SHORT + STEEP + SWIFT = STRENGTH

HOW HILL SPRINTS CAN MAKE YOU FASTER AT ALL DISTANCES

BY BRAD HUDSON

Every runner I coach does regular sessions of short hill sprints. Should you? Well, these brief, maximal-intensity efforts against gravity offer two key benefits. First, they strengthen all of the running muscles, making you much less injury-prone. They also increase the power and efficiency of your stride, enabling you to cover more ground with each stride with less energy in races. These are significant benefits from a training method that takes little time and is fun to do.

Hill sprints are an example of what I call “muscle training” — practices whose primary purpose is to stimulate neuromuscular adaptations that enhance running performance. They call for the nervous system to activate very large numbers of motor units, to fire these motor units quickly, to contract the muscles with great force, and to resist fatigue at maximal and near-maximal levels. They test the limits of the neuromuscular system's capacity to generate and sustain running-specific speed and power, and thereby push back these limits. By engaging in regular, progressive muscle training, you will improve your brain-muscle communications in ways that increase your power efficiency, running economy and fatigue resistance.

Muscle training represents half of the foundation that supports specific endurance, or the physiological capacity to run the full distance of a race at your goal pace. The other half of this foundation is, of course, aerobic support. To achieve a higher level of specific endurance, you must first build a higher level of aerobic support and neuromuscular fitness. Broadly speaking, aerobic-support training and muscle training move toward specific endurance from opposite ends of the spectrum of running fitness. If the most foundational sort of aerobic-support workout is a long run at a slow pace, then the most foundational sort of muscle-training effort is an all-out sprint lasting only a few seconds.
HIT THE HILLS

The whole point of steep hill sprints is to demand a truly maximal power effort. For this reason, they need to be very short. Your first session, performed after completing an easy run, should consist of just one or two 8 second sprints on a steep gradient of approximately 6 to 8 percent. If you don’t know what a 6 to 8 percent gradient looks or feels like, get on a treadmill and adjust the incline to 6 percent. After you’ve had the experience of running on this gradient, you can find a hill that matches it.

Your first session will stimulate physiological adaptations that serve to better protect your muscles and connective tissues from damage in your next session. Known to exercise scientists as the “repeated bout effect,” these adaptations occur very quickly. If you do your first steep hill sprint workout on a Monday, you will be ready to do another session by Thursday — and you will almost certainly experience less muscle soreness after this second session.

If you have not done a steep hill sprint before, you should not leap into a set of 10 steep hill sprints the very first time you try them, especially if you are over age 30. These efforts place a tremendous amount of stress on the muscles and connective tissues. Thus, the beginner is at some risk of suffering a muscle or tendon strain or another such acute injury when performing steep hill sprints. Once your legs have adapted to the stress that steep hill sprints impose, this workout actually protects against injury. But you must proceed with caution until you get over the hump of those early adaptations.

Thanks to the repeated bout effect, you can increase your hill sprint training fairly rapidly and thereby develop stride power quickly. First, increase the number of 8 second sprints you perform by one or two per session per week. Once you’re doing 8 to 10 sprints, you may move to 10-second sprints and a slightly steeper hill. After a few more weeks, you may advance to 12-second sprints on a 10 percent gradient, if you feel the need to increase your stride power.

Always allow yourself the opportunity to recover fully between hill sprints within a session. In other words, rest long enough so that you are able to cover just as much distance in the next sprint as you did in the previous one. Simply walking back down the hill you just ran up should do the trick, but if you need more time, take it. Some of the runners I coach like to walk down the first part of the hill backwards. Doing so helps to stretch the Achilles tendons and calves.

HILLS ON AN EASY DAY?

This might sound odd, but I recommend scheduling your hill sprints for the day before your hardest sessions, such as a track workout or tempo run. Precede the hill sprints with your normal recovery day easy run, and follow it with a short jog of a mile or less.

Remember, although an individual hill sprint is extremely challenging while you’re doing it, each lasts no more than 12 seconds, followed by full recovery. If you’re doing hill sprints properly, you should feel more energetic, not less, during the short jog home. Many runners do post-run strides the day before a hard workout or race. Hill sprints can similarly “jump-start” your neuromuscular system so that it’s ready to perform at a higher level during your toughest workouts.

There’s another reason I have my runners do hill sprints the day before their toughest workouts. I have found that how they feel on the sprints is a reasonably accurate predictor of readiness for a good workout the next day. If you lack power and feel drained and flat during the hill sprints, it is at least somewhat likely that you’ll perform poorly in any type of hard workout you try to do the next day. The reason that hill sprints are an especially good indicator of readiness for hard training is that they place a high demand on the neuromuscular system and thereby reveal underlying nervous system fatigue that you might not notice otherwise.

Most runners will achieve as much strength and power improvement as they can get by doing 10 to 12 hill sprints of 10 to 12 seconds each, twice a week. Once you have reached this level and have stopped gaining strength and power, you can cut back to one set of six to 10 hill sprints per week. This level of maximal power training will suffice to maintain your gains through the remainder of your training cycle.

BRAD HUDSON is the coach of Olympic marathoner Dathan Ritzenhein and other elites, and the co-author of Run Faster From the 5K to the Marathon.

THESE AREN’T HILL REPS

When doing hill sprints, resist the temptation to turn the session into a regular hill workout. As I’ve explained, hill sprints are solely a muscular-strength workout. Trying to make it "harder" or “more of a workout” by quickly jogging down the hill or otherwise cutting the recovery defeats the purpose of hill sprints, because doing so will reduce the intensity of your sprints.

I often have to explain this concept a few times when I start coaching a runner. For example, having grown up in Kenya, Boaz Cheboiywo is familiar with “normal” hill workouts. When he and I started working together, Boaz would sometimes jog down after his hill sprints and complete a session of 10 sprints in less than 10 minutes. Eventually Boaz accepted the counterintuitive notion that his hill sprints would be far more effective if he took 2 or even 3 minutes recovery after each one.

HOW HILL SPRINTS HELPED RITZ

When I first started coaching Olympian Dathan Ritzenhein in 2004, he was fairly susceptible to injury. He had already suffered two stress fractures and a few other breakdowns in his short running career. Most injury-prone runners have poor muscle strength in one or more important areas, and I found this to be the case with Dathan. He had trained hard in his youth, but the biggest thing he had neglected in his training was strength. To address the problem, I had him do a lot of short, steep hill sprints. His strength improved quickly, and he’s been free of major injuries for a long time now.

For an audio interview with Brad Hudson about other types of hill training, go to runningtimes.com/mar97.