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Photo: Lisa Tenold.

The Next Step in Speed Training

Effective tools to improve acceleration and stay fast

Because the basis of speed is strength, athletes need to perform multijoint core lifts such as squats and power cleans. That's a given. Certainly, being stronger and more powerful will improve your ability to sprint for short distances, but if that's all you do, then your program is incomplete. You need to use tools that will improve your ability to continue to accelerate and to maintain that speed over longer distances or throughout an entire game, especially in sports such as football and soccer. So, in addition to putting in your time in the weightroom, the question is "What's next?"

Let's start with the 40-yard dash, which is a basic test for measuring speed for the skill positions in football. There are other good tests, such as shuttle runs that test lateral speed and vertical jumps for explosiveness, but the 40 is considered the gold standard for gridiron warriors.

Strength is a key to a powerful start, and in fact you'll find that Olympic weightlifters and even powerlifters can move as quickly as top sprinters for the first several steps. Take, for example, Olympic weightlifter Mark Cameron. At a bodyweight of 240 pounds Cameron clean and jerked 500 pounds. Cameron attended the University of Maryland at the same time as Renaldo Nehemiah, who was the first man to run the 100-meter hurdles under 13 seconds and who played wide receiver for the San

Francisco 49ers when they won the Super Bowl in 1982. Seems like no contest that Nehemiah would always be the faster athlete, right? Wrong.

From a standing start with no blocks, Cameron could beat Nehemiah for the first ten yards – after that, Nehemiah easily rocketed ahead due to his superior acceleration and ability to maintain top speed, which many sprint coaches refer to as *speed endurance*. So after strength training, it's important to practice activities that will develop these two speed qualities. And that's where speed tools come in.

Strength is a key to a powerful start

Using these two athletic qualities, acceleration and speed endurance, it's easy to determine which tool is best for the job. There are many tools to develop acceleration, but sleds and harnesses are the most popular. For speed endurance, the basic tool is the speed parachute, which is commonly referred to as a *speed chute*. Finally, you need an electronic tool to measure progress. Let's look at each of these in turn.

Acceleration

To continue accelerating to maximum speed after a fast start, the most valuable training method is called *resistive running*. This involves running with resistance other than the athlete's bodyweight. Some coaches recommend running uphill to make the athlete's muscles work harder. It will, but the argument against such training is that the biomechanics of running uphill are much different than normal sprinting techniques. For example, running up hills, especially steep hills, tends to shorten stride length.

For resistive running, three great tools are push sleds, sprint sleds and speed harnesses. According to Mario Greco, a Canadian strength coach who has worked with several Olympic sprinters, you don't want to use a sled or these other resistive running devices for more than 25 yards. "Once your body goes into an upright position through the transition phase of a sprint, acceleration is basically zero. The problem with using the sled [or other resistive running devices] this way is that if you keep pulling it, let's say for 100 yards, you're always working to drive – it's not natural. Plus, you start fatiguing, and when you fatigue, you start to see a breakdown in body mechanics – it's like doing sets of 15 in the power clean."

How much resistance you use for these devices depends upon the training goal. The heavier the weight, the longer the ground contact time and the greater the hip extension. A good rule of thumb is to use a

variety of different weights to work all aspects of sprint conditioning.

Here are some of the best resistance running tools.

Push Sleds. BFS offers a push/pull sled that has become one of our best-selling products – primarily because it works. With a push sled the arms are held stationary, which forces the legs to do more work. This type of work has obvious implications for a fullback who needs to break tackles. To increase resistance, the push/pull sled has two pegs that enable you to put Olympic plates through them.

Sprint Sleds. The sprint sled is a weighted sled that attaches to your upper torso with a harness – you don't want to have the harness around your waist, as this will encourage you to lean forward excessively. With this type of sled, your arms are free to move, more closely matching sprinting mechanics. To increase resistance, weight plates can be placed through the single peg attached to the sled that is specifically designed for this purpose. You can also attach a harness to the push/pull sled, but the sprint sled is a more economical option. As such, one suggestion for an athletic program on a tight budget is to purchase one push/pull sled and several sprint sleds.

Speed Harness. The speed harness works exactly like a sprint sled but is an even more economical option, as the resistance is provided by a training partner.

Speed Endurance

After the acceleration phase, the athlete will assume an upright posture, often called the *sprint position*. This is the posture in which the athlete will reach maximum speed and have the greatest stride length.

