

# Off Season Training

So, the season is over. What's next? After a spring of goal oriented training, we're settling into our "off-season". This is a great time to switch gears a little bit and focus on some other areas of fitness as well as enjoy recreational activities just for fun. Just because many of us just finished a marathon doesn't mean we should go out and do another one right away. We need a physical and a psychological break from the intensity. We can, however, use the benefits we've gained from running to do something different and also to incorporate other types of activities such as swimming, elliptical and strength training. Hopefully, that's exactly what many of us will do and avoid the overuse injuries that plague a good number of runners.

Having said that, it's also a good time to address specific strength training for runners as well as use the benefits we have gained from this running season to try to build up our lactate threshold. In the following article, I will layout a program called "Three Are Enough" and describe 3 strengthening exercises along with 3 stretches that I feel will be the most beneficial to gaining running specific strength and flexibility. I will also explain why I think it's a good time to try to build your lactate threshold by using the benefits that you have ultimately gained from marathon training this year. In addition to this article, I am working with Lois Kuhn so they we can set up a time to demonstrate and explain these exercises. The details on the dates this will be offered will be advertised through the Road Runner e-mail.

Often times, runners will incorporate strength training into workouts in an attempt to improve their performance or prevent injuries. There is not a single, published article linked to resistance training and improved 5K, 10K, or marathon times. In regards to injury prevention, there is research that has demonstrated that strength training can bolster muscle power, raise tendon and ligament strength, and lower the risk of acute and chronic injuries. The problem has been that most strength programs don't mimic the muscular activities utilized during running. Many programs will add muscle bulk (i.e. weight) which means more work to cover the same distance. The exercises I am going to describe are from the work of Owen Anderson, an exercise physiologist from Michigan State who specializes in research specific to running. Bottom line, by performing a standard leg extension exercise will improve your quadriceps strength but not necessarily improve your running. The exercises I will describe are designed to improve running efficiency, coordination, and speed. Unfortunately, they won't give you the bulging muscles if you're planning on impressing folks on the beach, etc. All that said, I would not hesitate to encourage runners to incorporate cross-training or upper body weight training as part of a total body fitness program to balance all the lower body work that running provides for their lower extremities.

***I recommend spending 10 minutes warm-up such as biking, walking or the elliptical prior to doing the following workout:***

- 1. The High Bench Step-Up:** (1) This exercise strongly develops the hamstrings, with complimentary development of the gluteals (the butt muscles) and the quadriceps. Simply begin from a standing position on top of the high bench (approximately knee height), with your body weight on your left foot and your weight shifted toward the left heel. The right foot should be free and held slightly behind the body. (2) Lower the body in a controlled manner until the toes of the right foot touch the ground, but maintain all of your weight on the left foot. Return to the starting position by driving downward with the left heel and straightening the left leg. Repeat for the prescribed number of repetitions, and the switch over to the right leg. Maintain absolutely upright posture with the trunk throughout the entire movement, with your hands held at your sides (with or without dumbbells).
- 2. One-Leg Squat:** (1) This exercise strongly develops the quadriceps and gluteals, with a complimentary boost to the hamstrings. To complete one-leg squats in the correct way, stand with the left foot forward and the right foot back, with the feet about one shin-length apart (your feet should be hip-width apart from side to side). Place the toes of the right foot on a block or step which is six to eight inches high. As in the step-up exercise, most of the weight should be directed through the heel of the left foot. (2) Bend the left leg and lower the body until the left knee reaches an angle of 90 degrees between the thigh and

lower leg. (3) Return to the starting position, maintaining upright posture with the trunk and holding your hands at your sides.

3. **One-Leg Hops in Place:** (1) This exercise builds strength and coordination in the entire lower extremity, including the foot, ankle, shin, calf and hip. The resilient bouncy nature of the exercise makes it the most specific of the three-extremely close to the actual movement involved in running. Simply start from the same position you used for the one-leg squat, with the toes of the right foot supported by a six-to-eight-inch block as shown in **Figure 5**. (2) Hop rapidly on the left foot at a cadence of 2.5 to 3 hops per second (25-30 foot contacts per 10 seconds) for the prescribed time period. The left knee should rise about four to six inches, while the right leg and foot should remain stationary as shown in **Figure 6**. The left foot should strike the ground in the area of the mid-foot and spring upwards rapidly. The hips should remain level and virtually motionless throughout the exercise, with very little vertical displacement. After hopping for the indicated time on the left leg, switch to the right leg and repeat the exercise.

<b>AN EIGHT WEEK STRENGTH TRAINING PROGRAM FOR THE 5K, 10K AND MARATHON</b>				
	<b>Weeks 1-2:</b>	<b>Weeks 3-4:</b>	<b>Weeks 5-6:</b>	<b>Weeks 7-8:</b>
<b>Exercise</b>	<b><u>Introduction</u></b>	<b><u>Strength-Endurance I</u></b>	<b><u>Strength</u></b>	<b><u>Strength-Endurance II</u></b>
<b>Step-Up</b>	15 Reps/No wt 15 Reps/No wt 15 Reps/No wt	15 Reps/10% 20 Reps/10% 10 Reps/15%	15 Reps/10% 10 Reps/15% 7 Reps/20%	25 Reps/10% 30 Reps/10% 20 Reps/15%
<b>One Leg Squat</b>	15 Reps/No wt 15 Reps/No wt 15 Reps/No wt	15 Reps/5% 20 Reps/5% 10 Reps/10%	15 Reps/5% 10 Reps/10% 7 Reps/15%	25 Reps/5% 30 Reps/5% 20 Reps/10%
<b>One-Leg Hops in Place</b>	10 seconds 10 seconds	20 seconds 20 seconds	10 seconds 10 seconds 10 seconds	30 seconds 30 seconds

**How to Read the Table:** For each exercise, note that you utilize two or three sets per workout. For example, during weeks 1-2 with the step-up exercise, you would complete 15 reps for each leg with no weight ("no wt"), rest for two minutes, complete 15 reps for each leg with no weight again, rest for two minutes, and then carry out a third set with 15 reps and no weight. After a rest, you would move through the three sets of one-leg squats and then finish the workout with two sets of one-leg hops in place. % represents the approximate percentage of body weight added to the exercise by carrying dumbbells in your hands.

