

The FIRST "3plus2" Program

Scott Infanger was sitting in his Nashville, Tennessee, apartment when the mail carrier delivered his August 2005 issue of *Runner's World*. Scott, a 29-year-old doctoral student at Vanderbilt University, had run five marathons with a personal best of 3:25, 15 minutes slower than the time he needed to qualify for Boston. The fact is that after running steadily faster times in his first three marathons, he had plateaued. One of the magazine's cover stories, about a 3-day-per-week running program that claimed it could help you run faster, seemed written with him in mind. Though he suspected it was nothing more than marketing hype, he decided to give the article a read.

Despite his initial cynicism, Infanger soon found himself genuinely intrigued. The article's author, former Boston Marathon winner Amby Burfoot, was extolling the program as the real deal. The article detailed how the program had been developed by exercise scientists and tested with real runners, who had improved their marathon times by an average

of 19 minutes during a 16-week training program. And not just 4:00 or 5:00 marathoners, but sub-3:00 marathoners, as well.

At the same time, a Washington, D.C., attorney, Aaron Colangelo, was flipping through his mail when the same cover article caught his eye: “Train Less, Run Faster.” Aaron had run multiple marathons with the same best time and, just like Scott, needed to knock off 15 minutes for Boston.

However, unlike Scott, he had decided that with his busy professional life, marathon training was too demanding to allow another attempt. Nonetheless, his curiosity took him directly to the article. *This might be exactly what I’m looking for*, he thought. Running 3 days a week would not be overwhelming, and he did enjoy biking and swimming, which could satisfy the program’s cross-training component.

Both Scott and Aaron read the entire six-page feature. Interested readers were pointed to the Furman Institute of Running and Scientific Training (FIRST) Web site for more information. Soon, both were on their computers and found that the institute was advertising for volunteers for a 16-week fall marathon training study. Applications were due in 10 days. Applications from the two Boston hopefuls were soon on their way to FIRST.

Scott and Aaron were two of the 27 participants selected from applicants across the country, from California to Massachusetts. Their next step would be to travel to Furman University in Greenville, South Carolina, and complete a laboratory testing battery that required being weighed underwater to determine body composition, and running on a treadmill to exhaustion in order to gauge maximal oxygen consumption and lactate threshold. Both Scott and Aaron wondered what all of this meant and how it would help their running. They found out when they received a packet with their test results and a 16-week detailed training program. The training programs specified for every workout how far each was to run, how fast, and with what recovery time.

Scott and Aaron were to perform the three weekly running workouts and two cross-training workouts exactly as specified and report their results via e-mail. They would then receive immediate feedback from the FIRST faculty, which would include any necessary modifications for the next week’s workouts based on how they were performing.

After 15 weeks of faithfully following the program, Aaron and Scott traveled back to South Carolina for their post-training program laboratory assessments. What would the lab numbers show? Had the targeted workouts resulted in an improvement? Would 3:10 be attainable?

After completing their exhaustive treadmill tests, each sat down with me to review the results. The physiological test data confirmed what they had reported in their weekly training reports—they were fitter and faster. Now it was time to develop a race strategy and determine a race pace. Because the faster times that they had seen in their training were consistent with their physiological test improvements, we told them that with smart pacing, a Boston qualification was not out of reach, but it would be tough. It would take a focused effort.

Ten days after their post-test in the Furman University Human Performance Laboratory, Aaron and Scott gave determined efforts at the Kiawah Island Marathon and quickly reaped the benefits of their disciplined 16 weeks of training. Both ran smart races with good pacing, with more than enough left over for a strong finish. Aaron was 30 seconds under 3:10, and Scott made his Boston qualifying time with a whole 9 seconds to spare.

Aaron's and Scott's performances, while impressive, are not exceptional. Rather, they are consistent with the advances that others have accomplished using the FIRST training method.

Can all runners benefit using the FIRST “3plus2” training program? Our research studies say, *yes*. Most of the runners in our training studies have improved both their race performances and their physiological profiles. Why? Simply put, the training programs are designed with the purpose of improving speed and endurance. The underlying concept of the FIRST training approach is quality over quantity. Most runners measure their training by the number of miles run, rather than how those miles were run. Our *Training with Purpose* programs provide structure and specific workouts tailored to your current fitness level.

