the ground after two strides are taken (from the right foot to the left foot, then back to the right foot). This may also be referred to as cadence. Typically, cadence ranges between 80 to 90 gait cycles per minute.

Stride Length and Flexibility

An increase in stride length is a means by which an athlete can strive for continual improvement through flexibility training. When examining stride length and its associated property of flexibility, it is advantageous to view the legs as springs. The more a spring is compressed, the greater it's rebound when released. Similar to a spring, as a muscle's flexibility increases its ability to generate power escalates.

Research shows that an increase in flexibility directly amplifies speed and power. About 25% of an athlete's total training time should be dedicated to the use of flexibility enhancing modalities. This time should be evenly divided in order to include flexibility training in both the warm-up and cool-down.

Flexibility Training

■ Warm-Up

It is wise to warm priority muscles before stretching. Increased muscle temperature allows enzymes to work more efficiently, and muscles are less likely to be injured during traditional stretching. The warm-up period greatly affects the muscle's ability to perform. More importantly, it sets the tone for recovery and regeneration following the bout of activity.

■ Cool-Down

Stretching after bouts of exercise serves to facilitate muscle relaxation. It also helps to promote the removal of waste products and will help reduce muscle soreness. A proper cool-down is vital for muscle recovery/regeneration.

■ Stretching

In recent years traditional, static stretching techniques have been greatly amplified by a biomechanical technique known as segmental stretching. Segmental stretching is successfully used for both warm-up and cool-down. It directs attention to both the weakest and strongest muscle bundles. Segmental stretching can be accomplished without joint stress, motion or involvement. Research shows it to be complimentary with any existing flexibility program. The science of segmental stretching is trademarked Intracell Technology.

Intracell Technology engages the use of a biomechanical tool to perform segmental stretching. Trademarked The Stick, this non-motorized device allows the user to perform both general and segmental stretching with a high degree of precision.

Segmental stretching relaxes muscles that have shortened from bouts of activity. Unrestricted muscles provide a copious blood supply which accentuates regeneration of tissue. Flexibility training has escalated to a new level since the advent of segmental stretching in 1988.

