PRAISE FOR
YOU (ONLY FASTER)

“Greg is smart, very smart. The patience and positivity that Greg has when it comes to mapping athlete's careers and the steps to take in between goals is incredible. I think the sign of a great coach is someone who knows how to coach the mind as well as the body and this is where Greg stands out. He's guided me through all the ups and downs that running has thrown at me and helped me to be not only a better athlete but also a better person. “

- Andrew Lemoncello, Olympian

“I attribute most of my success in running to Greg's training philosophy. His way of targeting different training zones at specific times in the training schedule made all the difference for me. He is extremely knowledgeable and a true motivator. Working with Greg, I successfully participated in many world championship and Olympic Trials events. I was able to go from a 2:48 marathon runner to 2:32, winning two marathon titles and having a lot of fun in the process! The plans work.”

-Kelly Liljeblad, Houston Marathon Champion

"I have the utmost respect for Greg and am impressed with his abilities as a coach. He understands the principles and philosophies of the great coaches like Arthur Lydiard and is able to relate them to today's runner. I love how this book explains the need for adaptation in a training program as it is so very essential to creating confidence in an athlete."

- Rod Dixon, Olympic Medalist, NYC Marathon Champion

YOU (ONLY FASTER)

Training Plans to Help You Train Smarter and Run Faster

YOU (ONLY FASTER)

Training Plans to Help You Train Smarter and Run Faster

Greg McMillan, M.S.

mcmillan running

The information in this book is meant to supplement, not replace, proper exercise training. All forms of exercise pose some inherent risks. The author and publisher advise readers to take full responsibility for their safety and know their limits. Before attempting to perform the workouts in this book, be sure that you have consulted a doctor about your ability to perform them and do not take risks beyond your level of experience, aptitude, training and fitness. The exercise programs in this book are not intended as a substitute for any exercise routine that may have been prescribed by your doctor.

Internet addresses and screen shots given in this book were accurate at the time it went to press.

First Edition: April 2013
Printed in the United States of America
ISBN: 978-1-62030-442-6

CONTENTS

Step #4: The McMillan Running Calculator

Step #5: The Finer Points

Step #6: The 10 Rules of Running

The Finish Line

ACKNOWLEDGEMENTS

The path to this book has been paved with support. The sport of running provided purpose and passion to my life in high school. Coaches, teammates and training partners offered (and continue to offer) guidance, support and inspiration. Teachers and classmates stoked my inquisitive mind as I tried to figure out how to simply put one foot in front of the other a bit faster. Mentors and family members passed down knowledge, encouragement and love. And finally, athletes from around the world – some just coming off the couch, others chasing PRs and Boston qualifying times and a few going for the gold - all have been instrumental in helping me help them. This book is dedicated to each and every one of you.

Special thanks is warranted for everyone who encouraged me to put my thoughts down on paper, who helped proof the manuscript, who offered feedback and who shaped what you now hold in your hands. Thank you.

FOREWORD

I first met Greg at the NCAA track meet in 2007. I was hoping to finish my collegiate career with a bang in the 10K final, using it as a springboard for my leap into the world of professional running. I had spoken with Greg a few times leading up to this race, expressing great interest in the new team he was forming in Flagstaff, Arizona. We had plans to meet up after my race, and I was eager to see if I might be a good fit for the team. Unfortunately, that race did not go as planned, and I struggled to the finish, close to dead last. I was sure that I had blown any chance at continuing my running career and that Greg would be looking elsewhere for talent to fill his team. To my surprise, Greg was still very enthusiastic about meeting up. We sat down together in the lobby of my hotel, and that's when I first learned what Greg McMillan was all about. We talked for a while, covering topics from my high school running accomplishments to my injury history. He didn't seem deterred at all by the fact that I had just raced horrendously the day before. He wasn't focused on all the ups and downs I encountered while in college. What he saw was a kid that had success in high school and deep down knew what it was like to be a winner. He saw a chance to unlock this winner's mentality that had been lost somewhere in the midst of inconsistent performances throughout college. It was all a part of his mission to help fuel the resurgence of American distance running.

Greg offered me a spot on the team and upon arriving in Flagstaff, I was excited to sit down with him and talk about goals for the upcoming season, something I had done many times with other coaches. The only problem was, Greg didn't want to talk about the upcoming season – he wanted to talk about the next four years! He told me it was going to take two years to know just how good I could be. He talked about times he wanted me to run and races he wanted me to win. At one point, I think I laughed out loud at the goals he was setting for me. I couldn't believe this

guy I had met only months before was telling me I could do these things. I thought, "There's no way!" His face remained dead serious. He methodically laid out a plan for how we were going to accomplish these goals, and by the end of the meeting, I was a believer.

Over the next 4 years, Greg and I formed a great relationship. His training methods, studied and learned from some of the greatest minds our sport has seen, suited me very well and helped build me into the runner I always thought I could be. He valued my input, always willing to adjust or tweak parts of the training so that both of us were happy. He knew he had developed rock solid principles over the years, but he understood that I knew my body better than anyone else. Instead of having a "my way or the highway" kind of attitude, he took advantage of my input to build my own perfect training plan. At practice, every day was about becoming a better runner. There was no time for complacency in a sport that demands consistent, progressive training. I learned that it's the entire body of work that matters. You could tell he truly loved his job. He always reminded us how lucky we were to be doing what we love everyday.

I had a bit of an "Ah ha!" moment almost exactly 2 years after that first sit down in Flagstaff. I had committed myself just as Greg had told me, dedicating my life and making sacrifices to see how good I could be. Two years after that first sit down, I won the US 20K Championships. I thought, "Hmm, I guess this guy really knows his stuff!"

I'm so happy that he is sharing his wisdom as I'm sure many more runners will have their "Ah ha!" moments using the training principles in this book.

- Brett Gotcher

The Starting Line

Running is a simple sport but the training for it can seem complicated. Ask ten coaches how to train for a marathon and you'll probably get ten different answers. Some marathon coaches say you only need to run 16 miles for your long run in order to race your best. Some say you must run at least three 20-mile runs to be ready, and still others say you must run farther than the marathon distance (over 26 miles) to be adequately prepared for race day.

The answers vary because of one very important point: **Training for distance running is not a one-size-fits-all process.** Sure, we have general principles for training, but to be your best it's clear that what works for you could be very different than what works for your training partner.

The best training ultimately depends on several very important traits that are specific to you: who you are as a runner – your experience level, injury risk, race history and training background; how you respond to, recover from and adapt to different types of training; and even how much time you have available for training and (just as important) recovery.

The answers to these questions are yours and yours alone (and they change from month to month, year to year). That's why generic, cookie cutter and computer-generated training plans are good only to a point. To reach your best you need a program made specifically for your particular physiology, psychology, training/racing experiences and goals.

To help runners like you train smarter and run faster, I've devised a simple six-step system that allows you to dial in your training for maximal performance. It starts by picking a training plan. In the first part of this book, I'll provide my collection of proven plans and you can select the

one for your goal distance and how often you run. After choosing your program, I'll walk you through the same process I use when I start working with a runner. I call it your Personal Running Evaluation or PRE. Armed with this information, you'll see how to easily modify your training program to make it even more customized for you (just like I do with the athletes I coach). I'll say it over and over but I truly believe that it is this step that separates a good training plan from a great training plan.

Next, we dive into the details of your new training program – learning how to execute each and every run. And in Step #4 you use the McMillan Running Calculator to calculate the precise paces you should hit on all your runs, as well as your equivalent race times (so you'll know the estimated finish time of future races based on your current race times).

After selecting your plan, making it your own, understanding all the workouts and knowing your precise training paces, we'll put the finishing touches on your training plan, which includes how to adjust your plan when "life" happens (which it will inevitably do). And lastly, we'll review the 10 Rules of Running that the greatest coaches and athletes have taught us through the years. Follow them and you are very likely to run the best you've ever run.

The result is a near foolproof way to optimize your training so you stay healthy, get more from each workout and, most importantly, you'll run faster. It really is a simple sport and once you learn more about yourself as a runner, you'll be amazed at how fast you can run. On your mark. Get set. Go!

Step #1: Selecting Your Training Plan

Chapter 1

You *Need* a Training Plan

The first step in becoming a better runner is to choose a training plan. Runners, and I mean ALL runners, need a training plan to provide structure and guidance as they train for their goal race.

A smart training plan like you and I are going to build together is set up in such a way that it gradually, yet progressively, builds your fitness as you march toward race day. Runners, because we often get excited and do too much too soon and end up injured, need a smart training plan to control our training so we avoid runner enemy #1: injury.

In addition to safeguarding against injury, smart training plans build the types of fitness appropriate for your goal race. It's easy to understand that the type of fitness required to race a fast 5K (3.1 miles) is different than the type of fitness necessary to race a marathon (26.2 miles). Smart training plans make sure to build your overall fitness (which is often called "base fitness") and to also include specialized workouts that get you specifically prepared for the demands of your chosen event (called "race-specific" training).

In this first part of the book, I'm providing my training plans for races from 5K to the marathon. But, you don't have to use my plans. Just find a training plan (whether from another book, on the web or from another coach) that seems to fit your needs and you can use it as I show you how to customize your plan to better fit your particular physiology and psychology. As I mentioned earlier, training for distance running is not a one-size-fits-all process so no matter which plan you choose, mine or another's, you'll need to customize it (which we'll do in Step #2).

Chapter 2

McMillan Training Plans

In the following section, you'll find sample training plans. The plans are arranged by goal distance as well as by the number of days you run per week (e.g., 10K plan – 4-5 days running per week). After coaching runners of all abilities for the last 20 years, I've learned that while we can talk about all sorts of ways to classify training plans and runners (weekly mileage, beginner, intermediate, advanced, etc.) the most important criteria are simply your goal race distance (typically 5K, 10K, half-marathon or marathon) and how many days you run per week (2-3 days, 4-5 days or 6-7 days per week are the most common). And, the latter consideration (days running per week) is usually as much determined by your life schedule, as it is how much training you would like to do.

So, flip through the plans and find the distance of your peak race. I've named them 5K, 10K, half-marathon and marathon but you can use them for other distances as well. For example, if you are training for a 10-mile race, you can easily use the half-marathon plan. Or, if you have an 8K race coming up, the 10K plan will work for that distance too. Now, if you're like most runners, you don't just run one race. You run several. When choosing a plan, choose the plan for the race distance that is the most important to you – your peak race. We can add the other lead-up races into your plan later, but we need to know your main race distance.

Next, think about the number of days per week you can run. Now, this is very, very important. Don't think about how many days you'd *like* to run. Be honest with yourself and choose the plan that you have a high likelihood of actually completing. I had to do this recently. While I would love to run 7 days per week, I simply can't. I have a young son, family, work and life commitments that simply make this an unrealistic

goal. Plus, I have a history of injury if I train over six days per week so even though I would like to run 7 days per week, it's just not in the cards for me. So, I took a step back and said, "What plan do I *know* I can complete and stay healthy?" For me, that's a plan where I run 4-5 days per week. So, I would choose the 4-5 day plan. In fact, throughout this book, I'll be using my personal half-marathon plan incorporating 4-5 days per week to show you how to alter your plan for best results.

One note: The plans in this chapter are what I would call generic plans and while they would do fine for some runners, they can certainly be improved for you. In fact, for the rest of this book, I will walk you through the process that I use when designing a training plan for an athlete. We start with this general plan for a race, but then modify it based on what you'll learn in Step #2 of the book. The end result is a training plan that is completely individualized just for you.

What If I Need More Weeks?

One thing that you'll notice is that each plan lasts 12 weeks. This is because these are the weeks that include the most race-specific training – the workouts that get you race-ready. If you have more time than 12 weeks, then you can easily add on other training modules to get to the number of weeks you have. Chapter 38 details the extra modules and how to dovetail them with your 12-week training plan.

Miles vs. Minutes

While I know most coaches use mileage (number of miles or kilometers run per week) as the way to differentiate training plans, I actually find this less important than how many days you run per week. Think about it. Mileage is really a function of how much time you spend running *and* how fast you run. So, if you and I both go for an easy hour run, we both get the same physiological challenge and benefit. But, I may only run 6 miles in that hour whereas you may cover 10 miles. Since I work with athletes of all abilities, I care more about the physiological challenge so you'll notice that most of runs in the training plans are listed by minutes, not miles.

I like this because I feel that most days you don't need to feel obligated to run a certain number of miles, which is why I list a range of minutes. For example, an easy run might say 40 to 50 minutes. If you are tired, then just run 40 minutes. If you feel good and/or are trying to increase your weekly volume, then run 50 minutes. Obviously, the pace will determine how far you go.

In my opinion, this is a better way to train for all but a few specialized workouts where mileage trumps minutes.

Workout Codes

We'll go over each workout in detail later in the book but here is a breakdown of the workout codes that you'll see in the training plans:

OFF = Complete rest. No exercise.
XT = Cross Training. Elliptical, cycling, swimming, yoga, etc.
LR = Long run. Longest run of the week.
FR = Fartlek Run. Pace changes within the run.
CI = Cruise Intervals. Moderate pace repetitions with very short recovery jogs.
PR = Progression Run. Start easy but finish fast.
TI = Tempo Intervals. Moderate pace repetitions with short recovery jogs.
FFLR = Fast Finish Long Run. Long runs that start easy but finish fast.
SP = Speed Workout. Fast pace repetitions.
TR = Tempo Run. Moderate pace continuous run.
Yasso 800s = 800m repeats used to predict marathon time.
LS = Leg Speed. Short but very fast repetitions.
GP = Goal Pace. Runs or repetitions at goal race pace.
SS = Steady State Run. Easy-Moderate continuous run.

mcmillan running

McMillan **5K** Training Plan: **2-3 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Mileage Base	OFF or XT	30-40 min	OFF or XT	40-50 min	OFF	OFF or XT	LR: 60-70 min
2	Prep - Hills	OFF or XT	30-40 min	OFF or XT	Hills: 6-8 reps	OFF	OFF or XT	LR: 60-70 min
3	Prep - Stamina	OFF or XT	40-50 min	OFF or XT	PR: 40-50 min w/ last 15-25 min fast	OFF	OFF or XT	LR: 60-70 min
4	Prep - Hills	OFF or XT	40-50 min	OFF or XT	Hills: 8-10 reps	OFF	OFF or XT	40-50 min
5	Prep - Stamina	OFF or XT	40-50 min	OFF or XT	PR: 40-50 min w/ last 20-30 min fast	OFF	OFF or XT	LR: 70-80 min
6	Prep - Hills	OFF or XT	50-60 min	OFF or XT	Hills: 10-12 reps	OFF	OFF or XT	LR: 70-80 min
7	5K	OFF or XT	50-60 min	OFF or XT	FR: 3 x 6 min w/ 3 min jog	OFF	OFF or XT	PR: 60-70 min w/ last 20-30 min fast
8	5K	OFF or XT	40-50 min	OFF or XT	FR: 10-12 x 1 min w/ 2 min jog	OFF	OFF or XT	LR: 70-80 min
9	5K	OFF or XT	50-60 min	OFF or XT	FR: 8-10 x 2 min w/ 3 min jog	OFF	OFF or XT	PR: 60-70 min w/ last 20-30 min fast
10	5K	OFF or XT	40-50 min	OFF or XT	FR: 3 x 6 min w/ 3 min jog	OFF	OFF or XT	PR: 70-80 w/ last 10-20 min fast
11	Peak	OFF or XT	40-50 min	OFF or XT	FR: 6-8 x 2 min w/ 3 min jog	OFF	OFF or XT	45 min
12	Peak	OFF or XT	30-40 min	OFF or XT	FR: 8-10 x 1 min w/ 2 min jog	OFF	OFF or XT	RACE: 5K

