

# UNBREAKABLE RUNNER

Unleash the power of  
**strength & conditioning**  
for a lifetime of  
**running strong**

*Crush  
Every Race  
from 5K  
to Ultra*

**T.J. MURPHY &  
BRIAN MACKENZIE**  
FOUNDER OF CROSSFIT ENDURANCE

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This book is intended as a reference only. The information it contains is designed to help you make informed decisions about your own health and fitness programs. It is not intended as a substitute for professional medical or fitness advice. As with all exercise programs, you should seek your doctor's approval before you begin.

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# INTRODUCTION

## A NEW WAY UP TO THE MOUNTAINTOP

Nearly every coaching plan available in the running world today is an iteration of a model developed by famed New Zealand coach Arthur Lydiard (1917–2004).

Lydiard’s runners spent at least 8 weeks—often more—building an aerobic base. The essential tool for building this base was the standard training run. Although many training plans refer to this workout by the acronym “LSD” (for long, slow distance), Lydiard did not intend these to be easy jogs; he intended them to be up-tempo strength runs. But whether you were an 800-meter runner or a long-distance athlete, you ran at least 100 miles per week during this 8-week period, punctuated by a weekly long run of 20 miles or more.

Following this base-building phase came a month of hill work during which runners used a form Lydiard called “springing.” This was a kind of bounding that prepared runners for the speed phases of the program. After 4 weeks of hill training, Lydiard’s runners moved on to traditional speed work, running intervals on a track, followed by a peaking period that was intended to bring them to their best possible performance.

Lydiard's method won his runners six gold medals in the 1960 Olympics and ignited what would become the Lydiard era. He spent the following decades establishing his philosophy in countries such as Finland, Japan, and Mexico, each of which had its day as a world-beater. Where Lydiard went, gold medals followed.

So in 1989, at age 26, when I decided to try a marathon, I naturally decided to train the Lydiard way.

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*The CFE program is about two words you do not hear much about in traditional programs: health and sustainability.*

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I used a derivative plan that included a base-building phase, a hill phase, and a speed phase. The plan prescribed a long run every other week, which slowly increased to more than 20 miles. The speed phase included a session of mile repeats, peaking with a total of more than  $10 \times 1$  mile for a single workout.

The program was, I had to admit, pretty boring, especially the track work. I spent a lot of time going around in circles. But the method worked for me. I ran my first marathon in 3:24, my second in 2:52, my third in 2:49, and my fourth in 2:38.

This success cemented my belief in the Lydiard model of training. Unfortunately, though, that success was not long-lived. After my fourth marathon, I started to find myself dealing with injuries between occasional bouts of successful running. Still, I remained a staunch disciple and defender of Lydiard and the high-mileage work ethic, for which author John L. Parker coined the phrase “the Trial of Miles.”

For years I kept trying to regain the ability to carry out the Trial of Miles. I added core training, chiropractic and physical therapy, stretching, icing, and anti-inflammatories to my program but gained only minimal relief from injuries. Yet somehow I didn't see a problem with what I was doing; injury was just a necessary hardship to be accepted along with the success.

After meeting Brian MacKenzie and listening to what he had to say, I started to rethink my loyalty to the Trial of Miles. The more I listened, the more I found that MacKenzie was not some ill-informed guru with eccentric beliefs about training that had no relevance for or connection with the “real” running world. Rather, he was thinking hard about and discussing the running community's core topics, from volume to health, running form, diet, and stretching. As a journalist, I quickly saw how this information—the monumental paradigm shifts taking place in the ideas behind run training—could be valuable to many readers, and a book project began to take shape in my mind.

MacKenzie, meanwhile, was frustrated by the tremendous gap between what he was teaching and what he was perceived to be teaching by much of the outside world. Part of the problem seemed to stem from the failure of many critics to differentiate between CrossFit, a general fitness program, and CrossFit Endurance (CFE), MacKenzie's sport-specific program that has CrossFit-style workouts as one of its pillars but is also much more.

