



FURMAN INSTITUTE OF RUNNING & SCIENTIFIC TRAINING

HOME	MARATHON TRAINING
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FACULTY	FURMAN CORPORATE SHIELD
COACHING	5K
FEES	
SIGN UP	
CONTACT	

Frequently Asked Questions about the FIRST Approach to Marathon Training

FIRST has received many inquiries from Runner's World readers about using the "Three Days A Week" marathon training schedule and about FIRST training studies. Here are answers to the most frequently asked questions.

Q. What is the difference between participating in the FIRST marathon training study and using one of the FIRST training schedules to prepare for a marathon?

A. Participants in the FIRST training study will run the Kiawah Island Marathon in December. Information about the study is available at our website (<http://www.furman.edu/first/marathon.htm>). There you will find participation eligibility and expectations along with how to apply for acceptance.

The FIRST site also provides training schedules (marathon and half-marathon); in particular, for the Spinx RunFest Greenville Marathon. These training schedules (<http://www.furman.edu/first/fmtp.htm>) may be used for any marathon. Many RW readers have indicated that they are planning to use the training schedules for other marathons (NYC, Marine Corps, Chicago, Richmond, St. Louis, etc.).

Q. Which FIRST marathon training schedule is appropriate for me?

A. FIRST has two marathon training schedules. The "Finish with FIRST" training schedule is designed for runners looking to complete their first marathon (<http://www.furman.edu/first/2.htm>). The "FIRST to the Finish" training schedule is for marathoners who are trying to get faster (<http://www.furman.edu/first/1.htm>).

Q. Does FIRST have a half-marathon training schedule?

A. Yes. It is posted on the FIRST website at <http://www.furman.edu/first/greenvillehalfmarathon2005.pdf>.

Q. I am very intrigued by the FIRST training program and noticed differences in the schedules posted on your web page vs. the schedule debuted in the August 2005 issue of Runner's World. I am wondering if the 16 weeks is enough? It seems the website schedules are a bit more intense, i.e. more 20 mile runs, more reps during speed work, etc.?

A. Your observation is correct. The RW schedule for interval workouts was simplified by Amby Burfoot to make it easily understood by the typical reader. The long runs were accurately reported. The reason that the website includes longer runs is that on our website there are two programs (FIRST to the Finish for those who have run a marathon and are training to run faster and Finish with the FIRST for novice runners). In our 2004 marathon training study cited in RW, we had novice runners as well as marathoners who weren't doing runs longer than 6 to 10 miles when the study began. For that reason, the schedule included only two 20-mile training runs. We didn't want our study participants injured or overtrained. Also, we wanted to make sure that they could maintain the recommended paces for key workouts #1 and #2. We prefer more 20-mile runs (6 to 8 in an 18-week training program). In the "Finish with First" training program, there is one 20 mile run and one 18-mile run. In the "FIRST to the Finish" training program, there are four 20 mile runs, two 18-mile runs and a 17-mile run.

Q. Is it possible to use the training schedule, if I have fewer than 18 weeks to train for the marathon?

A. Yes, count the weeks you have prior to the marathon and begin with that week number. For example, if you are running a marathon in 12 weeks and wish to follow the program, then begin with the workouts listed for Week 12 and continue following the schedule until race day. Be sure that you are trained to handle the long run distance for whichever week you begin following the schedule.

Q. How does the FIRST marathon training schedule differ from the many other popular training programs?

A. FIRST stresses quality over quantity. While the weekly mileage is less than most programs, the intensity of the training runs is higher. Runners following the program typically report that the recommended paces are achievable, but more challenging than what they generally have run in the past. Participants in FIRST training programs have reported that the faster running made the recovery days welcome.

Q. Will running only three days a week be sufficient preparation for the marathon?

A. No. FIRST has trained runners of varying abilities (from sub- three-hour finishers to five-hour marathoners) with success. Two cross-training workouts per week are an important part of the program. We recommend aerobic cross-training to supplement your running and to augment your aerobic fitness level. This includes stationary biking, rowing, elliptical, etc. workouts that are performed for the same amount of time as your typical running workout and at a similar intensity. Cross training will help maintain and promote your aerobic fitness and give your legs a rest from the pounding from the running. Cross-train on the non-key run workout days. Cross-train for the same amount of time that you might normally run.