KEY: min = minutes
km = kilomters
Hills = Hill Workout (p. 217)
PR = Progression Run (p. 220)
Mi = miles
OFF = No exercise
LR = Long Run (p. 100)
m = meters
XT = cross-training
FR = Fartlek Run (p. 131)

mcmillan running

McMillan **5K** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	OFF, XT or 40-60 min	Hills: 6-8 reps	OFF, XT or 40-60 min	50-60 min	LR: 80-90 min
2	Prep - Stamina	OFF	LS: 10 x 20 sec w/ 1 min jog	OFF, XT or 40-60 min	TI: 3-4 x 2000m w/ 400m jog	OFF, XT or 40-60 min	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	80-90 min	OFF, XT or 40-60 min	Hills: 8-10 reps	OFF, XT or 40-60 min	50-60 min	LR: 90-105 min
4	Prep - Stamina	OFF	LS: 15 x 20 sec w/ 1 min jog	OFF, XT or 40-60 min	TR: 2-4 miles	OFF, XT or 40-60 min	50-60 min	LR: 75-90 min
5	Prep - Hills	OFF	80-90 min	OFF, XT or 40-60 min	Hills: 10-12 reps	OFF, XT or 40-60 min	50-60 min	FFLR: 90 w/ last 10-20 min fast
6	Prep - Stamina	OFF	LS: 20 x 20 sec w/ 1 min jog	OFF, XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF, XT or 40-60 min	50-60 min	LR: 90-105 min
7	5K	OFF	50-60 min	OFF, XT or 40-60 min	SP: 4 x 1 mile w/ 800m jog	OFF, XT or 40-60 min	50-60 min	FFLR: 90 w/ last 10-20 min fast
8	5K	OFF	80-90 min	OFF, XT or 40-60 min	SP: 16-20 x 200m w/ 200m jog	OFF, XT or 40-60 min	50-60 min	50-60 min
9	5K	OFF	TR: 2-4 miles	OFF, XT or 40-60 min	SP: 10-12 x 400m w/ 200m jog	OFF, XT or 40-60 min	50-60 min	FFLR: 90 w/ last 10-20 min fast
10	5K	OFF	LS: 8 x 30 sec w/ 1 min jog	OFF, XT or 40-60 min	SP: 6 x 800m w/ 400m jog	OFF, XT or 40-60 min	50-60 min	LR: 90-105 min
11	Peak	OFF	50-60 min	OFF, XT or 40-50 min	TR: 2-4 miles	OFF, XT or 40-50 min	40-50 min	PR: 60 min w/ last 10 min fast
12	Peak	OFF	SP: 8-10 x 400m w/ 200m jog	OFF, XT or 30-40 min	FR: 6-8 x 1 min w/ 1 min jog	OFF, XT or 40-50 min	30-40 min	RACE: 5K

KEY: min = minutes
km = kilomters
SP = Speed Workout (p. 129)
FR = Fartlek Run (p. 131)
PR = Progression Run (p. 220)
FFLR = Fast Finish Long Run (p. 211)
Mi = miles
OFF = No exercise
Hills = Hill Workout (p. 217)
CI = Cruise Intervals (p. 117)
TR = Tempo Run (p. 114)
m = meters
XT = cross-training
LR = Long Run (p. 100)
TI = Tempo Intervals (p. 115)
LS = Leg Speed (p. 142)

mcmillan running

McMillan **5K** Training Plan: **6-7 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF, XT or 40-60 min	70-80 min	50-60 min	Hills: 8-10 reps	OFF, XT or 40-60 min	60-70 min	LR: 90-105 min
2	Prep - Stamina	OFF, XT or 40-60 min	LS: 10 x 20 sec w/ 1 min jog	50-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF, XT or 40-60 min	60-70 min	LR: 90-105 min
3	Prep - Hills	OFF, XT or 40-60 min	80-90 min	50-60 min	Hills: 10-12 reps	OFF, XT or 40-60 min	60-70 min	LR: 105-120 min
4	Prep - Stamina	OFF, XT or 40-60 min	LS: 15 x 20 sec w/ 1 min jog	50-60 min	TR: 2-4 miles	OFF, XT or 40-60 min	60-70 min	LR: 80-90 min
5	Prep - Hills	OFF, XT or 40-60 min	80-90 min	50-60 min	Hills: 10-12 reps	OFF, XT or 40-60 min	60-70 min	LR: 105-120 min
6	Prep - Stamina	OFF, XT or 40-60 min	LS: 20 x 20 sec w/ 1 min jog	50-60 min	CI: 10-12 x 1000m w/ 200m jog	OFF, XT or 40-60 min	60-70 min	LR: 90-105 min
7	5K	OFF, XT or 40-60 min	TR: 3-5 miles	50-60 min	SP: 5-6 x 1 mile w/ 800m jog + 4 x 200m w/ 200m jog	OFF, XT or 40-60 min	60-70 min	FFLR: 90-105 min w/ last 10 min fast
8	5K	OFF, XT or 40-60 min	PR: 60-70 min w/ last 5 min fast	50-60 min	SP: 20-24 x 200m w/ 200m jog	OFF, XT or 40-60 min	60-70 min	LR: 90-105 min
9	5K	OFF, XT or 40-60 min	TR: 3-5 miles	50-60 min	SP: 8-10 x 300m w/ 400m jog	OFF, XT or 40-60 min	60-70 min	FFLR: 90-105 min w/ last 10 min fast
10	5K	OFF, XT or 40-60 min	PR: 60-70 min w/ last 5 min fast	50-60 min	SP: 12-16 x 400m w/ 200m jog	OFF, XT or 40-60 min	60-70 min	LR: 90-105 min
11	Peak	OFF or 40-50 min	LS: 15 x 20 sec w/ 1 min jog	40-50 min	TR: 2-4 miles	OFF or 40-50 min	40-50 min	PR: 70-80 min w/ last 10 min fast
12	Peak	OFF or 30-40 min	CI: 4-5 x 1000m w/ 200m jog	30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: 5K

KEY: min = minutes
km = kilomters
SP = Speed Workout (p. 129)
FR = Fartlek Run (p. 131)
PR = Progression Run (p. 220)
FFLR = Fast Finish Long Run (p. 211)
Mi = miles
OFF = No exercise
Hills = Hill Workout (p. 217)
CI = Cruise Intervals (p. 117)
TR = Tempo Run (p. 114)
m = meters
XT = cross-training
LR = Long Run (p. 100)
TI = Tempo Intervals (p. 115)
LS = Leg Speed (p. 142)

mcmillan running

McMillan **10K** Training Plan: **2-3 DAYS** of running per week

WEEK	***PHASE***	1	2	3	4	5	6	7
1	Mileage Base	OFF or XT	40-50 min	OFF or XT	40-50 min	OFF	OFF or XT	LR: 70-80 min
2	Prep - Stamina	OFF or XT	40-50 min	OFF or XT	PR: 40-50 min w/ last 15-25 min fast	OFF	OFF or XT	LR: 80-90 min
3	Prep - Hills	OFF or XT	50-60 min	OFF or XT	Hills: 6-8 reps	OFF	OFF or XT	LR: 90-105 min
4	Prep - Stamina	OFF or XT	30-40 min	OFF or XT	PR: 40-50 min w/ last 20-30 min fast	OFF	OFF or XT	LR: 90-105 min
5	Prep - Hills	OFF or XT	50-60 min	OFF or XT	Hills: 8-10 reps	OFF	OFF or XT	LR: 90-105 min
6	10K	OFF or XT	50-60 min	OFF or XT	FR: 4-5 x 2 min on 1 min off	OFF	OFF or XT	LR: 90-105 min
7	10K	OFF or XT	50-60 min	OFF or XT	FR: 10-12 x 1 min on 1 min off	OFF	OFF or XT	PR: 60-70 min w/ last 20 min fast
8	10K	OFF or XT	50-60 min	OFF or XT	TR: 2-3 mi	OFF	OFF or XT	LR: 90-105 min
9	10K	OFF or XT	40-50 min	OFF or XT	FR: 15-20 x 1 min on 1 min off	OFF	OFF or XT	PR: 60-70 min w/ last 20 min fast
10	10K	OFF or XT	40-50 min	OFF or XT	FR: 4-5 x 3 min on 2 min off	OFF	OFF or XT	LR: 80-90 min
11	Peak	OFF or XT	40-50 min	OFF or XT	FR: 20-25 x 1 min on 1 min off	OFF	OFF or XT	PR: 60-70 min w/ last 20 min fast
12	Peak	OFF or XT	30-40 min	OFF or XT	FR: 4-5 x 1 min w/ 1 min	OFF	OFF	RACE: 10K

KEY: min = minutes
km = kilomters
Hills = Hill Workout (p. 217)
PR = Progression Run (p. 220)
Mi = miles
OFF = No exercise
LR = Long Run (p. 100)
TR = Tempo Run (p. 114)
m = meters
XT = cross-training
FR = Fartlek Run (p. 131)

mcmillan running

McMillan **10K** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	50-60 min	OFF or 40-60 min	Hills: 8-10 reps	OFF or 40-60 min	50-60 min	LR: 80-100 min
2	Prep - Stamina	OFF	TR: 2-4 miles	OFF or 40-60 min	TI: 3-4 x 2000m w/ 400m jog	OFF or 40-60 min	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	LS: 10 x 30 sec w/ 1 min jog	OFF or 40-60 min	Hills: 10-12 reps	OFF or 40-60 min	50-60 min	LR: 90-105 min
4	Prep - Stamina	OFF	70-80 min	OFF or 40-60 min	TI: 6 x 1 mile w/ 800m jog	OFF or 40-60 min	50-60 min	LR: 80-90 min
5	Prep - Stamina	OFF	70-80 min	OFF or 40-60 min	CI: 6-8 x 800 w/ 200m jog + 4 x 100m w/ 100m	OFF or 40-60 min	50-60 min	LR: 105-120 min
6	10K	OFF	TR: 3-5 miles	OFF or 40-60 min	SP: 12-14 x 400m w/ 200m jog + 4 x 200m w/ 200m jog	OFF or 40-60 min	50-60 min	LR: 105-120 min
7	10K	OFF	50-60 min	OFF or 40-60 min	TI: 2 miles, jog 5 min, 4 x 1 mile w/ 3-4 min jog	OFF or 40-60 min	50-60 min	LR: 90-105 min
8	10K	OFF	TR: 3-5 miles	OFF or 40-60 min	SP: 20-24 x 200m w/ 200m jog	OFF or 40-60 min	50-60 min	LR: 80-90 min
9	10K	OFF	PR: 50-60 min w/ last 15 min fast	OFF or 40-60 min	TI: 2 x 2 miles w/ 5 min jog + 2 x 1 mile w/ 3 min jog	OFF or 40-60 min	50-60 min	LR: 90-105 min
10	10K	OFF	LS: 10 x 30 sec w/ 1 min jog	OFF or 40-60 min	SP: 4-5 x 1 mile w/ 800m jog	OFF or 40-60 min	50-60 min	FFLR: 90 min w/ last 10-20 min fast
11	Peak	OFF	FR: 5 x 2 min w/ 1 min jog	OFF or 40-50 min	TI: 3 x 2 miles w/ 5 min jog	OFF or 40-50 min	40-50 min	PR: 70-80 w/ last 10 min fast
12	Peak	OFF	SP: 8-10 x 400m w/ 200m jog	OFF or 30-40 min	FR: 5-6 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: 10K

KEY: min = minutes
km = kilomters
SP = Speed Workout (p. 129)
FR = Fartlek Run (p. 131)
PR = Progression Run (p. 220)
FFLR = Fast Finish Long Run (p. 211)
Mi = miles
OFF = No exercise
Hills = Hill Workout (p. 217)
CI = Cruise Intervals (p. 117)
TR = Tempo Run (p. 114)
m = meters
XT = cross-training
LR = Long Run (p. 100)
TI = Tempo Intervals (p. 115)
LS = Leg Speed (p. 142)

mcmillan running

McMillan **10K** Training Plan: **6-7 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF or 40-60 min	LS: 10-12 x 30 sec w/ 1 min jog	50-60 min	Hills: 8-10 reps	OFF or 40-60 min	60-70 min	LR: 90-105 min
2	Prep - Hills	OFF or 40-60 min	TR: 2-4 miles	50-60 min	Hills: 10-12 reps	OFF or 40-60 min	60-70 min	LR: 90-105 min
3	Prep - Stamina	OFF or 40-60 min	LS: 10-12 x 30 sec w/ 1 min jog	50-60 min	TI: 6 x 1 mile w/ 400m jog	OFF or 40-60 min	60-70 min	LR: 105-120 min
4	Prep - Hills	OFF or 40-60 min	PR: 60-70 min w/ last 10 min fast	50-60 min	Hills: 10-12 reps	OFF or 40-60 min	60-70 min	LLR: 90 min
5	Prep - Stamina	OFF or 40-60 min	TR: 3-5 miles	50-60 min	CI: 6-8 x 800 w/ 200m jog + 4 x 100m w/ 100m jog	OFF or 40-60 min	60-70 min	LR: 105-120 min
6	10K	OFF or 40-60 min	PR: 60-70 min w/ last 10 min fast	50-60 min	SP: 12-16 x 400m w/ 200m jog	OFF or 40-60 min	60-70 min	LR: 105-120 min
7	10K	OFF or 40-60 min	SP: 8 x 200m w/ 200m jog	50-60 min	TI: 2 miles, jog 5 mn then 4 x 1 mile w/ 3-4 min jog	OFF or 40-60 min	60-70 min	FFLR: 90-105 min w/ last 10-20 min fast
8	10K	OFF or 40-60 min	TR: 3-5 miles	50-60 min	SP: 20-24 x 200m w/ 200m jog	OFF or 40-60 min	60-70 min	LLR: 90 min
9	10K	OFF or 40-60 min	SP: 6 x 400m w/ 200m jog	50-60 min	TI: 2 x 2 miles w/ 5 min jog then 2 x 1 mile w/ 3 min jog	OFF or 40-60 min	60-70 min	LR: 105-120 min
10	10K	OFF or 40-60 min	TR: 3-5 miles	50-60 min	SP: 12-16 x 400m w/ 200m jog	OFF or 40-60 min	60-70 min	LR: 90-105 min
11	Peak	OFF or 40-50 min	LS: 10-12 x 30 sec w/ 1 min jog	40-50 min	TI: 3 x 2 miles w/ 5 min jog	OFF or 40-50 min	40-50 min	PR: 70-80 min w/ last 10 min fast
12	Peak	OFF or 30-40 min	SP: 8-10 x 400m w/ 200m jog	30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: 10K

KEY: min = minutes
km = kilomters
SP = Speed Workout (p. 129)
FR = Fartlek Run (p. 131)
PR = Progression Run (p. 220)
FFLR = Fast Finish Long Run (p. 211)
Mi = miles
OFF = No exercise
Hills = Hill Workout (p. 217)
CI = Cruise Intervals (p. 117)
TR = Tempo Run (p. 114)
m = meters
XT = cross-training
LR = Long Run (p. 100)
TI = Tempo Intervals (p. 115)
LS = Leg Speed (p. 142)

McMillan **HALF MARATHON** Training Plan: **2-3 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Mileage Base	OFF	30-45 min	XT or 30-45 min	30-45 min	OFF or XT	XT or 30-45 min	LR: 45-60 min
2	Mileage Base	OFF	30-45 min	XT or 30-45 min	30-45 min	OFF or XT	XT or 30-45 min	LR: 70-80 min
3	Mileage Base	OFF	45-60 min	XT or 30-45 min	45-60 min	OFF or XT	XT or 30-45 min	LR: 45-60 min
4	Mileage Base	OFF	45-60 min	XT or 30-45 min	45-60 min	OFF or XT	XT or 30-45 min	LR: 80-90 min
5	Half Marathon	OFF	45-60 min	XT or 30-45 min	PR: 50-60 min w/ last 15 min fast	OFF or XT	XT or 30-45 min	LR: 60-75 min
6	Half Marathon	OFF	70-80 min	XT or 30-45 min	CI: 4 x 800m w/ 200m jog	OFF or XT	XT or 30-45 min	LR: 90-105 min
7	Half Marathon	OFF	70-80 min	XT or 30-45 min	TI: 2 x 1 miles w/ 5 min jog	OFF or XT	XT or 30-45 min	LR: 105-120 min
8	Half Marathon	OFF	80-100 min	XT or 30-45 min	FR: 10-15 x 1 min w/ 1 min jog	OFF or XT	XT or 30-45 min	LR: 90-105 min
9	Half Marathon	OFF	45-60 min	XT or 30-45 min	TI: 2 x 2 miles w/ 5 min jog	OFF or XT	XT or 30-45 min	FFLR: 105-120 min w/ last 20-30 min fast
10	Half Marathon	OFF	80-100 min	XT or 30-45 min	FR: 10-15 x 1 min w/ 1 min jog	OFF or XT	XT or 30-45 min	FFLR: 105-120 min w/ last 20-30 min fast
11	Peak	OFF	40 min	XT or 30-45 min	TI: 3 x 2 miles w/ 5 min jog	OFF or XT	XT or 30 min	LR: 8-10 miles
12	Peak	OFF	40 min	XT or 30-45 min	FR: 5-6 x 1 min w/ 1 min jog	OFF or XT	XT or 20 min	RACE: Half Marathon

KEY: min = minutes
km = kilomters
LR = Long Run (p. 100)
PR = Progression Run (p. 220)
Mi = miles
OFF = No exercise
FR = Fartlek Run (p. 131)
TI = Tempo Intervals (p. 115)
m = meters
XT = cross-training
CI = Cruise Intervals (p. 117)
FFLR = Fast Finish Long Run (p. 211)