For some critics, the mere presence of CrossFit strength workouts within a run-training program raises concerns. But MacKenzie is not the first coach to encourage runners to add elements such as lifting weights and performing high-intensity circuit work to their training. Nor is he the first coach to advocate gymnastics training for runners or to emphasize speed endurance over high mileage. In the 1950s and 1960s, Percy Cerutti—coach of Olympic gold medalist Herb Elliott—

embedded gymnastics and weight training in his training program. In the 1980s, Peter Coe—coach of Olympic gold medalist Sebastian Coe—rejected high-mileage theory in favor of heretical principles bound to speed endurance and circuit training.

Other critics complain that MacKenzie’s program hasn’t achieved Olympic success in the way that Lydiard’s method has. The criticism is not inaccurate; however, it is also not a fair way to judge the program because MacKenzie’s focus has been not on elite runners but rather on the mass of runners of average ability. These are athletes who run for the love of it, perhaps wanting to pursue better health or enjoy racing but with time restrictions that come with having a job or a family. MacKenzie tried to figure out how these runners could boost performance and still enjoy a lifelong, injury-free running career.

The final frustration for MacKenzie came when a 2012 *Outside* magazine story on him included a basic CrossFit Endurance training schedule. It was misunderstood by some readers to be a marathon training plan. This confusion reinvigorated CFE naysayers, launching a fresh Twitter attack.

Before long, MacKenzie and I decided to combine our complementary projects into one book. I would examine the foundational mechanics of MacKenzie’s program from the point of view of a traditional runner who has spent time studying and using it. MacKenzie would produce training plans for the essential racing distances, illustrating how an athlete puts CFE theory into practice to prepare for an event.

## What Is CrossFit Endurance?

As mentioned, MacKenzie works hard to overcome assumptions that some people make about CrossFit Endurance—such as that it is

a bodybuilding routine, or that it is dangerous. Sometimes they simply aren't sure what difference exists between CrossFit and CFE. So for starters, what exactly is CrossFit Endurance?

CrossFit is a strength and conditioning program created by Greg Glassman. As defined by Glassman in the *CrossFit Journal*, CrossFit consists of “constantly varied functional movements executed at high intensity across broad time and modal domains.” Consider the person who goes to a gym three times a week and performs the same 25-minute circuit of machines that isolate specific muscle groups, completing 2 sets of 10 reps for each exercise. Rest breaks occur between each exercise and set, rendering the workout low in terms of intensity. He or she does this every week, year after year, using the same machines, like the quad extension machine and the biceps curl machine, and always in the same order.

CrossFit is the polar opposite. Rather than using machines that isolate a muscle, CrossFit uses compound functional<sup>1</sup> exercises, such as burpees, that recruit a swath of muscle groups. Workouts constantly vary: What you do this Tuesday will be vastly different than what you did the previous Tuesday. Workout lengths range from a couple of minutes to 7 to 20 minutes; only rarely do they last 20 minutes or longer. There are no rest breaks. If it's a 10-minute workout consisting of push-ups, running intervals, and power cleans, then you move from set to set as quickly as possible. This mixture of compound movements with little or no rest ratchets up the intensity.

Along with an emphasis on healthy eating, that is the basic CrossFit program. The most important thing to know about CrossFit is that it is intended to develop high levels of fitness and health and an all-around athleticism. It's *not* sport-specific.

CrossFit Endurance, however, *is* sport-specific. A CFE running program, as Brian MacKenzie has developed it, prepares a runner

for a race by combining specific running workouts, strength workouts, and CrossFit metabolic conditioning workouts. As MacKenzie asserts, the use of CrossFit workouts—with their myriad health and athletic benefits—allows a runner to obtain equal if not greater performance results while simultaneously decreasing the chance of injury.