Q. How do I determine the intensity level for my cross-training workouts?

A. For cross-training intensity you can use a HR monitor. For an equivalent running intensity expect your HR to be 8-12 beats per minute slower in cycling and 10-15 beats per minute slower in a swimming workout. You can also use perceived exertion and try to mirror your running intensity. You can add variety to your cross training workouts by making them similar to either an interval workout, tempo workout or long run workout. Match the intensity to the simulated running workout you choose.

Q. Do you recommend weight training as part of marathon training?

A. Weight training is somewhat valuable for running, but we primarily recommend it for general overall fitness. You just have to determine how much weight training you can do without it diminishing your running workouts. We usually do the weight training after runs or on the days that we aren't running.

Q. During the last week of training, the speed workout calls for 30 minutes easy with 5 x 60 seconds. What does the 5 x 60 seconds mean? Also, the tempo workout calls for 3 or 4 pickups. What pace should I run during those pickups?

A. 5 x 60 seconds means that in the middle of your 30 minute easy run, you should pick up the pace to about 85-90% of full speed for a minute, jog easily until you feel recovered, and repeat until you have 5 one-minute fairly hard, but controlled, efforts. Similarly, during the tempo workout, do three or four fast, but not all out, fast intervals for no more than a minute. These faster efforts will help to maintain your blood volume and leg turn-over that you have developed during the 16-week training program.

Q. I am going to run a hilly marathon; do I need to somehow incorporate hill training into my preparation?

A. The principle of specificity of training dictates that you need hill training to run a hilly marathon. All aspects of race conditions need to be simulated as much as possible -- time of day for training (as you near race day), climatic conditions (not always possible), and certainly terrain. In particular, try doing the long runs on hills. If the marathon has a preponderance of hills early in the race or late in the race, try to have your training runs mirror that terrain. Of course, hill running affects your training and race pace so your training paces and target race finish time may need to be adjusted from our predicted paces based on 10K race time.

Q. When you list a tempo run of 5 miles, does that include a warm-up and cool-down for a total of 7-9 miles?

A. For tempo runs, refer to the training program on our website which includes more detail than what the RW article indicates (<http://www.furman.edu/first/1.htm>). In general, for the tempo run, we use the first mile to gradually pick up speed so that the specified pace is achieved in the second mile. Of course, that may mean running a little faster than recommended pace in the middle of the workout to achieve the average pace recommended for the overall workout or we might use the first mile as a warm-up and then hold the recommended pace for the next five miles. This will vary depending on the time available for the workout.

We vary on cool down depending on the stress of the run. However, a cool-down is important. An easy mile jog, a mile walk, or 10 minutes of easy spinning on a fitness center bike are all good cool-down options

Q. I saw your training program in this month's RW magazine and have a question about the speed workouts. When you do repeats, how long do you rest in between?

A. The rest/recovery interval between speed intervals is specified in time (e.g. 90 seconds recovery of walking and jogging) or distance (e.g. 400 meters of walking and jogging). Walk and/or jog (as dictated by fatigue, heat, etc.) for the specified time or distance.

Q. I live in Knoxville, TN where the summer weather is hot and humid. It would be impossible for me to run in such weather at the suggested pace. Do you have some conversion factor that relates pace under different weather conditions, e.g. does 10K+75 seconds at 60 degrees equal 10K + 125 at 85 degrees? Any information about how I should proceed would be most appreciated.

A. Good question. There are tables that show the performance decrement due to heat. There's no question that the heat and humidity will slow your pace. However, the principle of specificity of training dictates that you need to run as close to race pace as possible. Because you will not be running your autumn marathon in 85 degree heat, it is not particularly valuable to train in 85 degree heat that causes you to run an additional 30 seconds per mile slower. To combat this problem we prepare for our Fall marathon by running early in the morning when the temperatures are typically 68 to 72 degrees with little radiant heat even though the humidity is high. There will still be a performance decrement, but the neuromuscular and biomechanical training will not be much different from your Fall training and racing. Something else you may want to consider is to drive to the mountains for your weekend long run. In 30 to 60 minutes we can be at a higher elevation where the temperatures are a good 5 degrees cooler. That makes a big difference

Q. I have never done interval training and I don't understand what to do when it says 6 x 800m (90 sec RI) or 12 x 400 (90 sec RI) or 5 x 1K (400m RI), etc.. Can you help me understand how to complete Key Workout #1?