As a result of the many letters from readers with questions about the training program and requests for advice, we developed this training book to provide runners with a complete guide for using the FIRST training method. This book is not a comprehensive compendium of running

research, knowledge, and training information. Those books have been written. Here, we have compressed our collective knowledge, experience, and research into a training method that provides specific workouts laid out in 16-week training schedules for races from 5-Ks to marathons. These concise and easy-to-follow training programs have been tested with runners of wide-ranging abilities. Along with the training schedules, we include answers to many of the most frequently asked questions that we have received from runners around the world.

WHAT IS THE FIRST PHILOSOPHY?

At the heart of the FIRST philosophy is the belief that most runners do not train with purpose. When runners are asked to share their typical training week and the objective of each run, they are at a loss as to explain why they do what they do. Not having a training plan that incorporates different distances, paces, and recoveries means that runners won't reach their potential. Nor will they garner maximum benefits from their investment in training time. The FIRST program makes running easier and more accessible, limits overtraining and burnout, and substantially cuts the risk of injury while producing faster race times. By focusing on efficient, purposeful training, FIRST enables runners to meet their goal of running faster without sacrificing job, health, family, and friends.

THE FIRST "3PLUS2" TRAINING PROGRAM AND ITS COMPONENTS

Three quality runs each week plus two cross-training workouts are the foundation of the breakthrough FIRST approach. The three runs—track repeats, tempo run, and the long run—are designed to work together to improve endurance, lactate-threshold running pace, and leg speed. For each run, FIRST prescribes specific paces and distances that are based on a runner's current level of running fitness. The three quality runs, including prescribed paces and distances, are described in detail in Chapter 4. Having a specific goal for each training run is another of the program's innovations.

FIRST's prescribed paces are usually reported by runners as being faster than their normal running speed. Generally, this is because our *Training with Purpose* philosophy favors quality over quantity, intensity over frequency, fast running over the accumulation of miles. If you want to run faster, you need to train faster. In fitness terms, you need to employ the principle of specificity. In addition to running less, what sets the FIRST program apart from other training programs is that it emphasizes a faster pace for the long runs than what other training programs typically recommend. In our studies, we've discovered that focusing on a designated, demanding pace for the long runs prepares runners physiologically and mentally for racing, particularly for the marathon.

The physiological value of this faster running is that it increases the muscles' ability to metabolize lactate. Why is this important? The accumulation of excess lactate inhibits aerobic energy availability for muscular action. By training at a higher intensity, the muscle adapts to this increased energy demand by developing the ability to use lactate as an energy source, rather than have it accumulate in the muscles and blood.

The FIRST training program differs from the typical running program not only by its emphasis on intensity but also by building in more recovery time between running workouts. Without sufficient recovery, it is difficult to have quality workouts. Muscles need time to recover from the stress of hard workouts. Stressing specific muscle fibers repeatedly, day after day, in the same pattern causes accumulated fatigue. In other words, running 6 miles, 5 days a week results in muscular fatigue, not muscular adaptation. However, using those same muscle fibers for different types of activities will permit recovery and recharging of the muscle's energy stores (glycogen). So you can engage in another aerobic activity and reap the cardiorespiratory benefits while the muscle fibers used in running are recharging for the next hard running workout. Chapter 7 explains further the importance of rest and recovery.

Many running programs ignore the benefits of cross-training in favor of running additional miles. FIRST's cross-training workouts not only enhance fitness but also add variety, which ultimately reduces vulnerability to overuse injuries. Plus, your training will be more interesting. Cross-training workouts at prescribed intensities increase bloodflow

around muscles, which in turn increases the muscle's ability to utilize oxygen and fat as energy sources for exercise. Using fat as an energy source spares the limited stores of carbohydrates (glycogen). Therefore, cross-training provides the same benefit as the additional running miles of other typical running programs. In Chapter 5, the cross-training workouts that are an essential part of the “3plus2” training program are described in detail.

WHERE'S THE PROOF?

Although we were convinced from our own experiences that these three running workouts, coupled with vigorous cross-training, would help runners improve both their race times and overall health, we were eager to conduct training studies with a variety of runners. We had designed the training programs to help runners train effectively and efficiently while helping them avoid overtraining and injury. But could we prove that the programs were, in fact, doing all these things?