**Progression:** After completing the above program, repeat weeks 3-8 using weights which are 5-10 pounds heavier.

**More Details on the Specific Strength Programs For Runners**

**Frequency:** Two times per week on non-successive days, such as Monday and Friday, or Tuesday and Saturday, immediately prior to speed training, running economy, or lactate-threshold sessions.

**Training Time Required:** Just 20 minutes per session, not counting warm-up time.

**Equipment Required:** (1) A sturdy bench of approximately knee height (2) A low step or block-about six to eight inches high, and (3) Free weights–dumbbells-in 3 to 5 pound increments up to about 10 percent of body weight.

**The Warm-Up:** Warm up for 10 minutes by performing light jogging, stretching, and range-of-motion activities for the trunk, low back, hips, quadriceps, hamstrings, calves and Achilles tendons.

**Exercise Technique:** Maintain an upright posture with your trunk at all times and use smooth, controlled movements, not-out-of-control jerks. Devote the first two weeks of the program to the development of proper technique. Don't always start your sets with the left leg; alternate between left and right. As your skill at carrying out the exercises improves over time, increase your movement speed to near maximum ***while maintaining balance and upright posture***. The idea is to exert high amounts of force in a short period of time, because that's what will give you an explosive foot strike during running and improve both your stride and frequency.

### 3 Are Enough: Stretches

1. **Leg Swing-Warm up Leg Swings:** Stand with weight fully supported on your left leg (you can use a hand on the wall, etc. for balance). Flex your right hip raising your knee to waist height, extend fully, then quickly swing up to starting position. Repeat without stopping motion and gradually increase speed but maintain smooth and coordinated movement through the full range. Repeat 20-30 times for each leg. Leg swings can also be performed with the knee extended. Start from same position at the hip only keep knee fully straight through the entire exercise. Same number of reps.
2. **Rotational Hamstring Stretch:** With your weight on the left foot and the foot turned outward approximately 45 degrees, place your right foot on a bench, stair, etc about waist height. Lean forward with your navel and shoulders (don't allow low back to round) until a good stretch is felt in the right hamstrings (no pain). While maintaining the stretch slowly rotate your knee in a clockwise, then counter clockwise direction for 20 repetitions each. Repeat with your left foot turned inward 10 degrees. Then reverse for the opposite hamstring.
3. **Rotational Plantar Fascia Stretch:** Stand barefoot with your left foot 2-3 inches ahead of the right. Place the bottoms of your toes in contact with the wall in front of you (sole of left foot on ground and toes on wall). Slowly rotate the left foot toward the big toe side (pronate) and then to the little toe side (supinate) for a total of 15 repetitions. Gradually shift more of your weight to front "stretched" foot and ankle will increase the intensity.

### ***Lactate Threshold Training***

Many runners, at this time of the year, are already thinking about ways to improve their next marathon, having just completed a fall one and experiencing that deep down feeling of knowing there's a better performance out there in the future somewhere (maybe Boston??). A study by a group of Dutch and Polish researchers studied blood-lactate levels as marathon runners ran at different speeds. Remember that it is the accumulation of lactate in our muscles that causes that familiar feeling of heaviness at the end of the race. The study demonstrated that running just 2-3% faster than marathon pace caused lactate levels to sky rocket. Bottom line, if we can raise lactate threshold running speed (LTRS) by as little as 3%, it could shave over 5 minutes off the clock of a 3 hour marathoner. To raise LTRS maximally, research suggests training close to your current LTRS is most beneficial. The following workouts will specifically address this:

*(#'s 1 & 5 are faster than LRS, #2 is at LTRS, and #'s 3 & 4 are just below it.*

1. 10-minute intervals at your current 10-K pace, with four-to-six minute recoveries.
2. 25-minute continuous runs at a pace about 12 seconds/mile slower than 10-K tempo (These are the tempo runs popularized by outstanding coach and exercise physiologist Jack Daniels).
3. Six-mile runs at a pace 24 seconds/mile slower than 10-K velocity.
4. Eight to ten-mile workouts at a tempo 35 seconds per mile slower than 10-K speed, which should also be about your planned marathon running velocity, and
5. 10K races and 15K races. 10-K events are slightly above threshold, while the 15K is usually right at LTRS. Regardless of your finishing place in either race, you win, because you can view the race as a workout which pushes your LTRS upward.

The research suggests that you bias your workouts toward the above workouts during the last 6-8 weeks before the marathon. It discourages running longer than 12 miles during the last 4 weeks before the race to allow adequate recovery from the high mileage training. In summary, research tells us we should focus on close to LTRS if we want to run marathons faster. These are more intense than long, slow runs but the increased speed should be just fine because research also tells us that average speed during a 6-10 mile run is a better predictor of marathon performance than frequency of long runs or total weekly mileage. The hardest part of all is that this comes down to the simple fact that we all become very comfortable with our own training experience and rituals and change is a risk. But, then again, we've all heard the saying "Big risk could mean big gains". Hope this offers some food for thought and maybe a little variety in your training. ***"Nothing ventured, nothing gained"!***