A. 6 x 800m means to repeat an 800 meter run six times. In between the repeats, you will recover by walking/jogging for 90 seconds. After the 90 seconds of recovery then you will start the next (#2 of 6) 800 meter run. You run the 800 meters at the prescribed pace. The goal of the workout is to keep a small range of times for the 800 meters. For example, rather than a set like 3:00, 2:28, 3:04, 3:08, 3:09, 3:02 shoot for a more consistent range of times such as 3:02, 3:01, 3:02, 3:02, 3:03, 3:02. There should not be more than a couple of seconds difference in your times for the six repeat runs.

5 x 1K (1000 meters or 2.5 times around a 400 meter track) means five repeat runs of 1000 meters with a 400 meter walk/jog as a recovery between repeat runs.

In our studies, we have found that some runners find the track intervals difficult but find the long run pace easy and conversely, some find the track intervals easy and are very challenged with the long tempo and long run paces. Some runners have more speed than endurance and vice versa.

What we emphasize to the runners in our program is that we want the track intervals to have a very small range for the entire workout. After each week we adjust the target training times based on the most recent training performance. We attempt to find target paces that are realistic and challenging, but not so difficult that the runner is unable to recover for key workout #2. By insisting that the entire set of repeats be run with a range of only a couple of seconds, it pretty much ensures that the runner isn't overdoing it.

Q. When the schedule says 6 x (1 minute fast then 2 minutes easy) do you walk or something in between running that 6 times?

A. Run one minute fast and then 2 jog minutes slow, then one minute fast, two minutes slow, until you have done six one-minute fast segments. This is continuous running. With a 10 minute warm-up and 10 minute cool-down, this would be a 38 minute run (10 min. + 18 minutes [6 x (1 min. fast, 2 min. easy)] + 10 min. cool-down).

Q. Do I try to maintain the prescribed pace for the entire long run?

A. Even pacing is the most efficient strategy in racing, so to the extent that you can have your training even paced then the more likely that you will be able to employ that strategy in the race. Try starting your training runs a bit slower than the prescribed pace and then pick up the pace in the middle section of your training run. Also, try to have a strong finish over the last couple of miles of your long training runs.

Heart Rate Monitor Training

Q. I read about your program in Runner's World and want to give it a try... I do have a heart-rate monitor, though. Have you converted your program into target heart rates - % of maximum for each type of workout? I believe that would make it easier to attain and maintain a consistent pace for intervals and tempo runs.

A. FIRST faculty have used Heart Rate Monitors since 1985. Dr. Scott Murr did his Master's thesis on the effectiveness of using a HRM during endurance performance. We believe that a HRM can be a valuable training aid. There are just too many variables that influence heart rate. Since runners tend to race more on pace than HR, we think runners' training should be similarly based.

FIRST is familiar with 8 formulae, with supporting research, that estimate maximum heart rate (HRMAX). Knowing which formula to use can often be as tough as throwing darts in the dark (not recommended). The most commonly used formula to estimate maximum heart rate is $HRMAX = 220 - \text{age}$. However, the 220 - age formula may not be the most appropriate for all runners. In fact, there is more research supporting some of the alternate formulae for HRMAX than the 220 minus age formula.

Researchers have discovered that age-based heart rate formulas can be as much as 20 bpm off of actual maximum values. Using the "wrong" estimated HRMAX to base your training can lead to slow development and ineffective training.

