

Running Faster: The Tools You Need

How to use contrast training to develop speed

Being able to run fast is a key athletic quality that virtually all athletes want to develop, especially those who play field sports such as football and soccer. Strength and endurance are certainly important in such sports, but they take a backseat to being able to get from point A to point B in the shortest amount of time. With our priorities in place, let's take a look at a few proven training methods that develop speed.

One of the most effective ways to develop speed is called *post-tetanic potentiation* (PTT). PTT refers to the theory that a more powerful muscular response can be elicited if it is preceded by a strong muscular contraction. For example, if a baseball player swings a heavy bat



A sprint chute is a speed-training product (introduced to the US by a Russian track coach) that creates resistance without affecting running technique.

immediately before going up to the plate, that athlete will be able to swing the regular bat faster and therefore hit the ball harder. Or, if an athlete performs several sets of heavy squats and then tests their vertical jump, they probably will be able to jump higher

nearly flies out of their hands. What has happened is that although they don't need to use the most powerful fast-twitch muscle fibers to lift the lighter box, their nervous system has been conditioned to anticipate that it still needs to activate those fibers with the

than if they had tested their vertical jump before that squat workout. Here's how it works.

Let's say an athlete is lifting boxes that weigh about 50 pounds each. As they do this, they are activating the powerful fast-twitch muscle fibers. After lifting about five boxes, say they pick up a 10-pound box – they may find that the box



A pulling sled will help develop speed by increasing the amount of force an athlete puts into the ground.

lighter box. The result: greater speed and power.

Although post-tetanic potentiation is the term used by sport scientists, *contrast training* is the term many coaches use for the training methods that elicit this response. This makes sense because you are “contrasting” one workout method, such as heavy weight training, with another, such as plyometrics.

One of the most practical methods for contrast training uses a pulling sled; you could have your athletes perform it on the Tuesday/Thursday speed and plyo workout on the BFS system. Let’s look at some details.

First, one common mistake many athletes make when pulling a sled is using too much resistance, which is unwise because using too much weight alters running mechanics. This

is especially true when using inferior harnesses that have a rope or cord attached only around the waist, which encourages the athlete to bend forward excessively from the waist. Of course many powerlifters use sled dragging with extremely heavy weights to improve their squatting and muscular endurance, and this is fine for strength training. For sprint training, however, an athlete needs to use much lighter weights.

A good starting weight for beginners, or for athletes with low strength levels, is to use only 10 percent of their bodyweight (including the weight of the sled) when pulling a sled. Another mistake is pulling the sled for too long. You want athletes to use the sled for developing the drive phase, so the maximum distance is about 20 to 25 yards.

Just pulling a sled will help develop speed by increasing the amount of force an athlete puts into the ground. One reason older sprinters are able to run faster is not because they are increasing their leg turnover, but because they are increasing their stride length by increasing leg power. However, you can add another speed dimension by having athletes alternate between sled dragging and sprint training. For example, after a warm-up, an athlete could perform 3-5 sets of sled dragging alternated with 3-5 sets of short sprints. More specifically, the athlete would pull a sled for 20-25 yards, then sprint for 20-25 yards; repeat 3-5 times.

Consider that 10 total sets of this type of work are extremely demanding and may be too much for a beginner. The guiding principle would be to stop

the workout when the athlete starts slowing down, a point that is often referred to as the *critical drop-off point*. Using an electronic timing system, such as the BFS Jump and Run, is a practical way to determine when the athlete reaches the critical drop-off point.

The Next Step in Contrast Training

One of the most popular methods of developing muscular endurance is by pushing a special sled designed for this purpose, such as the BXI Dog Sled. Rather than alternating between sets of resistance running and sprinting, an athlete can use a push sled to perform contrast training within the set. Here's how to do it so you can show the method to your athletes.

Grasp the vertical handles, holding them near the top of the handles so you are in a more upright position, and push the sled for about 10-15 yards. Instead of stopping, you would release the handles, step to the side of the sled and take off in an all-out sprint for another 15-20 yards. You'll find that when you release the handles, you will experience a sudden burst of speed, as if someone were pushing you from behind. You could have your athletes perform several sets of this type of training, followed by regular short sprints – it's an amazing workout!

As for the weight to use, that decision again varies with the level of strength and athletic ability of the athlete – a good rule of thumb is to use the weight that gives the athlete the greatest kick when they let go of the sled. Also, consider that this type of training is very taxing on the nervous system, so it should seldom be performed more than twice a week to avoid overtraining. One sound plan could be to use the BFS Push/Pull Sled on Tuesday, and then perform a



The BXI Dog Sled, shown here, enables an athlete to perform contrast training while running. Contrast training, as described in this article, enables an athlete to run faster than they could otherwise.

regular sprint workout on Thursday.

One advantage of the push sled is that there is little eccentric overload during the exercise. *Eccentric* means that the muscle encounters resistance as a joint lengthens, such as when an athlete descends into the bottom of a squat or lowers a barbell to their chest in the bench press. When athletes push or pull a sled, there is less eccentric loading, so they will experience little soreness from this type of training (and this is why athletes can perform heavy box squats the day before a game without being sore the next day). If you have a game on Friday, your athletes could do a short push-sled workout on Thursday without having soreness that could affect performance.

Another type of speed training works to develop the speed needed after the drive phase in running, when the athlete is upright. This requires the use of a sprint chute, a product

that was introduced to the US by Ben Tabachnik, PhD, a Russian track coach. The sprint chute is a parachute that provides a small amount of drag to create an overload on the muscles without affecting technique. The BFS sprint chute has a quick-release harness that enables the athlete to perform contrast training during a run. After hitting top speed with the chute, the athlete releases the chute; the resulting kick will enable them to run faster. For example, after performing several sets of regular sprints, an athlete could perform 3-5 sets of short-to-medium sprints (say 30-40 yards), releasing the chute halfway through the sprint.

Contrast training can be a valuable method to help get athletes to the next level of physical ability. In many sports speed is king, and contrast training with the speed tools discussed here is a proven method to quickly get athletes faster. **BFS**

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