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	TR: 5-7 miles	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
10	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	SS: 6-8 miles	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

KEY: min = minutes
km = kilomters
LR = Long Run (p. 100)
PR = Progression Run (p. 220)
SP = Speed Workout (p. 129)
LS = Leg Speed (p. 142)
Mi = miles
OFF = No exercise
FR = Fartlek Run (p. 131)
TI = Tempo Intervals (p. 115)
SS = Steady State Run (p. 112)
Hills = Hill Workout (p. 217)
m = meters
XT = cross-training
CI = Cruise Intervals (p. 117)
FFLR = Fast Finish Long Run (p. 211)
TR = Tempo Run (p. 114)

mcmillan running

McMillan **HALF MARATHON** Training Plan: **6-7 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Speed + Hills	XT or 55-65 min	FR: 6-7 x 2 min w/ 1 min jog	60-70 min	Hills: 6-8 reps	XT or 55-65 min	60-70 min	LR: 105-120 min
2	Prep - Speed + Hills	XT or 55-65 min	FR: 5-6 x 3 min w/ 2 min jog	60-70 min	Hills: 8-10 reps	XT or 55-65 min	60-70 min	LR: 105-120 min
3	Prep - Speed + Hills	XT or 55-65 min	FR: 10-12 x 1 min w/ 1 min jog	60-70 min	Hills: 10-12 reps	XT or 55-65 min	60-70 min	LR: 105-120 min
4	Half Marathon	XT or 55-65 min	60-70 min	60-70 min	CI: 8-10 x 1000m w/ 200m jog	XT or 55-65 min	60-70 min	LR: 105-120 min
5	Half Marathon	XT or 55-65 min	PR: 80-90 min w/ last 20 minutes fast	60-70 min	SP: 5-7 x 1 mile w/ 800m jog	XT or 55-65 min	60-70 min	LR: 105-120 min
6	Half Marathon	XT or 55-65 min	60-70 min	60-70 min	TR: 3-5 miles	XT or 55-65 min	60-70 min	LR: 14-18 miles
7	Half Marathon	XT or 55-65 min	PR: 80-90 min w/ last 20 minutes fast	60-70 min	SP: 6-8 x 1200m w/ 600m jog	XT or 55-65 min	60-70 min	FFLR: 14-16 miles w/ the last 2-4 miles @ goal HM pace
8	Half Marathon	XT or 55-65 min	FR: 10-12 x 1 min w/ 1 min jog	60-70 min	TI: 3 x 2 miles w/ 5 min jog	XT or 55-65 min	60-70 min	LR: 14-18 miles
9	Half Marathon	XT or 55-65 min	PR: 80-90 min w/ last 20 minutes fast	60-70 min	SP: 5-6 x 1 mile w/ 800m jog	XT or 55-65 min	60-70 min	FFLR: 14-16 miles w/ the last 2-4 miles @ goal HM pace
10	Half Marathon	XT or 55-65 min	60-70 min	60-70 min	TR: 3-5 miles	XT or 55-65 min	60-70 min	LR: 105-120 min
11	Peak	XT or 55-65 min	FR: 10-12 x 1 min w/ 1 min jog	40-50 min	SS: 6 miles	XT or 50 min	40-50 min	FFLR: 12-14 miles w/ the last 2-4 miles @ goal HM pace
12	Peak	XT or 55-65 min	CI: 4-5 x 1000m w/ 200m	30-40 min	FR: 8-10 x 1 min w/ 1 min jog	XT or 30 min	30-40 min	RACE: Half Marathon

KEY: min = minutes
km = kilomters
LR = Long Run (p. 100)
PR = Progression Run (p. 220)
SP = Speed Workout (p. 129)
LS = Leg Speed (p. 142)
Mi = miles
OFF = No exercise
FR = Fartlek Run (p. 131)
TI = Tempo Intervals (p. 115)
SS = Steady State Run (p. 112)
Hills = Hill Workout (p. 217)
m = meters
XT = cross-training
CI = Cruise Intervals (p. 117)
FFLR = Fast Finish Long Run (p. 211)
TR = Tempo Run (p. 114)

mcmillan running

McMillan **MARATHON** Training Plan: **2-3 DAYS** of running per week

WEEK	*PHASE*	1	2	3	4	5	6	7
1	Prep-Speed	OFF	30-45 min	XT or 30-45 min	FR: 8-10 x 1 min on 1 min off	OFF or XT	XT or 30-45 min	LR: 8-10 miles
2	Prep-Speed	OFF	30-45 min	XT or 30-45 min	FR: 3-4 x 2 min on 1 min off	OFF or XT	XT or 30-45 min	LR: 8-10 miles
3	Mara	OFF	45-60 min	XT or 30-45 min	CI: 4-6 x 800m w/ 200m jog	OFF or XT	XT or 30-45 min	LR: 10-12 miles
4	Mara	OFF	80-100 min	XT or 30-45 min	PR: 50-60 min w/ last 20 min fast	OFF or XT	XT or 30-45 min	90 min 3rds PR
5	Mara	OFF	60-75 min	XT or 30-45 min	Yasso 800s: 6-8 x 800m	OFF or XT	XT or 30-45 min	LR: 14-16 miles
6	Mara	OFF	80-100 min	XT or 30-45 min	TR: 2-4 miles	OFF or XT	XT or 30-45 min	LR: 16-18 miles
7	Mara	OFF	70-85 min	XT or 30-45 min	TI: 3 x 2 miles w/ 4 min jog	OFF or XT	XT or 30-45 min	90 min 3rds PR
8	Mara	OFF	80-100 min	XT or 30-45 min	Yasso 800s: 8-10 x 800m	OFF or XT	XT or 30-45 min	FFLR: 14-18 miles w/ last 6-8 miles at marathon GP or slightly faster
9	Mara	OFF	70-85 min	XT or 30-45 min	TR: 3-5 miles	OFF or XT	XT or 30-45 min	LR: 18-22 miles
10	Mara	OFF	80-100 min	XT or 30-45 min	PR: 50-60 min w/ last 20 min fast	OFF or XT	XT or 30-45 min	90 min 3rds PR
11	Peak	OFF	40 min	XT or 30-45 min	TI: 3 x 2000m w/ 400m jog	OFF or XT	XT or 40 min	FFLR: 12m w/ last 6 miles at marathon GP or slightly faster
12	Peak	OFF	30-40 min	CI: 4-5 x 1000m w/ 200m jog	45 min	OFF or XT	XT or 30 min	RACE: Marathon

KEY: min = minutes
km = kilomters
LR = Long Run (p. 100)
PR = Progression Run (p. 220)
SP = Speed Workout (p. 129)
LS = Leg Speed (p. 142)
Mi = miles
OFF = No exercise
FR = Fartlek Run (p. 131)
TI = Tempo Intervals (p. 115)
TR = Tempo Run (p. 114)
GP = Goal Pace (p. 214)
m = meters
XT = cross-training
CI = Cruise Intervals (p. 117)
FFLR = Fast Finish Long Run (p. 211)
Yasso 800s (p. 212)

mcmillan running

McMillan **MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep-Speed	OFF or XT	PR: 70-80 min w/ last 20-30 min fast	55-65 min	FR: 10-12 x 1 min w/ 1 min jog	OFF or 30-45 min	XT or 55-65 min	LR: 14-16 miles
2	Prep-Speed	OFF or XT	LS: 8-10 x 25 sec w/ 1 min jog	55-65 min	FR: 5 x 2 min on 1 min off	OFF or 30-45 min	XT or 55-65 min	LR: 16-18 miles
3	Mara	OFF or XT	80-90 min	55-65 min	CI: 6-8 x 1000m w/ 200m jog	OFF or 30-45 min	XT or 55-65 min	90 min 3rds PR
4	Mara	OFF or XT	FR: 12-15 x 1 min w/ 1 min jog	55-65 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 30-45 min	XT or 60-75 min	LR: 16-20 miles
5	Mara	OFF or XT	90-105 min	55-65 min	Yasso 800s: 6-8 x 800m	OFF or 30-45 min	XT or 60-75 min	LR: 18-22 miles
6	Mara	OFF or XT	FR: 12-15 x 1 min w/ 1 min	55-65 min	TR: 3-5 miles	OFF or 30-45 min	XT or 60-75 min	FFLR: 16-20m w/ last 6-8 miles at marathon GP
7	Mara	OFF or XT	90-105 min	55-65 min	TI: 3 x 2 miles w/ 4 min jog	OFF or 30-45 min	XT or 60-75 min	LR: 18-22 miles
8	Mara	OFF or XT	FR: 12-15 x 1 min w/ 1 min jog	55-65 min	Yasso 800s: 8-10 x 800m	OFF or 30-45 min	XT or 60-75 min	FFLR: 14-18 miles w/ last 6-8 miles at marathon GP
9	Mara	OFF or XT	90-105 min	55-65 min	TR: 5-7 miles	OFF or 30-45 min	XT or 60-75 min	LR: 20-24 miles
10	Mara	OFF or XT	FR: 12-15 x 1 min w/ 1 min jog	55-65 min	FR: 6-8 x 2 min w/ 1 min jog	OFF or 30-45 min	XT or 60-75 min	FFLR: 14-18 miles w/ last 6-8 miles at marathon GP
11	Peak	OFF or XT	FR: 8-10 x 1 min w/ 1 min jog	40 min	TI: 3 x 2000m w/ 400m jog	OFF or 30-45 min	XT or 50 min	FFLR: 12 miles w/ last 6 miles at marathon GP
12	Peak	OFF or XT	LS: 8-10 x 25 sec w/ 1 min jog	CI: 4-5 x 1000m w/ 200m jog	45 min	OFF or 30-45 min	XT or 30 min	RACE: Marathon

KEY: min = minutes
km = kilomters
LR = Long Run (p. 100)
PR = Progression Run (p. 220)
SP = Speed Workout (p. 129)
LS = Leg Speed (p. 142)
Mi = miles
OFF = No exercise
FR = Fartlek Run (p. 131)
TI = Tempo Intervals (p. 115)
TR = Tempo Run (p. 114)
GP = Goal Pace (p. 214)
m = meters
XT = cross-training
CI = Cruise Intervals (p. 117)
FFLR = Fast Finish Long Run (p. 211)
Yasso 800s (p. 212)

mcmillan running

McMillan **MARATHON** Training Plan: **6-7 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Speed	XT or 55-65 min	PR: 70-80 min w/ 20 min fast	60-75 min	SP: 12-16 x 400m w/ 200m jog	60-75 min	XT or 55-65 min	LR: 16-20 Mi
2	Prep - Speed	XT or 55-65 min	FR: 12-15 x 1 min w/ 1 min jog	60-75 min	SP: 6-8 x 800m w/ 400m jog	60-75 min	XT or 55-65 min	LR: 16-20 Mi
3	Mara	XT or 55-65 min	80-90 min	60-75 min	CI: 8-10 x 1000m w/ 200m jog	60-75 min	XT or 55-65 min	90 min 3rds PR
4	Mara	XT or 30-40 min	FR: 12-15 x 1 min w/ 1 min jog	40-50 min	TI: 4-5 x 2000m w/ 400m jog	40-50 min	XT or 30-40 min	LR: 18-22 Mi
5	Mara	XT or 55-65 min	90-105 min	60-75 min	Yasso 800s: 8-10 x 800m	60-75 min	XT or 60-75 min	LR: 20-24 Mi
6	Mara	XT or 55-65 min	FR: 12-15 x 1 min w/ 1 min jog	60-75 min	TR: 3-5 miles	60-75 min	XT or 60-75 min	FFLR: 16-20 Mi w/ last 6-8 Mi fast
7	Mara	XT or 55-65 min	90-105 min	60-75 min	TI: 3-4 x 2 miles w/ 4 min jog	60-75 min	XT or 60-75 min	LR: 22-26 Mi
8	Mara	XT or 30-40 min	FR: 12-15 x 1 min w/ 1 min jog	40-50 min	Yasso 800s: 8-10 x 800m	40-50 min	XT or 30-40 min	FFLR: 16-20 Mi w/ last 6-8 Mi fast
9	Mara	XT or 55-65 min	90-105 min	60-75 min	TR: 5-7 miles	60-75 min	XT or 60-75 min	LR: 22-28 Mi
10	Mara	XT or 55-65 min	FR: 12-15 x 1 min w/ 1 min jog	60-75 min	GP: 7-10 miles at marathon goal pace	60-75 min	XT or 60-75 min	FFLR: 14-18 Mi w/ last 6-8 Mi fast
11	Peak	XT or 50 min	FR: 8-10 x 1 min w/ 1 min jog	40 min	TI: 3 x 2000m w/ 400m jog	40 min	XT or 50 min	FFLR: 12 Mi w/ last 6 Mi fast
12	Peak	XT or 30 min	LS: 8-10 x 25 sec w/ 1 min jog	CI: 4-5 x 1000m w/ 200m jog	45 min	40 min	XT or 30 min	RACE: Marathon

KEY: min = minutes
km = kilomters
LR = Long Run (p. 100)
PR = Progression Run (p. 220)
SP = Speed Workout (p.129)
LS = Leg Speed (p. 142)
Mi = miles
OFF = No exercise
FR = Fartlek Run (p. 131)
TI = Tempo Intervals (p. 115)
TR = Tempo Run (p. 114)
GP = Goal Pace (p. 214)
m = meters
XT = cross-training
CI = Cruise Intervals (p.117)
FFLR = Fast Finish Long Run (p. 211)
Yasso 800s (p. 212)

Chapter 3

Setting a Goal Time

Not only do you need a training plan for your goal race but you need a time goal as well. Most coaches would now launch into a few chapters on how to set your goal time but I find that for most of us, our goals aren't too complicated. Many runners have a time threshold that they want to break. Common examples include breaking 20 minutes for a 5K or 4 hours in the marathon. For other runners, the goal is achieving some qualifying time (which is set by others). Younger runners have times they must achieve to qualify for various championships (e.g. regional championship qualifying times). Adult runners have qualifying times as well. The most common is the Boston Marathon qualifying time. So, I think setting your goal is usually pretty easy and largely determined by some external factor (time threshold, qualifying times).

Let's leave it at that right now. I have, however, done research over the last decade that provides some insight into whether your goal is achievable or not. We'll get to that later as right now, I want to focus on building your ultimate training plan. Just note your goal time and we'll evaluate it later in the book.

My goal time is:

Chapter 4

We're Just Getting Started!

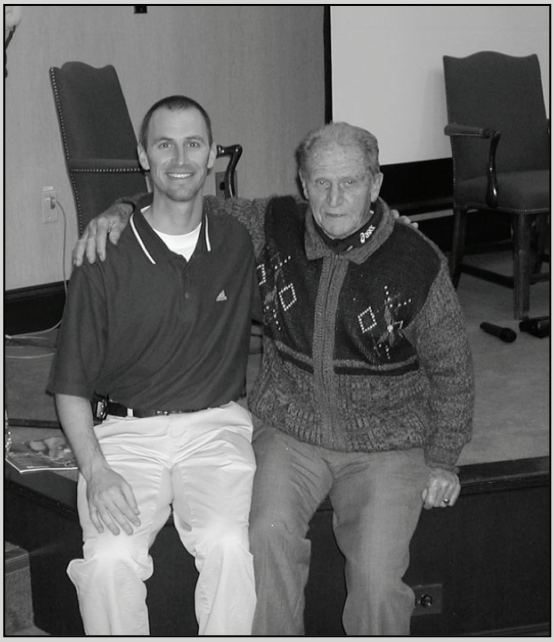
Now, many runners stop at this point. They put their faith in a basic training plan, but we're just getting started! I want to show you how I design truly individualized training plans. In the coming chapters, we'll walk through my actual training plan for a half-marathon. I'll show you step-by-step how I modify a basic training plan like the ones in Chapter 2 to better match the runners I coach. You can follow along with your training plan and after completing the exercises to come, you'll end up with a training plan just like the one I would build for you.

Coach to Coach:

Coaching development is like going from a robot to an artist. When I started coaching, I used published training plans, mostly from Arthur Lydiard, with my first athletes. Soon, I began to modify these plans based on what I was seeing in the athletes and my new athletes benefited from these experiences. Over and over, athlete by athlete, I slowly went from just providing basic programs from other coaches to more customized programs using my developing coaching philosophy. Now, 20 years later, I feel more like an artist when creating a training plan. I certainly have my overriding philosophy for each race distance but it's just more artistic in how I apply this philosophy to each athlete. If you are starting out in your coaching career, I encourage you to investigate lots of coaches and their programs. And, if you choose to use mine, start with these basic programs but keep a very close eye on how your athletes respond. Use your intuition and be confident that even though you will make mistakes, this is the path every coach takes. It's a never-ending learning process.

