

Enhancing Speed with Improved Sprint Mechanics **Adam Smotherman, SCCC, CSCS, USAW-L1**

As you know, speed is strength. This means speed development starts where? You guessed it...in the weight room! With that knowledge, we recognize that to get faster you must get stronger. When you started out in the weightroom, you probably noticed you made strength improvements and muscle mass gains quickly. And, if you have used resistance training extensively for years, you probably have noticed that your body does make gains at the rate it used to. Don't worry, there is nothing wrong with you. This is normal because at the onset of training, many of the gains you make are neuromuscular adaptations. Once those pathways are created, you will make steady gains moving forward as long as your program is periodized, you train hard, you have a good coach, and you listen to your body. So, besides strength gains, are there any other ways to improve speed? Yes, the answer is improved sprint mechanics.

Let's take a look at some common sprint mechanics mistakes and the proper ways to evaluate and improve them. First, the head position is key. The head directs the body, so head position affects your biomechanics. You do not want to stare downward at the ground, and you should not tilt your head in a posterior fashion to look at the sky. A neutral position is ideal with the eyes fixed forward.

Next, your shoulders should not be clinched (this starts with your hands). The shoulders need to be smooth but powerful, churning the arms forward and backward. Remember, the arms and legs must stay in sync to maximize the propulsion you create with your lower levers. Your shoulder joint motion should be directly anterior and posterior in the frontal plane. There should be no side-to-side motion of the shoulders. If your arms move with any sideways action, the rest of your body will follow, and you will not sprint in a straight line.

Many coaches teach that the elbows should remain at a 90° angle throughout the entire sprint. This is a good concept to think about as a beginner because you do not want your arms flailing around, nor do you want them to remain straight. If you watch elite sprinters from a side view, you will notice the elbow joint extends slightly during the posterior rotation of the shoulder joint, and then the elbow violently flexes forward to about 90° during the anterior rotation of the shoulder. The elbow should move rearward to a point parallel to the posterior deltoid, and forward to a point slightly in front of the lower chest with the hand close to the cheek.

Do not clinch your hands when you sprint. This will cause the musculature of the forearms to clinch, resulting in a chain of tightness from the upper arms to the shoulders to the neck. Remember, we want to move smoothly and powerfully.

Your core (abdominals, obliques, spinal erectors) is the transmission connecting the upper and lower halves of your body. The core must be strong and stable for you to be a great sprinter. You do not want to slouch forward when you run, nor do you want to lean back. A solid, upright torso position is optimal. If you slouch, your anterior core is probably weak.

Now for the wheels! The legs are your power mechanism in a sprint. You must have strength and explosiveness in this area to be fast. The hip flexor brings your leg up and forward. The knee typically travels to a point just at or below the line of the hip flexor. This depends upon the strength of your hips and the lengths your tibia, fibula, and femur bones. The hamstrings and glutes paw the ground and launch you forward. Your quadriceps assist in this and act as a shock absorber when your foot contacts the ground. You will notice an athlete with weak quads will exhibit a slight bouncing motion while he/she sprints. This is a sign of weak quads, which decreases speed output by keeping the plant leg in the amortization (transition) phase too long. The less ground contact time, the better.

Finally, we will look at the ankles and feet. As you sprint, your rear ankle will plantar flex (toe down) to help launch you off the ground, while your fore ankle will dorsiflex (toe up) to prepare for ground contact. The front foot should contact the ground just in front of the body, but not too far. Don't get caught up in thinking about "stride length"—your propulsion off the ground will take care of that rather than a sense of reaching your cycle leg. As your cycle leg comes through, your heel should come close to contacting your glute/upper hamstring when your knee has broken the anterior plane.

Always remember, if you start in the weightroom, stay in the weightroom, and continually practice and evaluate your sprint mechanics; you will improve your speed. Until next time!

Stay Strong and Finish First!
Charleston Speed Academy