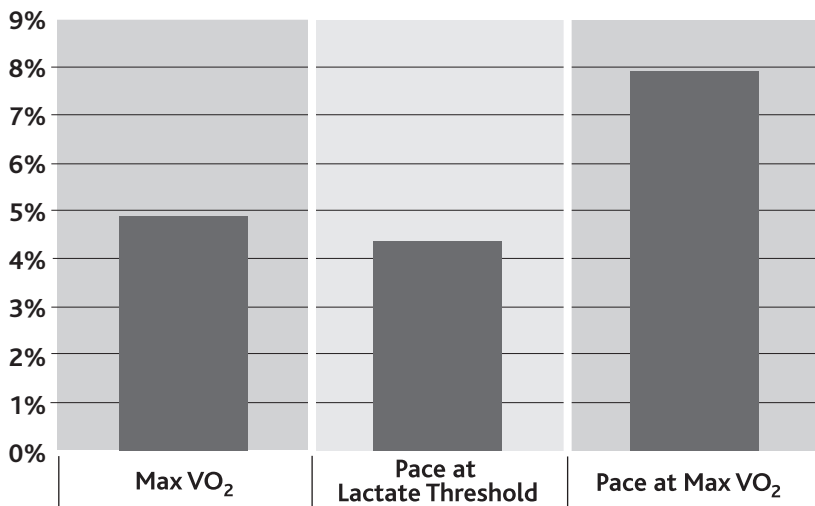
Exercise science studies testing the effectiveness of training regimens are typically conducted in laboratories, where potentially confounding variables can be controlled. We stewed over how to design our studies. Our goal was to test a program that would enable us to generalize the results to the typical runner, not just male college freshmen. Many research studies involve male college freshmen as subjects because they are easily accessible to professors. We wanted to test our programs on “real” runners—fast, slow, male, female, young, old, novices, race veterans—performing their training without direct supervision. That required giving up control. We also wanted to find out whether our program worked under the conditions that real runners would face—finding an accessible running track, having a measured running course for tempo and long runs, and being able to maintain a specific pace for a workout.

We posted announcements on our Web site and at local running stores, fitness centers, and running clubs, hoping to attract a wide array of runners. All three of our studies attracted more than twice as many applicants as the 25 spaces that were available in the study. We promised runners free laboratory fitness assessments, individually designed train-

ing programs, and weekly feedback on their training reports in exchange for a promise to adhere to the training program and file a weekly report.

We began the fall 2003 study by having all of the selected applicants come to Furman University's Human Performance Laboratory for a battery of fitness tests. After completion of the tests, subjects received an analysis of their fitness level and a 4-week training schedule. Adjustments were made to their weekly training regimens after their weekly training logs were evaluated by the FIRST coaches. After 4 weeks, they received another revised training schedule to match the changes in their fitness levels based on their reported training workouts. After 16 weeks of following the individualized training programs that were given to them, the runners were brought back to our laboratory for a replication of the laboratory fitness assessment. The results confirmed that the runners had improved their maximal oxygen consumption by an average of 4.8 percent, their running speed at lactate threshold by 4.4 percent, and their running speed at maximal oxygen consumption by 7.9 percent. These three critical running performance variables had been enhanced by following a three-quality-runs-per-week training program. We now had data to support our personal experiences.