So what results can CFE runners hope for? Under the CFE method, they can expect the following:

- Sustained or improved performance while running fewer miles overall
- Reduced injury risk as “junk” mileage is replaced with functional fitness workouts that train the same energy systems
- Increased explosive power and speed
- Less damage to mobility and range of motion through incorporating workouts that improve range of motion in the joints and muscle tissues
- Increased production of human growth hormone, which helps counter the natural loss of muscle mass that comes with age
- Revved-up fat-burning metabolism to burn excess body fat
- Improved coordination of upper- and lower-body muscle groups through the inclusion of compound movements in training
- Better race performance through greater strength, improved form, and greater running efficiency

All that probably sounds pretty good to you—maybe even a bit *too* good. Is there proof that CFE can deliver results? We will discuss

some of these effects in later chapters, but first, let's take a closer look at training with intensity.

## How Is This Possible?

As discussed earlier, most long-distance training plans adopt the standard Lydiard-based training model, which has high mileage as its cornerstone—the more miles, the better. There's no disputing that Lydiard developed a pathway for success, which he described in detail in his book *Running to the Top*. But is the high-mileage model the only way to the top? Or the healthiest?

Lydiard argued vehemently that it was, but not everyone agrees. For some, the risk of injury is not worth the benefits that high mileage bestows. For these runners, it makes more sense to make every step count than to take as many steps as possible.

Challenges to the Lydiard method did not start with MacKenzie. One of the first came in the 1980s from coach Peter Coe, who adopted a type of high-intensity interval training (HIIT) for his son, middle-distance runner Sebastian Coe. Their plan kept Seb's total mileage under 50 miles per week and included fast 200-meter repeats with 30 seconds of recovery between the fast segments. They also included weight training movements and plyometric exercises in a routine that looked similar to the typical CrossFit workouts one might see in a gym today.

How did this renegade training method work out for Seb? He won four Olympic gold medals in the 1980s, including gold in the 1500 meters in both 1980 and 1984. He set eight outdoor and three indoor world records in middle-distance track events—including, in 1979, setting three world records in the space of 41 days. The world record he set in the 800 meters in 1981 remained unbroken until 1997.

Even Lydiard would have had to admit that this method worked out pretty well for Seb, despite his relatively light mileage totals.

The HIIT approach has gone under the microscope as well, with scientists examining its influence on athletic performance. In a 1996 study, Izumi Tabata and his team tested the effects on athletes of 20 seconds of ultra-intense cycling followed by 10 seconds of rest, repeated 8 times, for a total testing time of about 4 minutes. Athletes using this method performed four 4-minute workouts per week and added another day of steady-state, lower-intensity cycling.

By the end of the study, the athletes using the HIIT method had obtained gains similar to those seen in a group of athletes who did only steady-state training, 5 times per week. While the steady-state group had a higher  $VO_2\text{max}^2$  at the end, the HIIT group had started lower and gained more overall. These findings suggest that had all the athletes started at the same level, the HIIT-oriented group would have ended up with higher  $VO_2\text{max}$  scores. Also, only the Tabata group had gained anaerobic capacity benefits—meaning they had added not just endurance but also strength.<sup>3</sup>

A 2009 study by Martin Gibala and a team at McMaster University in Canada also took a close look at HIIT. Their study on students incorporated a 3-minute warm-up, followed by 60 seconds of intense exercise and 75 seconds of rest, repeated for 8 to 12 cycles. The total workout time ranged from 20 to 29 minutes, with the students repeating the routine 3 times per week for 2 weeks.

By the end of the testing period, subjects using this method obtained similar adaptations to the control group that used a “much larger volume of traditional endurance training.” As the Gibala team concluded, “Given the markedly lower training volume in the sprint-interval group, these data suggest that high-intensity interval training is a time-efficient strategy to increase skeletal muscle oxidative

capacity and induce specific metabolic adaptations during exercise that are comparable to traditional endurance training.”<sup>4</sup>

In other words, with HIIT, you can get the same results as with high-volume training, but with less training.

These examples illustrate a central idea behind MacKenzie’s program, which trades long aerobic runs for short, hard bouts of effort. But there is more to the CFE approach.

