

Strength Training for Speed

by Adam Smotherman, SCCC, CSCS, USAW-L1

Perhaps I have beat this horse to death by now, but I will continue to preach it—speed is strength. A muscle that is stronger has the ability to produce more force. To move faster, your body must be able to launch itself off the ground more powerfully with every step. Additionally, stronger muscles provide for better balance, efficiency of movement, shock absorption, and speed endurance.

Below are some weightroom exercises which are unparalleled in the enhancement of speed. New-age athletes and coaches fear not, later articles will discuss the use of bands, sleds, straps, and other forms of resisted sprinting. But those methods cannot be your meat and potatoes. The following are time-tested exercises with lower body emphasis and have improved sprint performance for athletes for a long time:

Squat

Back squat, front squat, overhead squat...just be sure you SQUAT! Squatting is hands down the best exercise for building lower body strength and power. No lift loads the musculature, tendons, ligaments, and bones around and within the ankle, knee, and hip quite like the squat. Nothing compares to the benefits an athlete can achieve squatting. The core (everything from just under the pecs down to mid-thigh) is loaded in squat. The hips are forced to hinge throughout a great range of motion in flexion and extension, and the angle of the knee ends up in the same position in the bottom of a squat as it does in the top of the cycle motion of a sprint. And remember, work your depth. If you shorten the range of motion, you are missing out on the benefits of the exercise. Be sure to have a competent spotter when squatting.

Clean

Any Olympic lift will help tremendously in the development of speed. The nature of weightlifting movements requires that the athlete explosively extend and flex his/her ankles, knees, and hips (much like sprinting) in as short a time as he/she can. Additionally, the beginning concentric portion of the lift, which initiates the movement of the barbell, simulates some of the movement pattern an athlete experiences coming out of his/her stance to start a sprint. The second pull of a clean requires ankle, knee, and hip extension; which is similar to that of the drive leg of a sprint. If you do full cleans, you end up performing a front squat as well, so you get double the benefit. Also, cleans require dorsiflexion of the ankle in the starting position, plantarflexion of the ankle in the second pull, and a return to dorsiflexion in the catch. You do not need a spotter on Olympic lifts, but be sure you have a qualified coach to teach you how to miss properly should you get in trouble with a rep.

Deadlift

The deadlift is perhaps the best lift for training and testing raw strength. There is no momentum and no stretch reflex out of the bottom. It is a pure strength training exercise. During the deadlift, an athlete's core, primarily the spinal erector group, is under immense load, which translates well to sprint work as the first muscle group to contract with the initiation of a sprint is the lower back. Like the clean, deadlifting requires strong quadriceps muscles to complete the pull with full knee extension. The quadriceps muscles act as shock absorbers while sprinting, making strength in this muscle group paramount to efficiency of movement.

Step-Up

The step-up is a great exercise for improving strength in the musculature involved with sprinting. An athlete must drive through the fore leg using primarily the hamstring and glute and finishing the movement with a powerful extension of the leg using the quadriceps muscles. An additional benefit to the step-up exercise is the balance and stability work required of the fore ankle as this exercise is a single-leg movement. Some variations to the traditional linear step-up exercise are lateral step-ups, cross-over step-ups, and linear step-ups with step-over and step-downs. I would not advise using a barbell for any step-up exercise. Use something in your hands such as dumbbells, kettlebells, or sandbags which you can dump quickly and safely if you lose your balance.

Lunge

There are a few ways a lunge can be performed. An athlete can lunge forward and immediately drive off the fore leg to return to the starting position. This exercise places the majority of the force through the knee and ankle of the fore leg while also providing a stretch to the hip flexor and quadriceps muscles of the rear leg. Be cautious using this exercise as it places a great deal of force through the patellar tendon of the fore knee. An athlete can also perform a reverse lunge, which is the opposite of the aforementioned style. With this exercise, the athlete uses the hamstring and glute of the fore leg and the quadriceps of the rear leg to return to the starting position, which is beneficial to sprint strength. Finally, there are walking lunge variations. The forward walking lunge utilizes a great combination of quad, glute, and hamstring. The reverse walking lunge places focus upon the hip flexor as it must be used to paw through to the next lunge.

Much like the step-up, the lunge provides balance and stability work of the ankles.

Spinal Erector-Abdominal-Oblique Exercises

An athlete must have a strong core in order to quickly produce force, and thus, speed. Every resistance training exercise utilizes the musculature of the core, so by simply training you are engaging and strengthening the core. Auxiliary exercises that can be used to supplement the core include back extensions, reverse back extensions, various resisted sit-ups, and hanging leg raises.

A coaching point to remember when using resistance training is that the concentric portion of the movement should be explosive to develop power throughout a full range of motion, and the eccentric segment of the lift should be controlled to enhance muscle mass and strength. In a later article we will discuss the difference between submaximal speed lifts and heavier movements and their relation to speed training. Be sure to join us next time!

Stay Strong and Finish First,
Charleston Speed Academy