RUNNING HILLS, OPTIONS AND BENEFITS ABOUND

A hill regimen of once per week offers many benefits, including gains in aerobic endurance, and in leg strength and power.

After you've got a good aerobic base, it's time to consider hill training. A hill regimen of once per week offers many benefits, including gains in aerobic endurance, and in leg strength and power. The increased arm action and knee lift also improve your form and help train other body parts to contribute, thereby increasing speed. You'll find more power at toe-off as well as stronger hip flexors and quadriceps, which are all valuable gains in preparation for speedwork. And some even argue that the hard work in a short time that is characteristic of a hill workout yields gains comparable or beyond those from a much longer run on the flats, but without the prolonged pounding.

As with everything, start with a low number of repeats and shorter hills until your body adapts. Keep your chest out, and lean into the hill from the hips (as opposed to the waist). Look forward (as opposed to down or up). Shorten your stride, concentrating on knee lift, and pump your arms (but not excessively). On steep hills, use very small steps with feet low to the ground. Fast walking is effective, if you get caught exhausted on a long, steep hill. Try to remain the same effort/breathing rate that you used on level ground, but generally there will be more effort involved.

On the downhill, lengthen your stride slightly, and land more on the front of the foot, but don't overstride or you'll cause extra forces on the feet and legs. A slightly flexed knee on landing will lessen the shock. Relax and feel the reduced effort, avoiding a backward lean or braking motion. Keep your center of gravity over the landing foot. Once again, maintain the same effort/breathing rate as on the flats.

Do no hills two to three weeks before a major race, as this may cause undue stress on the legs. Hill training is similar to weight training or water running. It is advisable therefore to keep at least four days between hill repeats and a low-key race. Generally, aim for below 85% effort, though on some steep hills you may find yourself in the 95% of effort range. In these situations, it is important to recover completely. You may keep an elevated heart rate of, say, 120 bpm in between repeats in the case of the lesser effort workouts, but if you are exerting 95% of maximal effort, it's best to let the heart come down to below 96 bpm in between.

To improve VO2max, run up long hills at the same pace as a 5K race on the flats. Jog slowly down and repeat. Choose a hill that takes at least 3 to 5 minutes to run up, and try to stay below your anaerobic threshold. You might try a workout like this: on a 2% to 4% incline 200 meters long, run at a fast pace, followed by 2 minutes of jogging on the flats, then head down the hill relaxed but reasonably fast, jog on the flats for a minute, then repeat for a total of 10 cycles without stopping.

For anaerobic conditioning, run hard-but-relaxed on short, steep hills. You will see gains in running economy and speed. Try this treadmill workout: 10 times 1 minute at 15% grade (very steep), with one minute of rest in between. A 4% grade is the equivalent of speeding up by 1 minute per mile. This is useful in determining your treadmill pace for these workouts. For example, 9-minute miles on a 4% gradient requires the equivalent effort of running 8-minute miles on the flats. On an 8% incline, the effort required equals that of 7-minute mile pace. A 16% gradient at 9-minute mile pace, therefore, is the equivalent of running 5-minute miles on the flats.

There are an infinite number of hills and combinations of pace, length, and intensity worth experimenting with. With these guidelines on form and on the effects of gradient changes on effort, you can tailor a hill training plan to your race goals and hopefully reap many of the improvements to endurance, speed, strength, and power that hill training offers.

The Complete Guide to Running: How to be a Champion from 9 to 90 by Earl Fee, Meyer & Meyer Sport, 2005, 439 pp.