CrossFit Endurance is not limited to incorporating HIIT-based training principles, although that is central to the program. The CFE approach takes a much broader view of fitness than did Lydiard, or even Peter Coe. At its core, the CFE program is about two words you do not hear much about in traditional programs: health and sustainability.

As you’ll discover in later chapters, a CFE athlete does not just run; he or she also works on developing running skill, balance, and flexibility. A CFE athlete also focuses on nutrition and mobility.

Why? Because ultimately, a CFE athlete is not just someone who runs and races well; he or she is someone who is, first and foremost, healthy and strong. As a result, a CFE athlete can also run very well and continue to do so injury-free.

## **Does CFE Work for Long-Distance Runners?**

At this point, you might be convinced that a CFE approach may work for short- and middle-distance runners, but perhaps you wonder if it would work for longer distances. Can CFE really help marathoners? Or ultramarathoners? Those distances attract an almost reverential appreciation for repetitive motion and long training runs. How can a long-distance runner avoid running long distances and still expect to race strong?

The case for applying CFE principles to long-distance training and racing is actually even more compelling. In fact, the longer the distance, the more sense CFE makes.

The reason is the catch-22 that long-distance runners often face: the idea that to become a better runner, you need to run. A lot. But the more you run, the more likely you are to get injured and not be able to run.

The legendary running coach Jack Daniels has long counseled caution when it comes to high-mileage training. Daniels, who has been studying middle- and long-distance runners since the 1960s, recently conducted a survey of the first generation of runners that he took notes about. In 1968, as part of his dissertation research, Daniels had tested 26 elite long-distance runners. He retested the entire group in 1993 and tested it again in 2013. What results did Daniels find?

“Those that are the healthiest and fittest today,” he says, “are the ones who missed the most days of running over the past decades.”

In talks, Daniels often poses the following hypothetical question to a room full of runners: Consider two different training paths, one that requires 30 miles per week of training and another that requires 60 miles per week. Both will get you to a sub-5-minute mile. Which method would you pick?

For Daniels, the obvious choice is the plan with lower mileage. “Why would you pick 60 miles per week if you can accomplish the goal with 30? That’d be stupid,” he says. “Do the least amount of work to get the maximum benefit.”

Nevertheless, many of the runners to whom Daniels speaks prefer the option with more mileage. Why? Perhaps it’s because of the deeply held historical regard for how high mileage leads to marathon excellence.

There is the impressive Lydiard medal count, detailed above. In the 1970s, when runners such as Frank Shorter and Bill Rodgers emerged as the greats during the first running boom, both were known for triple-digit weekly mileage levels. A decade earlier, Buddy Edelen ran 140 miles per week during training and set the world record in the marathon in 1963, logging a 2:14:28.

The rationale behind this training method wasn't just anecdotal. It was based on a highly regarded principle called the "rule of specificity." Under this dictum, the only way to become better at a given activity is to practice that activity.

The rule of specificity has often been cited to support the idea that runners should spend their training time running rather than on other forms of exercise. To get better, runners have to run. Period.

But while this approach has provided us with some great elite performances and new world records, it has also resulted in rampant injuries among those same runners as well as among the nonelites who try to emulate them. This seems like a high—and frustrating—price to pay.

## **Is CrossFit Endurance for You?**

Is MacKenzie's way the only way to train? Certainly not. Although MacKenzie has been accused of preaching that his method is "the one true way" and that all elite athletes should be training like this, I've never heard him make such a sweeping declaration. In fact, the line he uses at seminars expresses quite the opposite: "There's more than one path to the mountaintop."

What MacKenzie is offering is an alternative. Yes, it is an alternative that he believes in fiercely, since it brought him back to health after his own high-mileage ultrarunning days left him beaten and

destroyed. But he does not suggest it is the only path. Rather, the CFE model presents an alternative method of training that is useful for a broad range of runners.