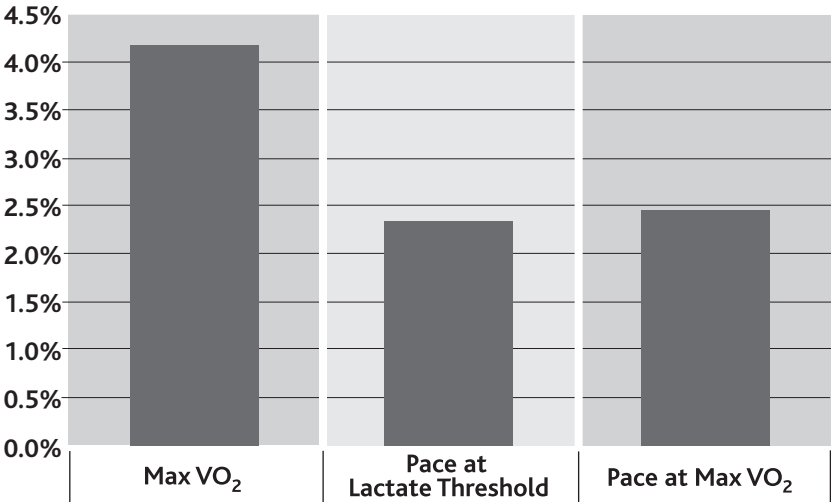
IMPROVEMENT IN KEY PERFORMANCE MEASURES 2003 MARATHON STUDY



In 2003, we had been worried that if we insisted that runners complete a marathon at the end of our 16-week study, we might not attract enough subjects. However, the study participants enthusiastically endorsed the program, with many asking if they could continue training with us and wanting to know if they could be in the next study. We decided that requiring participation in a marathon would not deter participation in a replicated study. Plans began immediately for a fall 2004 study to further test the effectiveness of our training program. We had shown that this program would improve a runner's fitness. Would it improve what really matters to them—their marathon finish time?

In 2004, as we had done for the previous study, we tried to select a wide array of runners from the large pool of applicants for the marathon training study. The 25 selected runners began by visiting our Human Performance Laboratory for the same battery of fitness tests that we had utilized in the 2003 study. After we collected and analyzed the data, we developed individualized training programs for each participant. After completing 15 weeks of training, 23 runners—one had dropped out due to injury and another due to a personal problem—returned to the laboratory to repeat the fitness tests. The results showed that they had improved

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their maximum oxygen consumption by an average of 4.2 percent, their lactate threshold running speed by 2.3 percent, and their running speed at peak oxygen consumption by 2.4 percent.

A week later, we met the 23 runners at the Kiawah Island (South Carolina) Marathon. We were nervous and preoccupied about how they would perform. Would the eight who had never run a marathon be able to finish? Would the veteran marathoners who were accustomed to running 5 and 6 days a week be able to perform as well when only having run 3 days a week for the past 16 weeks? Twenty-one of the 23 attempted the marathon, while the other two participants decided to run the half-marathon because of setbacks that had prevented them from doing all of the workouts. We met the runners at the halfway mark, recording their times and providing encouragement. Although they were on their assigned paces at that point, we knew from our own marathoning experience that feeling good and running well after 13.1 miles provides little insight as to what your ultimate marathon performance will be.

Our first finisher was under 3 hours, ninth place overall, and more than 24 minutes faster than his previous best marathon. We were thrilled that his success was mirrored by the other participants in our study. The eight first-time marathoners finished with very respectable times. For those who had previously run a marathon, the average finish time improvement was 19:48. By all measures, our training study was a resounding success.

Amby Burfoot, executive editor of *Runner's World*, had taken an interest in our institute and our training program. He knew about our study and was eager to see the results. Once he reviewed the data and read the participants' evaluations of the study, he traveled to Greenville to interview us about the study and to talk to the participants about their experiences. He published the feature article on the program that Scott Infanger and Aaron Colangelo would read and eventually follow. In that article, he reported on how the runners had significantly improved their marathon times with our training program.

What followed that August 2005 article was a flood of requests to participate in our fall 2005 marathon training study. We were shocked by the applications from all across the country. It became clear after

phone conversations with inquiring applicants that runners were excited about a program that improved marathon times by nearly 20 minutes. After reviewing the applications for our study, we chose runners from 11 states. Applicants were eager to participate in the study, even though it would entail travel to Greenville from all over the eastern half of the United States.

As with the previous two studies, the runners completed a battery of fitness tests in our Human Performance Laboratory in August and again just after Thanksgiving to measure any changes. They followed a 16-week training program tailored to their running fitness as determined by their laboratory test results and a running performance test. To measure their fitness level and to determine the paces for their training workouts, we required each to complete a workout that consisted of running 1600 meters three times with a 1-minute recovery between each of the 1600-meter runs.