Dr. Robert Robergs, a researcher at the University of New Mexico who has done extensive work on this topic has concluded that there is no acceptable method to estimate HRMAX. Therefore, we prefer that runners focus on maintaining pace rather than heart rate. In a race, you will not be running the same speed at the same heart rate throughout the race. Cardiovascular drift, due to increased heat storage and fluid loss, will cause the heart rate to increase as running time increases. If you rely solely on heart rate, you will be running slower at the end of your workout as your heart creeps higher. That's why it is difficult over the last part of a race to maintain the same pace; that is, you have a higher heart rate for the same pace. It requires more effort to maintain the same pace. We feel that you need to practice that in training so that you are able to tolerate that in a race.

News and Information



FIRST was featured in the August 2005 Runner's World. [Click here](#) to read the answers to frequently asked questions about the program.

"The Furman FIRST training programs are the most detailed, well-organized, and scientific training programs for runners that I have ever seen. For many runners, especially those hard-pressed to find time for their workouts, the Furman FIRST programs will also be the best."

- **Amby Burfoot**
- **Executive Editor, Runner's World Magazine**
- **1968 Boston Marathon winner**

About FIRST

What is FIRST?

The Furman Institute of Running and Scientific Training (FIRST) seeks to promote running as a healthy physical activity by providing training based on scientific principles. FIRST provides scientific and time-proven information on all aspects of becoming a better runner. The FIRST wishes to assist runners of all ages and abilities in the Greater Greenville area achieve their goals and potential by developing individually tailored training programs. We provide testing for the average to elite runner, believing that increased knowledge of personal fitness parameters facilitates precise development of personal training programs.

By Runners for Runners

As experienced runners and exercise physiologists, the FIRST staff understands the special needs of runners. The FIRST staff will work with runners to design an individualized program to improve running mechanics as well as maximize running performance. The training programs will be developed from scientific laboratory and field tests.

Runners will learn to:

- Maximize potential
- Train efficiently
- Avoid injury
- Set realistic goals
- Avoid over-training
- Improve the three primary determinants of performance
- Follow sound nutritional principles
- Develop a racing strategy
- Make each workout have a purpose
- Enjoy training and racing

FIRST Services, Programs and Fees

Laboratory assessments include:

- Maximal oxygen consumption
- Lactate Profile
- Running Economy
- Body composition
- Nutritional Analysis
- Individual and Team Coaching
- Lecture Series Presenting Scientific Running Principles (open to the public; free of charge)

[Extensive Fees Report](#)

FIRST Lab

FIRST Lab is a comprehensive battery of assessments that provides vital information about a runner. The battery of assessments includes Maximal Oxygen Consumption (VO₂ MAX), Lactate Threshold, Running Economy, and Body Composition. The four lab tests are completed in three sessions. A description of each of the four tests is available. [More FIRST Lab Info](#)

Half Marathon Training

- Don't wait to take walk breaks. By alternating walking and running from the beginning, you speed recovery without losing any of the endurance effect of the long one. Start with jogging one to two minutes and walking two to three minutes. As your training level increases you can adjust your run/walk ratio to running 5 minutes/walking one minute on your long runs.
- Be sure to do the running portion slow enough at the beginning of every run (especially the long run) so that you'll feel tired but strong at the end. The conservatism will allow you to recover faster.
- Every other day you can cross-train instead of walking. Cross country ski machines, water running, cycling, and any other other mode which you find fun and interesting (but non-pounding) will improve overall fitness.
- Stay conversational on all of your exercise sessions. This means that you should be exerting yourself at a low enough level that you could talk. It's okay to take deep breaths between sentences, but you don't want to "huff and puff" between every word.
- As the runs get longer, be sure to keep your blood sugar boosted by eating an energy bar (or equivalent) about an hour before exercise. Drink water continuously before and during exercise and with all food.

Half Marathon Training Schedule

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	3 miles
2	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	4 miles
3	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	5 miles
4	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	6 miles
5	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	7 miles
6	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	8 miles
7	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	9 miles
8	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	5 miles
9	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	10 miles
10	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	5-6 miles
11	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	11-12 miles
12	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	5-6 miles
13	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	12-13 miles
14	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	14-15 miles
15	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	5K Race
16	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	7 miles
17	walk/xt 40 min	run 30-45 min	walk or XT	run 30-45 min	walk or XT	off	Half Marathon