First, it is for runners who find themselves in the situation both MacKenzie and I were in: the disheartening cycle of the endlessly injured. According to a Harvard study from 2012,<sup>5</sup> 79 percent of runners deal with an injury each year. And with nearly 10 million Americans running more than 110 days per year,<sup>6</sup> three out of four injured means a whole lot of damaged runners, many seeking help—and forking over lots of cash—in sports medicine clinics.

CrossFit Endurance offers an empowering alternative to that unpleasant roller coaster of success, then injury. First, it is a training program that requires less time and less pounding on the pavement, reducing the chance of injury. More important, it is the means to building and sustaining overall good health.

Prioritizing health is the centerpiece of MacKenzie's CFE program. He believes not only that this is the right goal for the long term but also that this approach to creating good health is the best route toward achieving top performance. The program's low-volume, high-intensity training model is based on the following pillars:

- *Developing running skill:* Learn how to reduce the wear and tear of running through the development of good mechanics.
- *Building running endurance without creating injuries:* Avoid injury by avoiding the miles that hurt you rather than help you.
- *Building functional strength, conditioning, and mobility:* By executing varied, functional movements at high intensity, you will build an all-around athletic foundation and state of health that will support faster, healthier running.

- *Focusing on nutrition:* Learn how to feed your body the fuels it needs to enhance health, ensure recovery, and prepare for peak performance.

## Who Can Benefit from CFE?

Maybe it is a nagging or debilitating injury that's brought you to this book. Or maybe it is frustration. Perhaps you're not achieving what you'd hoped to accomplish. You've tried other training plans, but they all seemed vaguely similar, and none of them really worked, at least not for long.

Maybe you're curious. You've heard a lot about CrossFit, have friends who swear by it, and wonder if CrossFit Endurance can add something meaningful to your routine.

Or maybe you're a CrossFitter who wants to improve your endurance in order to more effectively run and race.

Whatever brought you here, you're in the right place to learn what CrossFit is all about. In the coming chapters, you'll discover the how and why of CFE, and by the time you reach the end, you'll be ready—should you choose—to become a CFE athlete yourself and to look forward to your next race with the power of CrossFit Endurance behind you. All that is required is that you keep an open mind and a willingness to consider a new approach to your training.

But an open mind does not mean checking your brain at the door. As CFE founder Brian MacKenzie says when challenged on his training philosophy: “Don't take my word for it. Try it out.” In other words, be your own scientist and your own experiment.

The contrast between the CFE approach and other training programs disturbs some, but Brian MacKenzie isn't concerned. He's not

afraid to shake things up, question accepted conventions, and let the runner decide which approach makes the most sense.

This book will explore the facets of CrossFit Endurance in detail and present basic drills, skills, and methods for getting started with a CFE program. An advantage of CFE's design is that being stronger, having better form, and remaining injury-free naturally increase the chances of running faster, so we'll conclude with several training plans that target specific race distances.

Our intent is not to tell you everything there is to know about these concepts but to provide an overview of the basic mechanics involved in CrossFit Endurance and guidance on how to incorporate them into your own running. Along with these new ideas, we offer some simple experiments so you can test-drive them on your own.

As you make your way through this material, keep in mind that you don't need to adopt every concept and bit of advice presented here. While we do recommend trying out the full CrossFit Endurance program, feel free to incorporate the skill work or strength and conditioning components into your normal schedule to see how they work for you. Doing even a part of this program can lead to improvements in your running, health, and performance.

By the end of this book, we hope that we'll have triggered a more informed conversation about what CrossFit Endurance is all about and how adopting CFE into your program can set you on the path to becoming an unbreakable runner.

# 1

## INDESTRUCTIBLE RUNNING FORM

*Sure, you can point to great runners who seem to be an anomaly form-wise. But I believe the best runners with the longest careers are those who have the best form.*

—ALBERTO SALAZAR

In CrossFit Endurance, the idea of approaching running as a skill is more than recommended: It is an essential, high-priority task, emphasized so that a runner both marginalizes the risk of injury and maximizes performance.