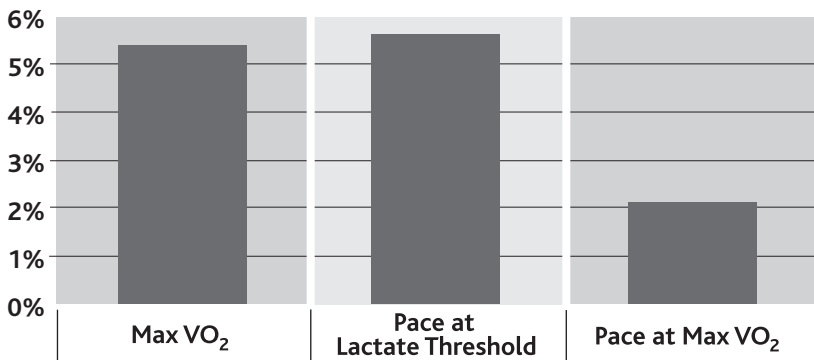
Even though we had 2 years of proof that our training program enabled runners to improve their fitness and race times, we were concerned about the expectations of the runners in our latest study. Soon after their arrival in Greenville for their initial testing, they began commenting that they were hoping for the same improvement as the participants in the study reported in the *Runner's World* article. Once again, we were anxious about the outcome of our study. Perhaps these runners would be different from the previous group. Because of their willingness to invest their resources and trust in our program, we were feeling a little more pressure to deliver the results they'd read about in the *Runner's World* article. It's one thing for runners within the county to visit our campus for testing and training. It's quite another for runners to fly to Greenville, South Carolina, get a taxi to bring them to the Furman University campus to be tested in the Human Performance Laboratory, get a taxi back to the airport, and fly back to Boston, New York, or Washington, D.C. But that's what these runners did. We realized that these folks were serious about getting faster. Did they have as much room for improvement as the previous two running study cohorts? Would restricting these veteran marathoners to 3 days a week of running improve their marathon times?

Because these veterans had more extensive running histories and more of them were accustomed to running 5 to 7 days each week, we were convinced that the cross-training was an essential component for this group. For that reason, we made the cross-training mandatory for participation in the study.

We began testing the study participants after completion of 15 weeks of training. In test after test, we saw improvements similar to those we had experienced in the two previous studies. We followed those tests with counseling sessions on race strategies and the all-important decision of what pace to run: Try running too fast and you'll fall apart at the end; choose a pace that's too slow and you'll fail to run to your potential. We used the results of the laboratory tests and the 15 weeks of training data to counsel the runners on challenging, but realistic, goal finish times.

For a variety of reasons—injuries, and personal and professional conflicts—we ended up with 17 runners who had completed the training program at Kiawah on the morning of the marathon. Of those 17 runners, 14 had run marathons before. As with the previous year, we checked their time at the halfway point and again with 2 miles to go. Our first runner finished under 3 hours, with a personal best time. Personal best times became common for our runners. Of the 14 who had previously

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run a marathon, 12 had personal best times. One runner, who had achieved his personal best marathon time 27 years before, in 1978, did not achieve a personal best time but did improve upon his times from the past 10 years. All three of the first-time marathoners ran well and were pleased with their finish times.

In all three studies, the runners showed significant improvement over the 16 weeks of training. All three running performance variables showed statistically significant improvements. And, most important to the runners themselves, each improved on at least one of the running performance variables. You can read more about these studies' results in Chapter 6.

The three-quality-runs-per-week training program enabled all of the first-time marathoners to finish, very much satisfied with their performance times. More impressive were the personal best times recorded by more than 70 percent of the veteran marathoners. Running only 3 days a week, coupled with 2 cross-training workouts, enabled even veteran marathoners who were accustomed to running 5 or 6 days a week to improve their physiological profiles in the laboratory assessment, as well as to improve their marathon performances.

Training with Purpose means having workouts designed to specifically target the determinants of running performance. These studies indicate that our “3plus2” training program is an efficient and effective way to get fitter and faster.

WHY DOES FIRST APPEAL TO RUNNERS?

Runners tend to have more confidence in methods that their training friends have used successfully, and not those of Olympic champions. The programs in this book have been used successfully by runners of vastly varying abilities. Runners also like structure and accountability. The FIRST training programs specify both distance and pace for each workout, so there is a clear measure of performance for each training run. Running 7 miles is one thing, but running 7 miles only 30 seconds slower than 10-K pace is quite another.

CAN ALL RUNNERS BENEFIT USING THE FIRST TRAINING PROGRAM?

Our research says *yes*, for age-group runners. This training program was designed for regular runners aspiring to improve their running. The FIRST training programs have been used to improve running performances by 5:00 marathoners and sub-3:00 marathoners, by runners preparing for their first 5-K or marathon, and by runners in their early twenties as well as veterans in their sixties and seventies. In addition, the “**3plus2**” training program is extremely flexible and can be adjusted to fit all types of runners, from those who have limited time to train to those who make training a major focus in their lives.