One major purpose of speed endurance tools is to provide some resistance without affecting biomechanics. As such, these devices usually have harnesses attached to the waist – and the resistance is not so great as to encourage the athlete to lean forward.

Here are two great speed endurance tools.

Sprint Chutes. Parachutes provide a slight resistance when running, which helps an athlete work on achieving perfect form. Says Greco, "When you have some resistance, you tend to focus on your technique a little more. What happens when your technique is not sound when you use a chute is that it feels as if you're working too hard." It also provides a form of contrast training.

With contrast training, the muscles are stimulated to work hard, and then the resistance is removed so that after the muscles are stimulated to work harder, the resistance can be removed quickly. With a sprint chute, the athlete runs while pulling the chute to activate more fast-twitch muscle fibers, and then releases it. For the first several strides after the chute is released, those fast-twitch fibers are still activated, enabling the athlete to run faster.

Another benefit of the chutes is

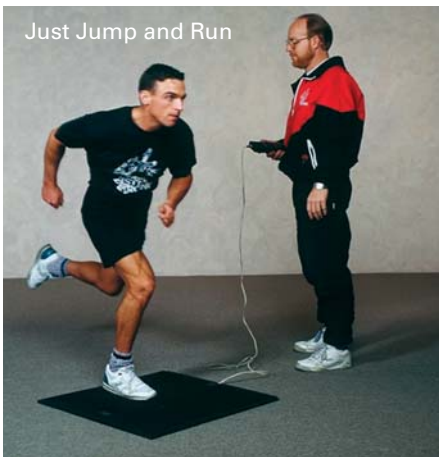
that they move back and forth, and this instability improves joint stability. Says Greco, "I actually like it for team sports. Take the example of football running backs who are basically running and people are hitting them from the side. I think this instability helps significantly . . . and even with sprinters, because if you're coming off a curve and there's a gust of wind that throws you to the side, your body has to get used to that."

Doubleman Overspeed. This device enables two athletes to be linked together by an elastic cord attached to two harnesses. As the athlete in front runs, the cord stretches and the athlete running behind is able to run faster than they could otherwise. This is known as overspeed training, and it conditions the athlete's nervous system to become accustomed to running faster.

Timing Devices

Finally, to ensure that your athletes are making progress and to motivate them to train harder, it's important to test them. Ideally, an athlete should be tested twice per month as part of their workouts. Although hand timing with a stopwatch will work, for accuracy it's better to use some form of electronic timing device.

Here are two great electronic devices that should fit any budget.


Just Jump and Run

Just Jump and Run. Although this 28" x 28" force platform is primarily used for running, it can also be used as an electronic timer for any distance. The system is voice activated, so as soon as the timer tells the athlete to sprint, the timing begins. The sprint time is registered when the athlete steps on the platform.


Speed Trap

Speed Trap. BFS has two electronic timing devices that are strictly devoted to recording running speed: Speed Trap 1 and Speed Trap 2. These devices come with a starting pad that can be activated by a hand, or for standing starts, a foot. The major difference between the two units is that the Speed Trap 2 is completely wireless and is accurate to .001 of a second compared to the .01 accuracy of the Speed Trap 1.

Although the ability to develop speed is influenced by genetics, an athlete can become significantly faster by working hard and training smart. Add the right tools, and your progress will really take off. BFS

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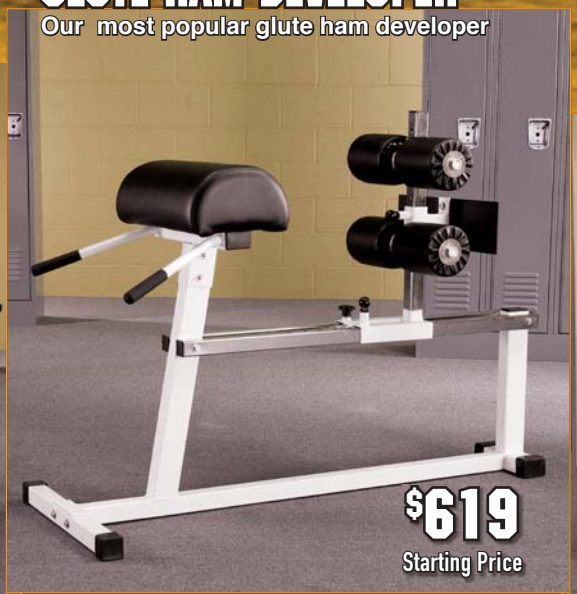

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