### **Born to Run or Made to Run?**

Christopher McDougall opened up a vigorous discussion of form and natural running in his best-selling book, *Born to Run*,<sup>1</sup> in which he describes the legendary ultradistance runners of the Tarahumara tribe who live in Mexico's remote Copper Canyon. Instead of wearing shoes, these runners use homemade footwear crafted from pieces of tire tread. McDougall's description of the Tarahumara and his discussion of the benefits of barefoot running have sparked a debate that continues to rage about what exactly constitutes good running.

## ABOUT THE AUTHORS



◀ **T.J. MURPHY** started his career in publishing as an assistant editor for *Triathlete* magazine in 1996. Before that, he held a series of odd jobs that turned out to be part of an education that he has since drawn upon: bike messenger, sports massage therapist, running shoe salesman, and unpaid assistant running coach for the Golden Gate Triathlon club. His magazine career has included stints as editor in chief for *Triathlete* magazine and *Inside Triathlon* and as editorial director of *Competitor* magazine. In 2012, he chronicled his personal odyssey into strength, conditioning,

and mobility in his book *Inside the Box: How CrossFit Shredded the Rules, Stripped Down the Gym, and Rebuilt My Body*.



◀ **BRIAN MACKENZIE** is a world-renowned strength and conditioning coach and the innovator of the endurance/strength and conditioning paradigm. He is the author of

*Power, Speed, ENDURANCE* and creator of CrossFit Endurance ([www.crossfitendurance.com](http://www.crossfitendurance.com)), which specializes in movement with an emphasis on running, cycling, and swimming mechanics. MacKenzie and his program have been featured in *Competitor* magazine, *Runner's World*, *Triathlete* magazine, *Men's Journal*, *ESPN RISE* magazine, *The Economist*, Timothy Ferriss's *New York Times* best seller *The 4-Hour Body*, *Men's Running UK*, *Los Angeles Sports & Fitness* magazine, and *Riviera* magazine. MacKenzie has consulted with several teams, including the 2012 Western Athletic Conference Champions San Jose State Women's Swim Team, and worked with top athletes including Erin Cafaro (2-time Olympic gold medalist in women's 8+ rowing), Taylor Ritzel (Olympic gold medalist in women's 8+ rowing), Sara Hendershot (Olympian in women's pair rowing), Jamie Mitchell (10-time Molokai 2 Oahu Paddleboard champion), and Rich Froning (4-time CrossFit Games champion).

# Break free of stale training and repetitive injuries to become an **UNBREAKABLE RUNNER!**

Stamina, strength, endurance, resilience: These are the keys to successful running. Yet injury rates from running are at an all-time high, and training is often to blame. In *Unbreakable Runner*, CrossFit Endurance™ founder Brian MacKenzie and journalist T.J. Murphy examine long-held beliefs about how to train, tearing down those traditions to reveal *new principles for a lifetime of healthy, powerful running*.

Challenging sacred cows of conventional training such as mega-mileage running and high-carb diets, MacKenzie and Murphy show how reduced mileage and high-intensity training will make you a stronger, more durable athlete and prepare you for races of any distance.

**IF YOU'RE A DISTANCE RUNNER** who wants to invigorate your training, solve injuries, or break through a performance plateau, you'll gain power and resilience from MacKenzie's effective blend of run training with whole-body strength and conditioning.

**IF YOU'RE A CROSSFITTER** who wants to conquer a marathon, half-marathon, or ultramarathon, you'll find endurance training instruction with 8- to 12-week programs that combine CrossFit™ workouts with run-specific sessions.

*Unbreakable Runner* includes CrossFit-based training programs for race distances from 5K to ultramarathon for beginner, intermediate, and advanced runners. Build a better running body with CrossFit Endurance, and run the race of your life!

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**"MacKenzie has opened doors to coaches and runners, offering proven solutions to a myriad of problems that persistently vex runners of all ages, abilities, and backgrounds."**

—Dean Karnazes