Learning from the Best: Arthur Lydiard

The first running book I read (way back in high school) was a handwritten copy of *Running the Lydiard Way* by Arthur Lydiard. I didn't realize it at the time but I was reading the words of the man *Runner's World Magazine* called the "Best All-time Running Coach." Lydiard revolutionized the training of runners by advocating the development of an endurance base (something unheard of in his day) before an athlete began race-specific speed training. Today, his training techniques form the basis of nearly every successful training program around the world.



Nearly 20 years after reading *Running the Lydiard Way*, I was asked to accompany Arthur (87 years old at the time) on his lecture tour through Texas. Day after day, I spent nearly every waking hour with the greatest coach on the planet. We talked training. We gave lectures. We shared

meals. It was great. I admired him, learned from him and he took me under his wing. Sadly, as we sat in a hotel room in Houston on the night before he was to depart for his last few lectures in California, he suffered a heart attack and died. It was the worst day of my life. Being around him, though, had stoked my fire to help runners, just as he had done for over six decades. My goal in coaching is to apply what I learned from Arthur and to make him proud. I highly recommend his books *Running to the Top* and *Running with Lydiard* to all goal-oriented runners and coaches.

Step #2: Your Personal Running Evaluation (PRE)

Chapter 5

Three Questions Every Runner Should Answer

It's one thing to have a training plan. It's another thing to make it your own and that's exactly what we're going to do now. I believe all runners should answer three questions about themselves:

1. How do I *respond* to each type of workout as well as to my day-to-day training?

2. How do I *recover* from training and racing?

3. And, how do I *adapt* to training?

Once you know the answers to these questions, it becomes easy and clear what your training should look like (and how it may differ from your training partner's). You also learn how, when necessary, you should adjust your training.

I call this your Personal Running Evaluation (or PRE – like the late great runner Steve Prefontaine). I find that runners rarely evaluate themselves in this way. They usually just blindly follow a set training plan. But once they do the PRE, the light bulb goes off. I commonly hear, "That's why I struggle with that workout. It's not my type!" and immediately, steps can be taken to optimize training and reduce poor workouts and races.

In the next three chapters, I'll walk you through your PRE. I bet you'll be amazed at what you'll discover and we'll use this information when we customize your training plan.

Chapter 6

PRE Question #1: How Do I Respond to Training?

The first question, "How do I respond to training?" is an easy one to answer. You just need to think about how you feel while running different types of workouts and races. Runners can usually be divided into three general types -- Speedsters, Endurance Monsters and Combo Runners – based on how they respond to training and racing. Think about your training and racing history and see which description sounds most like you.

Speedsters

The Speedster dominates his peers in any workout where the repeats are short and fast (15-minute race pace or faster which for many competitive runners is 2-mile to 5K race pace). Speed workouts and short races get the Speedster excited and leave him fatigued but not exhausted. Long runs, tempo runs, marathon training and longer races, however, take more out of the Speedster than a day of hard repetitions on the track. When comparing race results with his peers, the Speedster is often frustrated that he can perform so well at short races but as the distance increases, he gets left behind.

Endurance Monsters

For the Endurance Monster, long runs, marathon training, tempo runs and any workout at long distance race paces are a breeze and usually invigorating. The more miles per week the better is a common mantra for the Endurance Monster and she finds that she can almost double her 5K personal record (PR) in a 10K and nearly double her half-marathon PR in

her marathon. The Endurance Monster, however, finds it very difficult to get her legs to go fast. Short, fast training like speed workouts leave the Endurance Monster feeling deflated. Short races like 5Ks also leave her exhausted and sore.

Combo Runners

The Combo Runner is the most common type of runner. He performs fairly well in all types of workout - short/fast and long/slow. The Combo Runner also performs equally well in races of 5K to the marathon, placing nearly the same compared to his peers in each distance. No runner is perfectly balanced, however, so even Combo Runners may find some subtle tendencies toward one type of workout or race. So you may be a Combo-Speedster or you may be a Combo-Endurance Monster.

What's Your Type?

So, which one are you? By knowing whether you tend to be more of an Endurance Monster, a Speedster or a mix of both, you get an idea of your strengths and weaknesses as a runner. This is valuable because it does you no good to train like a Speedster if you're an Endurance Monster, even if you're getting ready for a speed-oriented event like a 5K. I'll say it again: It does you no good to train like one type of runner if you are the complete opposite type.

What we need to do is set up your training to match your type. This doesn't mean you won't do some training in your weaker area, but it does mean that any workout that isn't your strength needs special consideration in your training plan. Why? Because that workout will likely be a tougher workout than it may appear when just looking at it on the training plan. You will need to be mentally ready to challenge yourself even though your training partner may fly through the workout

with no apparent effort or concern.

What you'll learn as we perform the PRE exercises throughout this section of the book is that we have to carefully mix training that is your strength, with training that is your weakness, to bring you to peak fitness as your goal race or racing season nears. I cannot emphasize enough that it's the subtle manipulation of training plans that can take your fitness to an entirely new level, and knowing your type is vitally important for you.

Training Zone Primer

I'll give you an in-depth explanation of training zones in Step #3 of this book, but for now, here's a quick overview of how I define training zones:

Endurance Zone: Running at an easy effort for extended periods of time. Examples include easy runs and long runs.

Stamina Zone: Medium-effort, medium duration running. An example is a tempo run.

Speed Zone: Running at a high effort for a short duration. An example is a speed workout with repeats lasting one to five minutes.

Sprint Zone: Running at a very high speed for a very short distance. An example is a sprint workout with repeats lasting 15 to 40 seconds.

New Runner? Take This Quiz

Don't worry if you're new to running or returning after a long layoff. While you may not be able to answer these questions now, understanding the PRE will be very valuable as you get going on your running career.

That said, I find that with new runners there are clues as to what type of runner you may be. And, once you know your type, you typically follow the same pattern as others of your type. Here's my quick quiz to help you determine your type:

Clue #1: Previous Sports Participation -
Have you played other sports? If so, think about your capabilities compared with others. Were you quick to first base and great at stealing bases? If so, you may lean toward the Speedster type of runner. What about sports with jumping like basketball or volleyball? If you felt stuck to the ground and couldn't jump very high, you may lean toward the Endurance Monster type of runner. Search for clues related to speed versus endurance in other sports to help steer you toward your type of runner.

Clue #2: Cross Training -
Cross training can also provide a clue as to your type. Do you prefer high-intensity activities like a spin class (typical of Speedsters) or do you prefer low-intensity exercise where you simply zone out and let the time tick by (typical of Endurance Monsters)? Again, think through any activities you've done and see if there is a tendency one way or the other.

Clue #3: Your Mentality -
Psychologists would suggest that your mentality is also a great clue as to your physical traits. Athletes who tend to have a more quiet, reflective personality may be more like an Endurance Monster whereas those who like a lot of stimulus may enjoy Speedster-type training more. Most of us, of course, are somewhere in between (Combo Runners) but your mentality may provide a clue as to your tendencies toward speed or endurance.

This quick quiz provides a cursory look at the type of runner you may be. It's not an exact science but can give you a clue as to where your tendencies lie. With new runners, I tend to start by classifying them as Combo runners (so we get some experience and data from all types of workouts) but use the results of this quiz to shift the Combo training toward a more speed or endurance orientation.

McMillan's Six-Step Training Notes:

Before we move to the next chapter, now's a good time to jot down your insights from this chapter. You can then refer back to these notes when you evaluate future training plans.

Training Response Insights:

I am:

____ A Speedster – I perform better at short, fast workouts and races. High mileage, long workouts and long-distance races challenge me so I need to be careful with them.

____ An Endurance Monster – I perform better at long, steady workouts and races and enjoy running lots of miles each week. Speed workouts and short races challenge me so while I need them, I will need to be smart about how I insert them into my training.

____ A Combo-Speedster – I'm fairly equal in my workouts and races – enjoying both short/fast and long/steady workouts and all of my races. However, I tend to perform better in speed and sprint-type workouts and feel they provide the best fitness boost for me.

____ A Combo-Endurance Monster - I like it all but find I tend to like higher mileage and stamina-type workouts best.

PRE Exercise #1

Labeling Key Workouts

Now that you have an idea of what workouts fit your type (strengths) and which ones are not your type (weaknesses), it's a good exercise to photocopy or print out your training plan and mark each key/specialized workout. In fact, make a few copies because we are going to go through some exercises in a bit where you'll want to mark up your plan. I've provided training plan worksheets that you can print out on my website, www.mcmillanrunning.com, if you like.

For this exercise, I'll use myself as an example. I'm using the Half-Marathon – 4-5 days per week – plan from page 22.

I've marked each specialized workout, which in this plan falls on Day 2 (on occasion), Day 4 and Day 7. "ST" indicates a workout that fits my strengths and "WK" indicates a workout that is my weakness. Now, this is a half-marathon training plan and since the half-marathon is an endurance event and I'm more of a Speedster, I expect that I'll have to run some workouts that are my weakness and I need to be cognizant of these workouts. However, what I'm looking for after marking each special workout is whether I have too many WK workouts in a row (notice on Week #9 that both specialized workouts are my weakness). I also want to ensure that I have a nice sprinkling of ST workouts across the plan. (Note that I'm not marking easy runs or regular long runs as they aren't specialized workouts.)

My only concern after marking this training plan is that I have two WK workouts in Week #9 and two of the three key workouts in Week #11 are WK workouts. Since Week #11 is the week before the race, I might consider changing the steady state workout to something that better fits

my strengths (maybe 4-5 x 1200m with 400m recovery jog). In this case, I simply mark through the planned workout and write in one of the workouts from earlier in the plan (Week #5) that fit my strength.

mcmillan running GREG'S COMBO-SPEEDSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	ST Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min ST off	XT or 40-60 min	ST Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-~~10~~ 5 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 ~~6~~ ST 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 ~~min~~ ST w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	WK TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x ST 1200m w/600m jog	OFF or 40-60 mi	50-60 min	WK FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	ST PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x ST 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	TR: 5-7 miles WK	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 WK miles fast
10	Half Marathon	OFF	ST LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog ST	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min ST off	XT or 40-50 min	TI: 4-5x 2000m SS: 6-8 miles WK	OFF or 40-50 min	40-50 min	WK FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	ST CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	ST FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

You can do the same thing with your training. Follow what you learned in this chapter, and be prepared to modify the plan if you see something like that described above.

In fact, let's do this exercise again but instead of using my Combo-Speedster traits, let's modify the program for an Endurance Monster. As you can see, the workouts are now marked differently – workouts that were my weaknesses are now strengths for the Endurance Monster and some workouts that were my strengths are now labeled as weaknesses for this different type of runner.

After labeling the workouts, I see two areas that concern me. In Week #10, there are two WK workouts. This is always a cause for concern but when it's so close to the race, it's really important that you adjust the program. For this week, I would simply omit the "10 x 15 sec w/ 1 min jog within the run" and just run easy for 50-60 minutes. Then, since I know mile repeats are often a struggle for Endurance Monsters, I would change this to a workout that will be a positive confidence-builder for the runner. I've suggested a tempo interval workout of 3 x 3 miles with 5 minutes jog in between. This is an advancement of the workout from Week #8 and I bet will really suit this type of runner.

Next, I'm concerned about the week of the race (Week #12). There are two workouts that aren't this runner's strength and we should change that. So, I must mark through the suggested workouts and add workouts that I know work well (and happen to be workouts from earlier in the training). With these simple changes, I would predict a better experience for an Endurance Monster type of runner.

Flipping between the two programs (mine and the Endurance Monster's), you can see that while the basic outline of the training is the same, a few subtle tweaks using the ideas from the PRE can really turn a

basic program into a perfect program. I want you to always remember this exercise. It will serve you well as you chase your goals.

mcmillan running ENDURANCE MONSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	WK Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	WK Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	WK CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	ST: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	~~WK 50~~-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	ST TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m WK jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast ST
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast ST	XT or 40-60 min	ST: 3 x 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	ST TR: 5-7 miles	OFF or 40-60 mi	50-60 min	ST FFLR: 14-16 miles w/ last 2-4 miles fast
10	Half Marathon	OFF	~~WK 50~~-60 min w/ ~~10 x 15~~ sec fast ~~w/ 1~~ min easy within run	XT or 40-60 min	WK SP: 5-6 x 1 mile w/ 800m jog CI: 5x5M	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min WK off	XT or 40-50 min	SS: 6-8 miles ST	OFF or 40-50 min	40-50 min	ST FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	WK CI: 4-5 x 1000m w/ 200m jog. TR: 2-3M	XT or 30-40 min	WK TR: 8-10 x 1 min w/ 1 min jog PR: 30-40 MIN	OFF or 30-40 min	30-40 min	RACE: Half Marathon

KEY:

How Do You Respond to Your Training Load?

Before we move on to the next chapter, another important consideration is how you respond to your day-to-day training load or weekly mileage. Again, there is no set amount for all runners. Some runners respond better to running a lot of miles in a week (usually Endurance Monsters or Combo-Endurance Monsters). Others respond better to running lower mileage (usually Speedsters or Combo-Speedsters).

What I've found is that there is a *sweet spot* in mileage for each runner that challenges the body to get fitter and faster but keeps injuries at bay. This sweet spot is what you need to seek in your training.

So, think about your past training (or better yet, review your training log if you kept one). Compared to your peers, do you find that running more miles per week suits you? Or, do you feel "chasing miles" is more trouble than it's worth? Do you often find that an injury is right around the corner so you need to be careful or can you run mile after mile and feel rejuvenated?

Task number one as we customize your program is to identify your *current* sweet spot in mileage. Task number two is to recognize that your sweet spot will change

1) as you gain experience as a runner (mileage usually increases with experience),
2) as you age (mileage often goes down later in life) and
3) as your life stress changes (high stress times equal lower mileage, low stress times equal higher mileage).

You may race better by gradually running more miles at certain times of the year (or even year round) or you may find that you need to settle in at

a slightly lower mileage. Some runners even find that they need to cycle their mileage up and down from week to week and month to month to perform their best. Again, it's all about you and your particular needs.

But for now, think about your current training volume. Does it seem to be dialed in or are you finding it hard to be consistent? Let's make a note of this.

McMillan's Six-Step Training Notes:

One of the key ingredients to customizing your perfect plan is your weekly mileage. Jot down your notes here so you can refer back to them whenever you need a refresher on your mileage sweet spot.

Weekly Mileage Insights:

My current sweet spot in mileage is:

_____ miles per week/kilometers per week and I find running
_____ days running per week to be perfect for me.

When my life is busy and/or I'm battling/concerned about an injury, my sweet spot in mileage is around:

_____ miles per week/kilometers per week and frequency is:
_____ days running per week

When my life is calm with little external stress and/or I'm preparing for a big race like a marathon, my sweet spot in mileage is around:

_____ miles per week/kilometers per week and frequency is:
_____ days running per week

PRE Exercise #2

Mileage Evaluation

Let's revisit my half-marathon plan and take a look at the weekly mileage. I estimated the mileage I would run for each workout in the week and added it to the far right column. On the surface, it fits right in with my sweet spot at this point in my running life. I feel I can run 30-40 miles per week, week in and week out, without injury. I can even push the mileage up to 50-60 but if I do it for too many weeks in a row, this usually leads to injury.

I feel good that the plan doesn't go above my comfort level (50 miles per week) but do notice that it calls for four consecutive weeks between 40 and 50 miles (weeks 7, 8, 9 and 10). Now, if I were one of those runners who never gets hurt, then this would be fine. But, I'm not. I was injured frequently when I was younger so I know that I need to insert recovery weeks into my training plans.

I feel that I might be risking injury if I do four straight weeks near the top of my safe mileage range so I would modify the plan to take a rest week in Week #8. To aid recovery, I would reduce the run on Day 3 of the week (or even omit it all together) and I would omit the run on Day 6. This will lower the weekly mileage to 30-35 miles, which should be enough to keep injuries at bay. It will also give me one more complete day of no running, which I've found really helps me avoid injury.

You can follow the same process when you evaluate your training. Look for situations where the weekly mileage either (1) goes above the level where you think you will get injured or (2) strings together too many weeks at the high end of your mileage range. In either case, do just what I've done and modify the plan to be more realistic.

mcmillan running GREG's COMBO-SPEEDSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7	Est. Mileage
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	ST Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min	30-40
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min	40-50
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off ST	XT or 40-60 min	ST Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min	35-45
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x ST 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min	40-50
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x ST 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles	40-50
6	Half Marathon	OFF	LS: 50-~~80~~ ST min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	WK TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles	35-45
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x ST 1200m w/600m jog	OFF or 40-60 mi	50-60 min	WK LR: 14-16 miles w/ last 2-4 miles fast	40-50
8	Half Marathon	OFF	PR: ~~50-60~~ ST w/ last 10 min fast	XT or ~~40-60~~ 20-30 min	TI: 3 x 2 ST miiles w/ 5min jog	OFF or 40-60 mi	~~50-60~~ OFF min	LR: 14-18 miles	30-35 ~~40-50~~
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	TR: 5-7 miles WK	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 ~~WK~~ as fast	40-50
10	Half Marathon	OFF	LS: 50-60 min w/ 10 ST x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog ST	OFF or 40-60 mi	50-60 min	LR: 105-120 min	40-45
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off ST	XT or 40-50 min	SS: 6-8 miles WK	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM WK pace	30-35
12	Peak	OFF	ST CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	ST FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon	20-25 w/o RACE

Mileage Tips for New and Young Runners

Building endurance through consistent mileage is one of the most basic training principles and it will help you achieve your potential. However, the injury rate in running is so high (nearly 2/3rds of runners get hurt every year) that new and young runners need to be especially careful and smart when considering mileage.

My rule is to run 10-20% LESS mileage than you think you can but plan for an increase in mileage over time. So, if you feel you can run 30 miles per week, shoot for 25 and on one less day of running. Do this for six to eight weeks then bump up to 30 miles per week plus one more day of running. This should significantly reduce your injury risk and allows your musculoskeletal system (the muscles, tendons, ligaments and bones) to become stronger and stronger. It's very important to understand that mileage for a new runner is less about performance gains and more about gradually building up the musculoskeletal system so you can train more and stay healthy.

This careful approach allows you to determine your durability – your ability to tolerate running and not get hurt. Some new runners will find that their musculoskeletal systems are very durable and, in the future, they can ramp up their mileage more aggressively (rare) whereas other new runners will find that they need to be careful and stick with a very gradual and conservative increase in mileage over the first few years of running (more common).

Chapter 7

PRE Question #2: How Do I Recover from Training?

The next question, "How do I recover from training?" is also an easy one to answer and is vitally important when it comes to planning your training. For each runner I coach, I try to determine as soon as possible how quickly he or she recovers from each type of workout and race. This makes sense doesn't it? As their coach, I need to make sure that I schedule enough recovery days after a hard workout to ensure subsequent workouts are successful.

Most runners take 48 to 72 hours to recover from a hard workout before their bodies and minds are ready for another intense workout. But, we don't all recover at the same rate from the same workout or race. So, you need to determine your recovery rate to make sure you set up your training for success. Again, this is where generic programs fail goal-oriented runners like you. If you are slow to recover from one type of workout then the training plan must provide extra days after that workout. I often remind runners that you can't force a training plan on your body. The plan must work *with* your body and your unique rate of recovery.

Think about the different types of workouts and races you've completed and how you felt *after* each. You can usually classify each as a "quick recovery" or "long recovery" workout. For example, some runners find long runs to be refreshing and their bodies and minds are invigorated and ready for another hard workout within a day or two (quick recovery). For other runners, long runs are a large mental and physical challenge. They leave the body exhausted for two to four days – low energy, low desire for training with stiff and sore legs (long recovery). The same goes for other

types of workouts and races as well – some leave you fresh and ready to attack training; others leave you fatigued with little motivation for training. Of course, the body's daily energy levels ebb and flow as well. Thus, how you recover can vary from time to time, occasionally turning a quick recovery workout into a long recovery workout. You need to be aware so you can adjust to how your body is recovering that day. The key is just respecting the body and how it feels. In general, the greater the workout stress the more recovery that will be needed.

I'll use my friend Peter as an example of how important recovery rate is. Peter is a Combo runner who tends toward an Endurance Monster. For years, his training plan included speed work on Tuesdays and a tempo run on Thursdays. He'd also include a weekly long run on Sundays. This training rhythm served him well but once he turned 45, he began to notice that his tempo runs (workouts he normally was very good at) were hit or miss. He'd have a good one one week then a poor one the next week. Now, given that he is more of an Endurance Monster, you'd predict that his tempo runs would be where he would shine. If he had trouble with any workout, you'd predict that it would be his speed training on Tuesdays. Not the case.

What was happening was that as he aged, it was taking him longer and longer to *recover* from the speed work on Tuesday. This delayed recovery was leaving him tired for his tried-and-true tempo run. Once we added an extra recovery day between the two workouts (even skipping the speed workout on some weeks), his tempo runs once again became a great strength for him and he went on to set a new marathon PR at the age of 48.

The lesson is that we all recover from different workouts at different rates (and remember that recovery rates may change throughout your running career). As such, you should set up your training based on your unique recovery rate. It's likely that after a workout that is your strength, you only

require a short recovery whereas after a workout that is your weakness, you will likely need extra recovery days. This is important information as you customize your training plan, isn't it?

As I'll mention over and over, I believe that recovery rates should trump the calendar - a challenge for us in today's world where the calendar drives our daily lives and training. Be open to adjusting your training when your body and mind require it. The result will be consistently good workouts and a greater chance at success when you toe the line at your next race.

McMillan's Six-Step Training Notes:

Training Recovery Insights:

My "quick recovery" workouts are (check all that apply to you):

_____ Endurance Workouts like long runs (LR) and fast finish long runs (FFLR)
_____ Stamina Workouts: Medium-effort, medium-duration running like stead state run (SS), tempo runs (TR), tempo intervals (TI) and cruise intervals (CI)
_____ Speed Workouts: Running at a high effort for a short duration like speed workouts (SP) and fartlek runs (FR) with repeats lasting one to five minutes.
_____ Sprint Workouts: Running at a very high speed for a short distance like sprint workouts (LS) with repeats lasting 15 to 40 seconds.
_____ Combo Workouts: Normal length runs which starts easy but finished fast like progression runs (PR)
_____ Hill Workouts: Hill repetitions (HILL)

My "long recovery" workouts, which require extra recovery days, are:

_____ Endurance Workouts - LR, FFLR
_____ Stamina Workouts – SS, TR, TI, CI
_____ Speed Workouts – SP, FR
_____ Sprint Workouts – LS
_____ Combo Workouts – PR
_____ Hill Workouts - HILLS

PRE Exercise #3

Label Workout Recovery Times

Again, let's use my half-marathon plan as a real-world example of this concept. I've labeled each specialized workout as a quick (Q) recovery workout or a long (L) recovery workout. Note that I'm using my original unadjusted training plan so that it's easier to see how this exercise works.

What I'm looking for are any times where I have more than one long recovery workout in a week. If we look at Week #9, you'll see that I have two long recovery workouts that week. I may need to adjust a workout or I may just need to be prepared that I may not feel very good on the second workout if I keep things the way they are. I suspect I'll be okay in this instance because there are two days (with one full day off – Day 5) between the workouts.

Week #8 also concerns me and this illustrates a very important point. If I just look at each week as a separate unit, then week #8 appears to be a great week with two quick recovery workouts. But, the body doesn't know that it's a new week. It only knows what came the day or two before it. If you look at the end of Week #7, I have a long recovery workout but then the plan calls for another workout two days later. This may be okay since I have a full day off in between (Day 1, Week #8) but if I recover slowly from the fast finish long run on Day 7 of Week #7, then I may need to omit the fast finish on Day 2 of Week #8. (The same will apply with the end of Week #11 and beginning of Week #12.) Again, I may not have to adjust anything but it's really important that you identify potential problem areas at the outset. This will help you to be objective come decision time when you are actually in the middle of the training.

I hope you are seeing that this type of labeling and marking up a training

plan is a simple yet powerful way to customize your training.

mcmillan running GREG'S COMBO-SPEEDSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	TR: 5-7 miles	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
10	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	SS: 6-8 miles	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

New and Young Runner Recovery

As you get started in running, recovery is a key area where you can set yourself up for success and avoid the pitfalls most new runners face – namely getting injured.

I recommend what might be called "extended recovery" for new runners. Why? Because new runners are at great risk of injury from doing too much, too soon and also don't yet know how to deal with "bad" workouts. So, why even risk being under-recovered and having a bad workout? Why not add another recovery day or two to the training? It will pay off in the long run as you build your body to handle more training and build this motivation with successful workout after successful workout.

So, I recommend new runners add an extra recovery day between key workouts for this first year or so of training. It's likely that you'll have better workouts which will boost your fun and motivation and that you will stave off the injury monster lurking around every corner.

Chapter 8

PRE Question #3: How Do I Adapt to Training?

The third and final question every runner should answer is, "How do I adapt to training?" Like the two previous questions, your answer tells a lot about how your training plan should be structured for maximal benefit.

Here's the simple concept: If you perform a few endurance workouts, your body adapts in various ways (physiologically and psychologically) to better handle this type of workout in the future. You experience this as an ability to run longer and longer with less fatigue. If you run a few stamina workouts, you feel your ability to run at a fast pace for a long time improve. Run some speed workouts and your speed will improve in a similar fashion. The same goes with sprint workouts. But, you guessed it, we each adapt to different types of workouts at different rates (and to varying amounts) so we need to take this into account to make sure our training is optimized.

For example, I'm a Combo-Speedster type of runner so my body adapts much more quickly to speed and sprint workouts than it does to endurance and stamina workouts. After just a few speed sessions, I feel amazingly fit and ready to race. But, with endurance and stamina workouts, it takes a lot more of those for me to feel a boost in fitness. I understand this about myself, but it's still frustrating that my training partner (who is a Combo-Endurance Monster) adapts so much faster than I do to stamina sessions. Our race times are the same, but boy is there a difference in how we adapt to different types of workouts. You may find this with your training partners or the athletes you coach as well.

When building a training program for an athlete, it's important to determine the training zones that are "fast adapting" and those that are "slow adapting" and take this into account when scheduling the ramp-up in fitness toward the goal race. After all, we want to be in peak shape on race day, not a week too early or a week too late.

When you approach your training plan in this way, it gives you the power to better predict how quickly you build specific aspects of your fitness (endurance, stamina, speed and sprint) and when you will reach peak race fitness. This individualized way of planning training is so much more effective than just blindly following a generic plan.

Most runners find that after performing four to eight workouts in a given training zone over the course of a month (1-2 workouts per week) that their fitness is higher and their race performances are improved. So, think back across your training and racing history. (This is where a training log really comes in handy.) Do you find that you adapt more quickly (quicker boost in fitness) to endurance and stamina workouts? Or, are you like me and find that you adapt more quickly to speed and sprint workouts? Your answer provides insight into whether you need more or less of a certain type of workout and how close to put these workouts to your race (so you time your peak for race day).

Now, knowing your adaptation *rate* is one thing but the other component in this section is the *extent* to which you adapt to each training zone. In other words, not only are we different in how quickly we adapt to training, each runner is also different in the amount of adaptation available in a given training zone.

I'll use myself as an example again. Because I quickly adapt to speed and sprint workouts I find I reach peak fitness with four to six of these types of workouts. (Fast adapting workouts usually only take four to eight

sessions to reach peak fitness.) So, I know that I only need four to six workouts to be race ready. No need to schedule twelve weekly speed workouts because I know I will risk over-training.

With stamina workouts on the other hand, I adapt much more slowly. I've found that I need more of these workouts to feel like I've really developed my stamina to its fullest. From experience, I know I need six to sometimes twelve of these workouts to bring my stamina to its fullest potential. (Slow adapting workouts usually take eight to even as many as sixteen sessions to reach peak fitness.)

From my example, you can see that my training program should have lots more stamina workouts across the plan than speed workouts and that I can delay inserting the speed workouts until later in my plan. You may be like me or you may be the opposite. Again, there is no right or wrong. It's just a matter of identifying your particular adaptation rates and then applying this information when you schedule your training. It actually makes designing training quite easy and I bet you are starting to see just how easy my six-step system is.

So, as you think about how you respond to, recover from and adapt to different types of workouts, the training plan almost customizes itself, doesn't it? You know which workouts to include frequently and which to use sparingly. You know how to quickly build your fitness, as well as how to meter it out over time, in order to arrive on race day in peak shape.

McMillan's Six-Step Training Notes:

Training Adaptation Insights:

I get a quick fitness boost (and thus reach a fitness peak quickly) from:

_____ Endurance Workouts - LR, FFLR
_____ Stamina Workouts – SS, TR, TI, CI
_____ Speed Workouts – SP, FR
_____ Sprint Workouts – LS
_____ Combo Workouts – PR
_____ Hill Workouts - HILLS

These workouts take longer to build my fitness:

_____ Endurance Workouts - LR, FFLR
_____ Stamina Workouts – SS, TR, TI, CI
_____ Speed Workouts – SP, FR
_____ Sprint Workouts – LS
_____ Combo Workouts – PR
_____ Hill Workouts - HILLS

PRE Exercise #4

Label Workout Adaptation Times

Our final exercise to help really dial in your training plan is to mark the fast-adapting (F) workouts and the slow-adapting (S) workouts. Looking at my half-marathon plan, I see that as expected, I have more slow-adapting workouts than fast-adapting workouts. Remember, I'm more of a Speedster and since the half-marathon requires more endurance and stamina, I'll need more slow-adapting workouts in order to get that part of my physiology and psychology race-ready.

In looking at the plan, I'm hesitant to change much even though it looks like I have a lot of slow-adapting workouts. I usually need these types of workouts to get ready for a half-marathon. But, there is one area that concerns me – the Day 4 workout in Week #11. Heading into the last couple of weeks before the race, I may not want a slow-adapting workout in my plan. If I was an Endurance Monster, I bet this would fit great but since I'm Combo-Speedster, I will probably change this workout to something that is more fast-adapting. And, let's remember that I already expressed concern over this workout in PRE Exercise #1. As a result, I'll definitely change this workout.

Now, if I was an Endurance Monster, I'd probably be concerned with Week #12 since it includes two workouts that are more speedy. I'd probably change the Day 2 workout to a tempo run of 2-3 miles since that would be a fast-adapting workout for an endurance-oriented runner.

Again, this process is so critical yet so many runners just blindly follow a plan. I want you to see that a little thought up front can help not only tailor the program for you, but help you get more from the program which will lead to a faster time on race day.

mcmillan running GREG'S COMBO-SPEEDSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	*PHASE*	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	TR: 5-7 miles	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
10	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	SP: 6-8 miles TI: 4-5 x 2000m	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

Personal Running Story – Jordan Horn

Not only have I coached beginners and Boston qualifying level runners, I also have had the honor of working with Olympic and World Championship level athletes. One such fast runner is Jordan Horn. His story provides great insight into the power of the PRE.

(Spencer Allen/SportsImageWire.com)

When Jordan joined my stable of Olympic hopefuls, his personal bests (PRs) for 5K and 10K were 14:11 and 29:00, respectively. In comparing those times, the 10K performance is slightly better than the 5K time. In training, he ran a lot of miles and his body seemed to handle mileage easily. Given the above, I assumed he was a Combo Runner (he had run well at all distances) but had tendencies toward Endurance (better 10K performance and lots of mileage). As we went through the first

year of training, however, I noticed that he really struggled with Endurance and Stamina training, which you would predict would be his strong point. But, we kept trying. Workout after workout I kept expecting a breakthrough but it didn't happen. And, at the end of that first year, his times had barely improved – his 5K dropped to 14:01 and his 10K didn't improve at all.

After his season, I performed the PRE and it was glaringly obvious. Jordan, despite looking like a Combo-Endurance Monster on paper, was actually a Combo-Speedster. He responded better to the Speed and Sprint workouts we sprinkled through the first year's training plan. He also recovered faster and got more of a fitness boost from these workouts. I found that he struggled with the Endurance-type workouts and it was clear that he was a different type of runner than I thought.

So, I adjusted his training the second year. I was careful with the inclusion of Endurance and Stamina training and was more generous with the Speed and Sprint training. For example, when his more Endurance-oriented teammates were doing a 10-mile continuous steady state (marathon effort) run, I'd give Jordan 5 times 2 miles at steady state pace with a three-minute jog between. In the end, he got the same amount of training as those doing the continuous run but his mind and body responded better to the interval-type way we executed the workout. And, I did this throughout the training cycle. Nearly every Endurance and Stamina workout was adjusted from continuous to a repetition workout with a rest interval. And, I gave him more Speed and Sprint Workouts across the entire training plan.

The result? He lowered his PR in the 5K by over 30 seconds to 13:31! He also broke four minutes for the mile, a lifelong goal of his. It was amazing! And most importantly, his confidence grew from all the positive results. His hard work and newfound performance level even

landed him on Team USA for a prestigious race in Japan, and another lifelong dream of representing the U.S. had come true.

What Jordan's story shows is that if you apply what you learn from the PRE, you can have a big breakthrough in your performance. While the first year of working together was like beating our heads against the wall, the second (PRE-adjusted) year of training included positive result after positive result.

In the end, I followed my own advice and created a training plan that worked *with* Jordan's physiology and psychology, not against it, and the results were incredible. Now that you understand the PRE, you can do the same and I hope you, like Jordan, will enjoy a breakthrough series of races.

Chapter 9

PRE: What You Learned

I hope by walking through your personal running evaluation (PRE) you see how easy (and important) it is to customize your training plan. I've used this simple evaluation to help thousands of runners train smarter, avoid injury and race faster and now you can use it to improve your running as well.

I believe that when you apply what you learned about yourself in the PRE, you avoid the pitfalls of blindly following a generic training plan. I believe it allows you to make your training plan more effective – more bang for your buck so to speak - and that it helps you avoid or at least limit the number of "bad" workouts and races. I believe that it puts you in control of the training plan and how quickly you choose to build various aspects of your fitness (so you peak on race day) and allows you to adapt any plan to fit your particular physical and mental traits. This makes training a more positive experience, which keeps motivation high and if your motivation is high, there is nothing you can't do.

Now's a good time to jot down some notes on what you learned from your PRE. Let's recap:

#1) Your Response to Training

You learned that you respond differently to different types of workouts and races. You learned whether you are a Speedster, an Endurance Monster or a Combo Runner. And if you are a Combo Runner, you learned whether you have tendencies toward speed or endurance.

Now you understand why you excel at some workouts and have trouble

with others. Given your responses, you know which workouts will be a relative breeze to complete (your strengths) and which ones you'll need to simply "survive" (your weaknesses).

You also learned how you respond to the day-to-day training load. Again, the training plan must fit your body, not the other way around. You learned that some runners run faster off of higher mileage and some run faster off of lower mileage. Due to injury risk, some need to cycle their mileage up and down throughout the year and others have a high stress life and so must run fewer miles than they would like.

You learned that you must find your sweet spot in weekly mileage. This may or may not match your training partner's. Once you dial in your optimal weekly mileage, you'll notice that it can rise and fall from time to time. You'll have some periods where you can schedule higher mileage (marathon coming up, low stress in life) and times when you need to back off a bit (high stress in life, need to prevent injury). It may take a bit of trial and error, but over time you'll learn exactly what you can and can't handle, making the training process relatively smooth sailing. The goal being that you stay fresh and excited for training, not fatigued and unmotivated.

#2) Your Recovery from Training

You learned that some workouts are "quick recovery" workouts that require a minimal number of recovery days before you are ready for another hard workout and that some workouts are "long recovery" workouts that require a bit more time before the next specialized workout can take place. This information helps you better space out your workouts within your plan and you learned that your body's recovery rate must rule the roost, not the calendar. You also learned that your recovery rate isn't static. It moves throughout your running career –

with life-stress, age, training experience, etc.

When planning your training or tweaking an existing plan, you will now add in an extra recovery day after long recovery workouts. This way of training works with the body, not against it, and results in consistently good workouts – something that every runner wants.

#3) Your Adaptation to Training

Similar to recovery, you learned that you get a quick fitness boost from some types of workouts (fast-adapting) whereas other workouts take a bit longer (slow-adapting). This information helps you plan just how quickly you reach peak racing fitness. In your training program, you can now plan for your fitness improvements. You'll include a bit more slow-adapting workouts (especially early in the plan) since you need more of them and you'll know that you only need a few fast-adapting workouts to get race ready. This may mean a significant departure from your generic training plan but that's okay. You now know what works for you and that is more important than any set training plan.

Apply Your PRE

I recommend that you perform a new PRE before each training cycle. You will learn things from each training plan and this can be valuable information to help you tweak your next one. You will also be a different runner than you were in the previous training plan. Fitness and experience build from one plan to the next and hopefully, you'll enter each subsequent training cycle a fitter and more experienced athlete ready to take your running to the next level.

But, just as life has its ebbs and flows, running does too, so you can expect that you'll enter some training plans super fit from the last training cycle

and you'll have times when you are forced to regain fitness. Either way, your PRE will guide you toward a more beneficial plan for achieving your goals and I find that after a few times using this simple tool, you can end up with a way of training that virtually guarantees success.

PRE Benefits for New and Young Runners

As I mentioned earlier, new runners won't necessarily know the answers to the questions in the PRE but I hope you see how you can use this information in the future. What you've learned should help you make some educated guesses as to the best training for you and as you perform this training, you will now pay close attention to how you respond to, recover from and adapt to each workout. This will help you when you perform the PRE before your next training cycle.

I advise new runners to be conservative at first. Err on the side of less volume and less intense training. Get through your first training cycle uninjured, with better fitness and raring to go on your next one. That's much better than getting over-anxious, training too hard and getting injured. Nothing is worse than a person who finds their passion in running, then is stuck on the sidelines with an injury.

Coach to Coach:

This is it. This is what coaching is all about. It's not just about the Xs and Os of a training plan. It's about how that training plan will fit your athlete and his physical and mental traits. This is the most important lesson I learned from Arthur Lydiard. It's all individual. For me, this idea of the PRE has been the most important factor in becoming a better coach. I use it constantly and encourage you to use it as well. It will help you to be a better coach and in the end, that's what we're all after.

Learning from the Best: Joe Vigil

Great coaches make you want to be a better athlete *and* a better person. There is no better example of this than Coach Joe Vigil. "Coach", as he is lovingly called, has had more of an impact on U.S. distance running than nearly any other coach. At the collegiate level, his Adams State College teams won 19 National Championships, produced 425 All-Americans, 87 individual National Champions and Vigil was named National Coach of the Year 14 times. During this time, he also worked tirelessly on coaching education for USA Track & Field, helping to educate a new generation of coaches.

Vigil may best be known for his work with post-collegiate runners, most notably Deena Kastor. At a time when U.S. distance running was in a drought, he helped Deena become one of the best distance runners in the world, eventually earning a bronze medal at the 2004 Athens Olympic Games. His coaching techniques and her performances

helped fuel the resurgence of long distance running in the U.S.

Over the last few years, Coach Vigil has been extremely kind to me. He's a teacher at heart and I guess he saw I was interested in learning more. I'm indebted to Coach for not only his lessons on training theory but for his inspiration and motivation to become more than just a trainer of athletes and to move toward that important role of "coach" – an athlete's trusted partner who not only provides the physical training but also the mental fire power to break through to new levels of performance. I recommend his book *Road to the Top* (which is available on my website: www.mcmillanrunning.com) to all aspiring coaches and competitive runners.

Step #3: Phases, Zones and Workouts

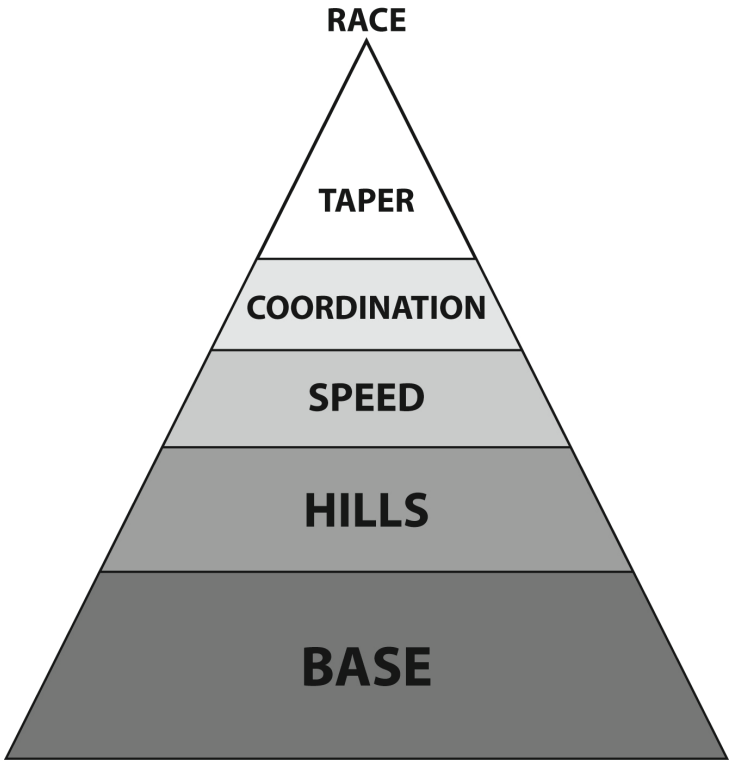
Chapter 10

Training Phases

You'll notice that one of the first columns in your training plan is called "Phase." For decades, it's been popular to break training into blocks called phases. Phases provide a way of ordering training (do this phase, then this phase, then finally this phase) with each phase focused on a different type of training.

The most famous example of ordering training using phases is Arthur Lydiard's training pyramid. The idea was that you started with the base and added training blocks, or training modules as I call them, on top of this base phase until you reached the peak of the pyramid, which corresponded to your peak fitness for your goal race. I got the sense from Arthur when we toured together that each phase wasn't quite as one-dimensional as had been reported (some interpreted Lydiard's phases as only including one type of training), rather the idea was that you would focus on one type of training in a phase before switching to a new phase and new workouts. The genius of this approach is that Arthur found that his runners could do a better job in their most race-specific workouts if they did preparatory training to get ready for the demands of the race-specific workouts – something unheard of in his day.

Arthur Lydiard's Pyramid



Today, distinct training phases aren't used as often since most coaches prescribe training plans that include a variety of workouts from week to week. But, I still like the idea of training phases and that's why you see them in all the McMillan Training Plans.

Ultimately, it comes down to this: I've given you the types of training you need to do to get ready for your race (the last 5-8 weeks of your training plan that you picked out in Step #1). But, you probably aren't yet fit enough to do that training at the level (volume of running and paces in workouts) you need to in order to reach your goals. So, you need to "do the training so you can do the training." That's what the preceding weeks

are for. These basic fitness weeks prepare your body and mind so that you can get the most benefit from the race-specific training. Sometimes, runners aren't even ready for the basic fitness that precedes the race-specific phase so we have what I call the need to "do the training, so you can do the training, so you can finally do the training you need to do." This idea of being prepared to do better in the most race-specific phase of your training is really what Arthur was getting at and I think it makes sense today.

Every runner is different of course. Some runners only need a few weeks of basic training to get ready for the final few weeks before their goal race. Other runners, however, must do a lot of preparatory training (sometimes even focusing on non-running exercises to build injury resistance) in order to be ready for the race-specific training.

The result is that you can think of phases in two general types: basic fitness and race-specific training. You've seen the race-specific phase (usually labeled as 5K, 10K, Half-Marathon or Marathon) in the phase column of your training plan. And, you've seen a few basic weeks in your program as well, the number of which varies based on the event you are training for.

Ultimately, I design several different types of basic fitness phases:

1) Injury Resistance: Non-running exercises and to prepare the muscles, tendons, ligaments and bones for the rigors of running

2) New Runner: Introductory workouts to help new runners learn effort and pace, practice better running form and get a quick fitness boost

3) Mileage Base: Used to build mileage up to a goal level – sometimes returning to full volume from your last training cycle or sometimes building to a new mileage level

4) Workout Base: Modeled after what I learned from Arthur Lydiard and includes leg speed and aerobic threshold (steady state) workouts, plus long runs to maximize your endurance

5) Prep – Hills: Also modeled after Lydiard's training philosophy and often used before a speed-oriented training phase to condition the legs for the stress of fast running

6) Prep – Speed: Modeled after what I learned from Gabriele Rosa and works to develop your speed in advance of starting a stamina-oriented training phase (like marathon training)

7) Prep – Stamina: Similar to the Prep-Speed phase and develops your stamina in advance of a speed-oriented training phase (like 5K and 10K training)

8) Race-Specific: Includes all the specialized workouts to help you prepare for the unique demands and limitations of your goal race (You see this labeled 5K, 10K, Half-Marathon and Marathon in my training plans)

9) Peak Phase: The last 1-2 weeks before your race where you balance resting up for the race with doing some final peaking workouts so you'll be at your best on race day.

More on training phases in Chapter 26 but I wanted to overview them at this time since they provide insight into how (and why) your training plan features phases as well as zones and specific workouts.

Proven Practices + Exercise Science = My Training Philosophy

With the runners I coach, the key to individualizing their training is to blend the time-proven principles from running's greatest coaches and athletes with what sports science has taught us over the last few decades. I even focused my graduate studies in exercise science on this idea and it's exactly what you are learning from this book.

This concept is not new. In fact, I first came across it when I picked up a tiny booklet with an impossibly long name that I paid 10 cents for at a yard sale. The name? *What Research Tells the Coach about Distance Running* by Dr. David Costill. It was in the 50 pages of this book written in 1968 that I found the connection I was looking for, and upon which my Six-Steps philosophy is based. By using exercise science, I take the proven training principles of our greatest coaches and athletes and adjust these principles to any runner of any ability. This has been vitally important for me since I coach runners across the full spectrum of the sport – runners who are just coming off the couch or out from behind the computer, those who are trying to qualify for the Boston Marathon as well as those competing in the Olympic Games.

Using this philosophy, I believe you can create a training plan that is superior to a generic plan.

Chapter 11

Race Pace Relativity

Okay. This is very important so read it carefully before we get to the training zones and workouts. You'll notice that I refer to race pace by time instead of distance. For example, I'll say, "one-hour-race pace" instead of "10K-race pace." From a physiological standpoint, if you run as hard as you can for one hour and I run as hard as I can for one hour, we will both exhibit very similar physiological responses. The main difference, of course, is the speed. You may run 10 miles in one hour whereas I may only run seven. In order to make all the training advice relative to runners of all abilities, I'll present race pace by time so we are all on the same page.

I can't express the importance of this point enough because you may read about a workout in a training plan that calls for five times one mile at 5K race pace with a 2 minute recovery jog between each. Now, that sounds fine but let's look at this workout for two runners and you'll see that this workout can be very, very different for each runner.

For example, if you are a 15-minute 5K runner, then your workout will be five times one mile in 4:50 per mile with 2 minutes recovery jog between. This will give a total of 24:10 of fast running. However, if you are a 30-minute 5K runner, then the workout will be five times one mile in 9:41 per mile with 2 minutes recovery jog between. This runner will now have nearly 50 minutes of hard running. See how different this workout can be when prescribed by race distance? Isn't a workout where you run hard for 50 minutes different than a workout where you run hard for less than half that?

A better way to prescribe the workout would be five times five minutes at

your 15-minute-race pace with two minutes recovery jog between. This way, both runners will get the exact same training stimulus. The speed and distance covered will be different but the overall amount of work completed will be the same. Note: Don't worry about what your 15 minute race pace is, I've created an online calculator that I'll talk about in a moment to calculate it for you.

Relating training to time-based race paces is how I'll approach our discussion of training so that all runners are getting the same training effects.

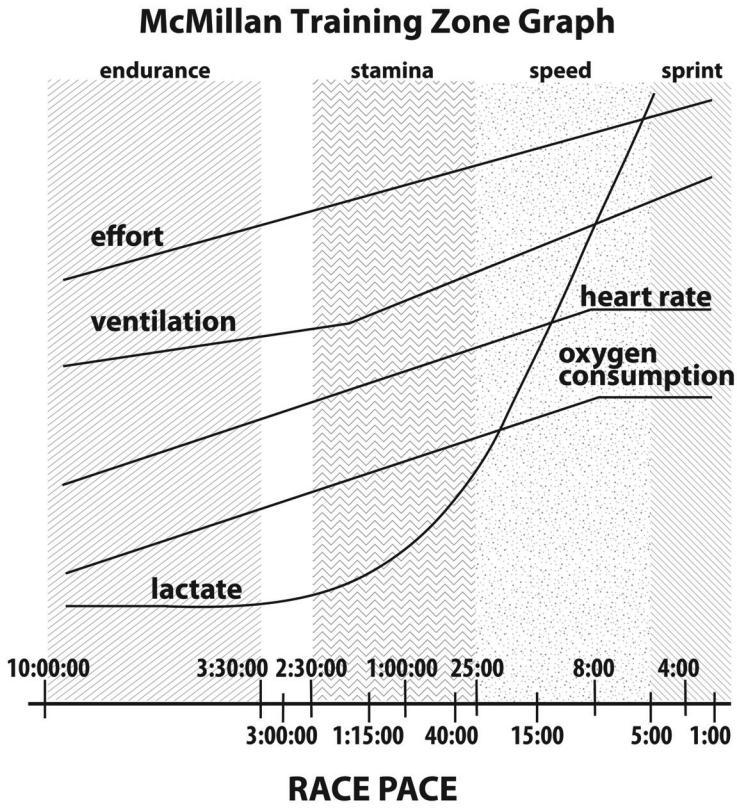
Chapter 12

The Four Training Zones

Now that you have your training plan picked out (Step #1), and an idea of your particular traits as a runner, and how you can move things around in your training plan to account for this (Step #2), let's discuss the four training zones I recommend every runner use. Applying what you learned from your PRE, you'll quickly see which zones are your strengths and will provide the largest and quickest boost in your performance. You'll also see which zones are your weaknesses and must be carefully mixed into your training plan. You'll quickly and easily be able to see how to execute your training plan since each workout fits nicely into a training zone.

While other coaches and physiologists have more scientific names for the zones, I've named them based on the benefit you receive – more Endurance, improved Stamina, increased Speed and faster Sprinting.

If you look at the McMillan Training Zone Graph, you'll notice that each zone is presented on the graph. The Endurance zone is on the far left. The Stamina zone is to its right. The Speed zone is next on the graph and the Sprint zone is on the far right. I've shaded the zones so you can easily see where they start and end.



Also on the graph, and crucial to our discussion, are six variables that are used to define each zone (effort level, breathing rate – labeled as "ventilation", race pace, heart rate, oxygen consumption and lactate level). Two of these, effort and breathing rate, are variables that you can actually "feel" while running. They require no special equipment so they are the easiest to use to make sure you are in the correct zone. In fact, I believe all training should help you connect with effort and breathing so

that you can perform your best, regardless of whether you have a watch on for that run or race or even if the race is over a hilly terrain (where pace will fluctuate) or in adverse weather conditions. This is what coaches mean when they say, "Listen to your inner coach."

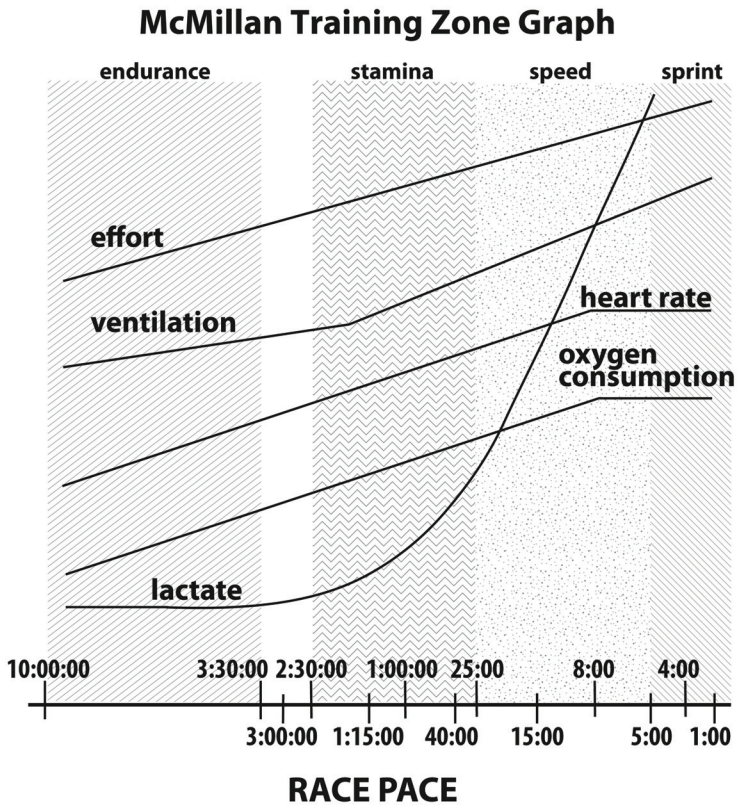
Pace and heart rate are also easy to use while running. For nearly all runners, pace is the one variable that we use most, given that virtually every runner wears a watch while running. And, with the new speed/distance monitors, knowing your pace is easier than ever.

Monitoring your heart rate is easy too. Heart rate monitors have been around for years so it's easy to get a reading of your heart rate while you run (not that you have to but it's available if you want).

The last two variables, oxygen consumption (or VO_2) and lactate, require special equipment so few runners have access to them. But, they are very important variables so we'll talk about them in order to gain a full understanding of each zone. In the end, you'll likely find pace to be the most consistent variable for knowing when you are in the right zone (and the McMillan Running Calculator calculates your paces for you).

For me, the training zone graph is like *CliffsNotes* for running physiology, and tells you all you need to know to train smarter and run faster. While you can certainly dive deep into physiology as I did in graduate school, I find that the graph easily provides the basics you need in order to understand how training affects your body.

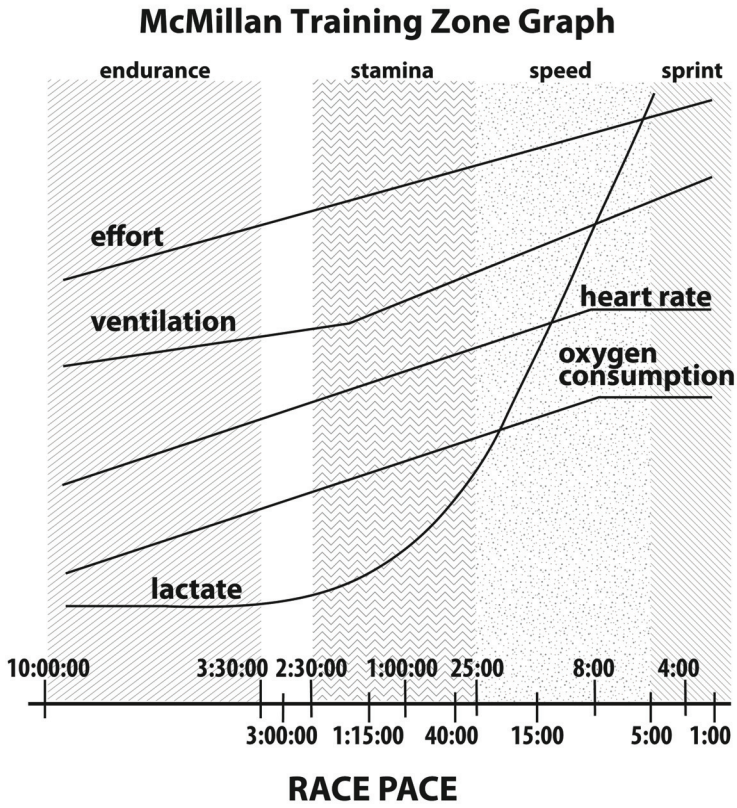
How to Read the Graph



Here's how to read it: Across the bottom (x-axis) is your speed represented as race pace – four-hour race pace (4:00:00), one-hour race pace (1:00:00), four-minute race pace (4:00), etc. (Again, don't worry about knowing your exact 4:00:00 race pace because the online calculator that you'll read about in Step #4 will calculate all your paces for you.) The pace starts slow on the left side of the graph and gets faster and faster as you move to the right. All four training zones are defined by race pace with a "slow end" of the pace range and a "fast end" of the pace range. The goal of training is to simply run at speeds that are within this pace range and you can feel confident that you will get the benefits you want

from the workout.

There are five lines on the graph itself – some straight and some curved. The top line represents your effort level (how hard you feel the pace is) and the line below effort represents your breathing or ventilation rate (the number of breaths and amount of air you inhale per minute). The next line is your heart rate (the number of times your heart contracts in one minute). Then there is your oxygen consumption or VO_2 (the amount of oxygen you take in and utilize) and finally, the last line is your lactate level.



One quick "sciency" note: Lactate is a by-product of your metabolism. It

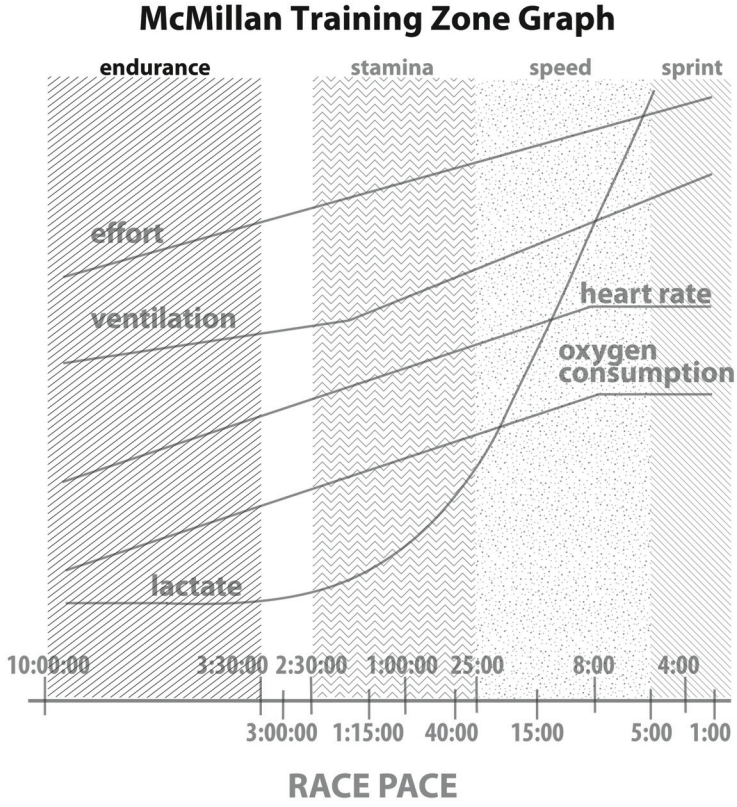
is formed as lactic acid, which you've probably heard about and have undoubtedly felt if you have run really, really hard. Once lactic acid is produced in the muscles, it quickly splits into a lactate molecule and a hydrogen ion. The lactate then moves from the working muscles into the blood where it can be easily measured (and thus displayed on a graph like this one). The hydrogen ion is either buffered or builds up depending on your intensity.

You don't have to worry with this detail but just focus on the concept. If you do, however, like the more technical stuff, I've included Nerdy Notes sidebars throughout the book that provide a bit more explanation. If you're not nerdy like me, just skip them.

Let's now go through each training zone as outlined in the McMillan Training Zone Graph to show how the various energy systems of the body are linked to specific types of training zones and key workouts that you should perform. You're then ready to start your scientifically-based, yet individualized program that gives you the best opportunity for success and removes all guesswork from your running.

Chapter 13

The Endurance Zone



The first section of the graph (on the left hand side) corresponds to when you're running at your relatively slow and easy pace. If you follow the paces on the x-axis of the graph, you'll see that the pace range is anywhere from around your 3:30:00 race pace (slower than marathon pace for some runners, at marathon pace for others and faster than marathon pace for some) up to your 10:00:00 race pace.

At this slow pace, your effort is easy, heart rate and oxygen consumption

are relatively low and your breathing is barely noticeable. There's also very little accumulation of lactate in your blood. This pace is what for years has been called "conversational pace." You can easily talk at length with your training partners throughout this type of run.

When you perform Endurance zone training (which is the bulk of your running if you think about it), you quickly see your endurance improve. You go from feeling out of breath to easily being able to chatter throughout the entire run. Your breathing becomes gentle and rhythmic and the legs no longer feel "rusty." They seem completely happy to go for a run and when you encounter hills, there is only a mild increase in effort compared to before you began training. You will also see your morning and resting heart rate drop and your heart rate remain lower at any given pace. Basically, easy running becomes easier.

Number Formatting

Just a quick note that throughout the book, I've tried to use the standard HH:MM:SS time format we runners are all used to. For example, eight hour race pace will be 8:00:00 whereas eight minute race pace will be 8:00.

No Man's Land Training

You'll notice that the Endurance and Stamina zones don't touch. This indicates what famed physiologist Jack Daniels in his book, *Daniels' Running Formula*, calls "no man's land training." It's not that you won't receive any training benefit if you run in this area, but you won't be getting as much bang for your buck as if you kept your training within one of the zones. Your injury risk may increase as well. As we'll discuss, staying within each training zone as well as each specific workout zone is vital to optimal training for maximal performance.

Nerdy Note: The Science of Endurance Zone Training

Science and experience show that optimal "Endurance" training occurs when your heart rate is between 60 and 75% of maximum and your oxygen consumption stays between 55-75% of your VO_2max. (One note here: Older, fit runners can train at a higher heart rate percentage than younger runners so their heart rate may be as high as 85% of maximum while running at paces within the Endurance zone.)

Research also reveals that Endurance zone training results in specific adaptations to your cardiorespiratory and nervous systems as well as to the muscles themselves. The key cardiorespiratory or "central" adaptations that result from Endurance zone training include an increase in your stroke volume -- the amount of blood that is pumped with each heartbeat. The result is that fewer heartbeats are needed to

deliver the same amount of blood to the working muscles. You experience this as a slower resting pulse and a lower heart rate at a given pace. In the muscles, there is a corresponding increase in the number of tiny blood vessels (capillaries) that deliver this greater volume of blood per beat. The number and size of mitochondria, the power plants of the muscle cells, also increase. You become more efficient at using fat as a fuel source, decreasing your reliance on your limited carbohydrate stores (called muscle glycogen). Speaking of glycogen, Endurance zone training stimulates the muscles to store more glycogen making this fuel readily available for long duration efforts as well as high intensity workouts – a big plus for distance runners.

With Endurance zone training the nervous system becomes very coordinated in its recruitment and use of your slow-twitch muscle fibers, which helps improve your running economy. There's even a stimulus for your fast-twitch muscle fibers to become more "endurance-like."

Training Zone Snapshot

Zone	Endurance
Pace Range	3:30:00-10:00:00+ race pace
Common Workouts	Recovery Runs, Long Runs, Easy Runs
Physiological Benefits	Increased stroke volume, more mitochondria and aerobic enzymes, greater capillary network, better injury resistance
Psychological Benefits	"Tireless state" – the ability to run for miles and miles without undue fatigue.

Training Zone Workouts

After describing each training zone, I'll want to walk through the workouts that fall within each zone. You'll see these workouts on your training plan so let's dig a bit deeper so you know exactly how to run each workout.

At this point, you should see things coming together. It's becoming clear that the training process can make sense and be individualized to your particular fitness level and traits. This knowledge will help you as you head out for your next run, because you will have a complete understanding of the how's and why's of each workout.

My experience has been that most runners don't focus enough on the details of the key workouts that they do. They peruse the internet, or books, or magazines and find a plan to follow. They see speedwork, or intervals, or a tempo run and just go to the track or roads and run as hard as they can for the number of repeats or for the distance listed in the schedule. This is missing the point. You must know exactly what the purpose of each type of workout is and exactly what pace range and effort level is appropriate for you. This is the only way that you can improve the quality of workouts and thus receive the greatest adaptations from the training.

Chapter 14

Endurance Workouts

While Endurance is the overriding theme behind endurance training, there are actually three distinct purposes for Endurance zone workouts:

1. to recover from a previous workout or race,

2. to improve your endurance - the ability to run for longer and longer, and

3. to maintain and build your basic fitness level - improved running economy, more injury-resistant musculoskeletal system and increased maximal oxygen consumption (VO_2max).

These goals are then represented by three distinct types of workouts: Recovery Runs, Long Runs and Easy Runs.

Recovery Runs

You might find it helpful to think of a recovery run as a slow jog. In fact, I usually call recovery runs recovery "jogs" just to reinforce that the run is very slow. The correct pace is between your 7:00:00 and 10:00:00 race pace. Your heart rate must stay below 65% of maximum (though it's okay for it to reach around 70% by the end of the run). Of course, these percentages are for young, fit runners. As you age, you'll be able to increase your percentage to 70-80% of your maximum heart rate as was mentioned in an earlier Nerdy Note.

Believe me, you'll find it difficult to run this slow at first, but you must. If you want to improve and get more from your training you must keep the effort very, very light.
Recovery jogs should be used the day (or two) after a hard workout or race. Intuitively, this makes sense, but I've found that recovery jogs are severely lacking in the training programs of runners. We seem to get caught up in our normal pace or the pace of our training partners and end up running too fast on our recovery days. Slow down. What's the rush? Remember, the goal is simply to get the muscles warmed up and blood flowing to deliver essential rebuilding nutrients to the muscles. These jogs work out the tightness that occurs from hard running. There is no other goal of a recovery jog. Therefore, these runs last only 15 to 45 minutes - the shorter the better.

Long Runs

Long runs need no introduction as most of us include one every seven to 21 days in our training programs. The purpose is simply time on your feet. Challenging your ability to keep running improves your endurance and is a cornerstone of distance training. While there are debates on just how long and fast your long run should be, the general recommendation is that you run your regular long runs at between 3:45:00 and 7:00:00 race pace (remember to check the McMillan Training Zone Graph). Your heart rate hangs around 70% of maximum but it could creep up to 80% as you get tired or if you are an older, fit runner. They are steady runs with the challenge of simply running a steady pace for the entire duration of the run. Keep the effort easy and resist the temptation to increase the pace just to get home sooner. Give the body time to really feel the stimulus of a long run. It will reward you with greater endurance adaptations that will serve you well in later workouts and races.

Long Run Fueling: Three Proven Strategies

Nutrition plays a key role in performance, especially in the marathon. We know this but it's not as simple as always being fueled for performance in each of your long runs. There are actually times when you want to run out of fuel. That's right. You actually want to "bonk." I wrote about it years ago and now there's plenty of research to support the idea. But, that's just part of the story. Here's the full skinny on the three types of long run fueling:

1) Normal Fueling

This is what runners do for most of their long runs. You get up; grab a quick bite then head out the door. Often, you don't ingest any calories (though maybe some fluids) during the long run. This strategy is easy. It doesn't require any special planning and will serve you well for most of your long runs. Just remember that fluids (with electrolytes) are important for all long runs, especially in hot/humid conditions.

2) Marathon Fueling

As a marathon approaches, you are advised to practice exactly what you expect to eat and drink before, during and after the marathon itself. This "dress rehearsal" allows you to dial in just what, how much and when to consume fluids and fuel for an optimal race performance. Marathon nutrition is very individual so you'll just have to try various routines to see what works for you. But, the general rules are that you should take in fluid, carbohydrate and electrolytes every 15 to 45 minutes, depending on your method of delivery (fluids only or fluids with gels or other products). And, some athletes respond well to

caffeine (particularly late in the marathon) so that may also be part of your routine.

Most athletes do just fine with liquids only but some runners need to augment their intake with gels or gel-type products. In the end, it just comes down to what you find works for you (not only for a better performance but also with respect to your digestive system). I advise athletes to start with the least complicated nutritional strategy (typically just a sports drink every 15-30 minutes) and then add to it if your results aren't what you want. This trial and error method is truly the only way to determine what works best for you. And, you may have to alter your routine in hot/humid conditions.

Again, training is your laboratory so use it to dial in your nutrition. Once you know your routine, you'll be able to approach each marathon knowing that you have the right plan for a peak performance.

3) Carb-Free Fueling

For athletes who struggle in the latter stages of a marathon (usually Speedsters and Combo-Speedsters), Carb-Free fueling may be the answer to the bonking blues. Here is the basic problem, runners who bonk are using too much of their carbohydrate stores (muscle glycogen) at race pace and their blood sugar (glucose) drops causing them to slow down. I've found that some runners simply need to challenge the body to perform without external carbohydrates. By avoiding carbohydrates before (no breakfast) and during (no sports drinks or gels with carbohydrates) a regular long run, the body is forced to get more efficient at burning fats and sparing the limited carbohydrate stores. Is it fun? No. It won't be fun at all because you run to the point of bonking – that fatigued state where you are just plainly out of energy. While these aren't fun runs, my experience and the

research shows that these carb-free runs create a strong stimulus for your body to begin to use more fat for fuel during running and to spare the limited glycogen stores – both key ingredients to beating the bonk.

So, if you are struggling with the late marathon fade and have tried everything else to improve your performance, you may want to include some carb-free long runs in your plan.

One note: For safety reasons, I recommend that you carry some carbohydrates (a gel for instance) with you on these runs just in case you run into trouble and really, really need to get your blood sugar back up. And as always, make sure you are hydrating (and including electrolytes) on all runs even if you aren't consuming carbohydrates.

Easy Runs

The final true Endurance workout is the easy run. The majority of your training is likely to be composed of easy runs and the purpose is to fully develop your aerobic fitness and then maintain it. The pace for easy runs can be as fast as your 3:30:00 race pace and as slow as your 6:45:00 race pace. Your heart rate is around 75% of maximum though it can reach 80-85% near the end of the run (maybe even a bit higher for older, fit runners). Easy runs last anywhere between 15 minutes and an hour and a half. Again, one of the common mistakes we make is running our easy runs too fast. Keep them steady but don't get into a pace where your breathing becomes noticeably faster.

Nerdy Note: Running Economy

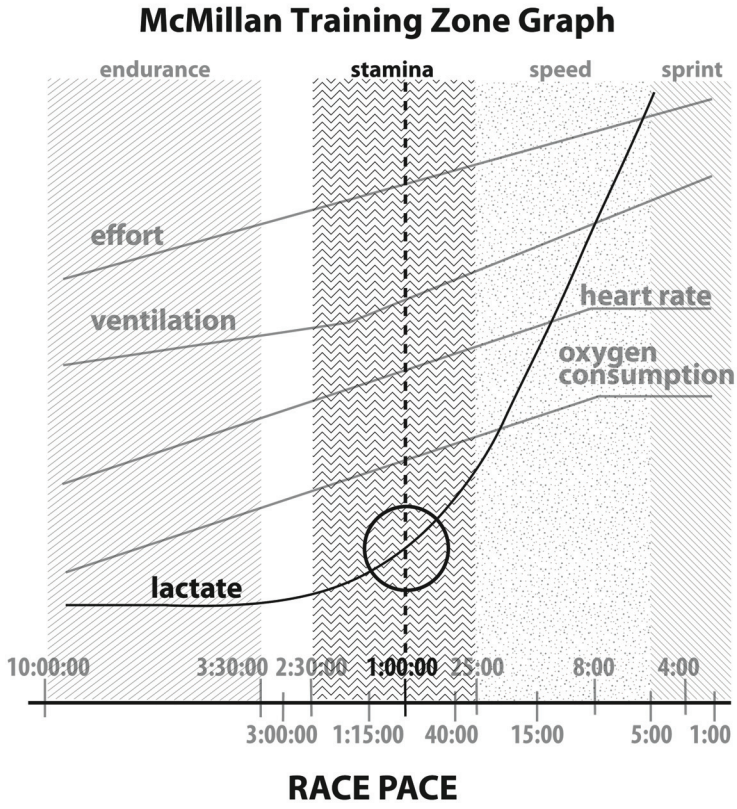
Scientists define running economy as your oxygen consumption (VO_2) at a given pace. The lower your VO_2 at a given pace, the better your economy. One runner may have a VO_2 of 55 at 7:00 pace while another may have 52. The second runner, then, has better running economy than the first — less O_2 needed at a given pace. Good running economy seems to arise from two factors. First, some runners just have inherently good economy. I don't think we truly understand this yet but after testing hundreds of runners in the lab, it appears that some of us are just more economical than others regardless of training experience. Second, training improves economy. Running economy improves simply by running more and more year after year. Fast running (faster than 10:00 race pace) also improves your overall running economy and, of course, you become more economical at the paces you run most frequently which is why you should include some running at your goal race pace in your training program.

Training Table: Endurance Zone

Workout	Pace Range	Total Volume	Repeat Duration	Recovery Duration	Notes
Recovery Run	7:00:00-10:00:00+ race pace	15-45 min	N/A	N/A	Slow jog to recover from hard workout or race
Long Run	3:45:00-8:00:00 race pace	90-240 min	N/A	N/A	Steady run to challenge body/mind to run for long periods of time
Easy Run	3:30:00-6:45:00 race pace	15-90 min	N/A	N/A	Build and maintain base fitness level, bulk of your training

Chapter 15

The Stamina Zone



The next section of the graph is the "Stamina" zone. This zone corresponds to when you are running between your 25:00 and 2:30:00 race pace. You'll notice that all the lines on the graph increase in this zone. Heart rate, oxygen consumption and effort level have all increased over their levels from the Endurance zone. Breathing rate (ventilation) and lactate have also increased, but notice that within the Stamina zone, both your breathing and lactate exhibit a "threshold" where they begin to increase at a faster rate. You've probably heard of the "lactate threshold".

Well, here it is, right in front of your eyes.
Because the Stamina zone contains these important thresholds, I really think of Stamina zone training in three ways – below the threshold, at the threshold and slightly above the threshold.

On the slow end of the pace range (1:15:00 to 2:30:00 race pace), you are just below your lactate threshold. Around your 40:00 to 75:00 race pace, you are right at your threshold and at your 25:00 to 40:00 race pace, you are slightly above your threshold. As you'll see when we talk about stamina workouts, we really focus on workouts that hit each of these three areas and the results are amazing.

You experience all the benefits of Stamina training as the ability to run longer and faster before "going over the edge" and fatiguing quickly. Research has shown over and over that the pace of your lactate threshold is the most important factor in distance running success (5K to marathon racing). Push your lactate threshold faster and you will race faster over these distances. Stamina zone training does just that so it's therefore critical that you understand Stamina zone training and how to incorporate it into your program (the next part of the book).

Nerdy Note: Lactate Threshold Training

Optimal Stamina zone training occurs when your heart rate is between 83 and 92% of its maximum (though this can vary from runner to runner, and can be slightly higher for older, fit runners), and oxygen consumption is 85-90% of maximum. In this zone, your breathing is fast but under control. The effort has been described as "comfortably hard" and your lactate level hangs around 2.5 to 5.0 millimolar, right about where your lactate threshold occurs.

Research shows that training in the Stamina zone helps push critical thresholds (lactate and ventilatory) to faster paces, which results in faster race performances.

The key adaptations that result from Stamina zone training deal with what scientists call the "Lactate Shuttle."

While we used to think that lactate was simply produced and eventually accumulated to the point where fatigue sets in, we now know that lactate is always being formed, just at different rates. At rest and during light exercise, only small amounts are formed. During heavy exercise, large amounts are produced. Once formed, the body has mechanisms whereby the lactate is "shuttled" to other tissues to be used for fuel, sort of like recycling. This recycling or shuttling has a maximum capacity, however. Once reached, the production of lactate outpaces its removal, resulting in its accumulation in the blood. Thus, the lactate threshold is reached.

I should note that lactate has a partner, a hydrogen ion. When the lactate and the hydrogen ion are together, they form lactic acid. Once

produced, however, lactic acid quickly splits into lactate and its former pal, the hydrogen ion. Like lactate, the hydrogen ion, which causes the working muscle cells to become more acidic and begin to fatigue, is controlled, up to a limit, by the body. This process is called the bicarbonate buffering system. This system captures the hydrogen ion thereby forestalling the rise in acidity in the muscles. Once this system is overwhelmed, however, the cells become more and more acidic which interferes with energy production and this acidic state is associated with fatigue.

Stamina zone training helps to improve the efficiency of these two processes (the lactate shuttle and the bicarbonate buffering system) and over time, results in less lactate and hydrogen ions accumulating at a given pace, effectively pushing your lactate threshold to a faster pace.

Training Zone Snapshot

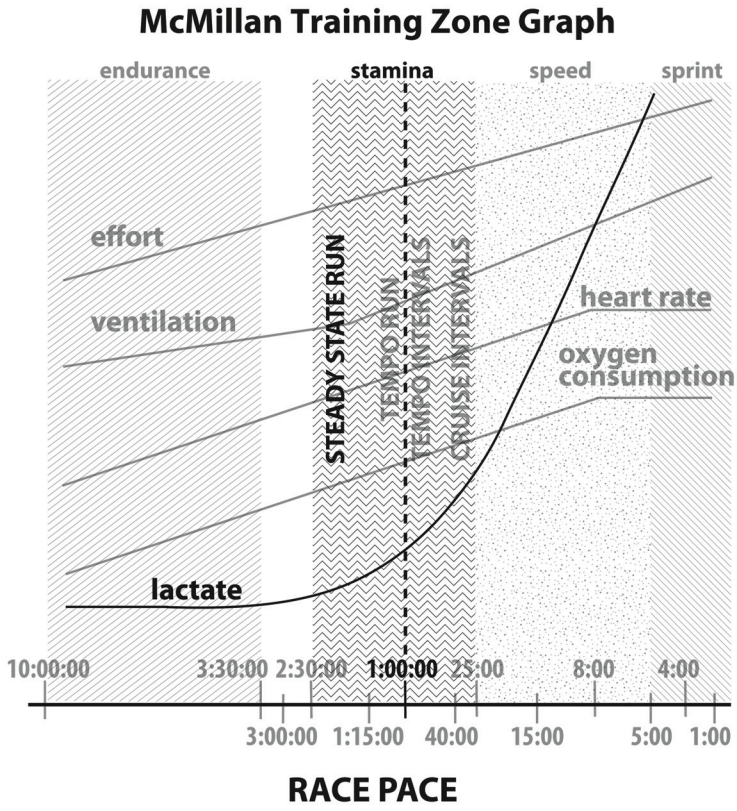
Zone	Stamina
Pace Range	25:00-2:30:00 race pace
Common Workouts	Steady-State Runs, Tempo Runs, Tempo Intervals, Cruise Intervals
Physiological Benefits	Increase in the speed at lactate threshold, improved lactate shuttle system
Psychological Benefits	Learn controlled effort and “riding the edge”

Chapter 16

Stamina Workouts

Stamina workouts introduce steady, medium-paced running into your program and mimic many common race distances of runners – 10K to the marathon. The goal is to develop your ability to run a steady pace for long periods of time. Specifically, you increase your lactate threshold pace which leads to faster race times. The challenge with each of the four types of Stamina workouts is to keep from running too fast. These are moderate efforts and running faster does little but shorten the amount of time that you are in the correct zone. It's much better with Stamina workouts to challenge yourself to go longer at a given pace as opposed to faster. At times, I also find that it's beneficial to do these workouts without a watch. Go by effort. Learn your body.

Steady-State Runs

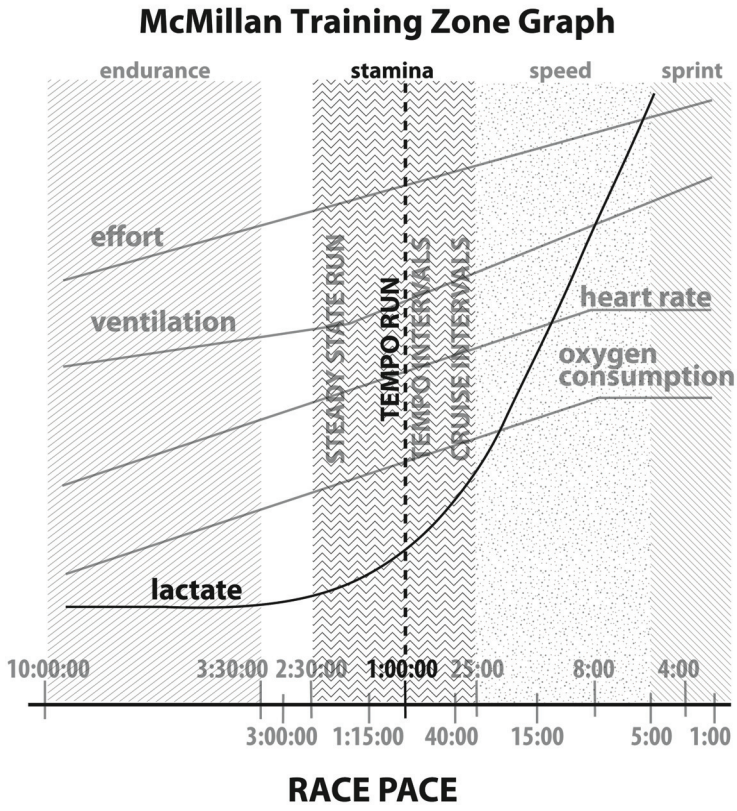


Steady state runs were once a staple in the training programs of distance runners but somehow fell out of favor. Runners now seem to have only two speeds, slow and fast - no in-between. But the steady-state run is one of the most beneficial types of workouts. The appropriate pace range for steady-state runs is between your 1:15:00 and 2:15:00 race pace. Your heart rate will likely be between 83 and 87% of maximum and the runs should last at least 25 minutes and can go as long as an hour and 30 minutes.

These are pretty tough efforts not because of the pace but because of the duration of running so be prepared to increase your concentration to stay on pace and to take a good recovery day afterwards in order to reap the full benefits. Begin with shorter steady-state runs of 25 minutes at the slower end of the pace range and gradually build to where you can run an hour at this pace. A nice way to progress is to add 10 minutes to each subsequent steady-state run until you get to around an hour at steady-state pace. As you are building toward 60 minutes of steady-state running, you'll find that your training pace will gradually get faster without you even trying.

Unlike the three Endurance workouts discussed in the last chapter, steady-state runs are the first workouts that require a warm-up. For all the remaining workouts, you should begin the workout with 10 to 30 minutes at an easy pace. Following this warm-up (which may also include stretching and faster "strides"), you can proceed into the continuous steady-state run. You will also want to include five to 20 minutes of easy jogging after the workout as your cool-down.

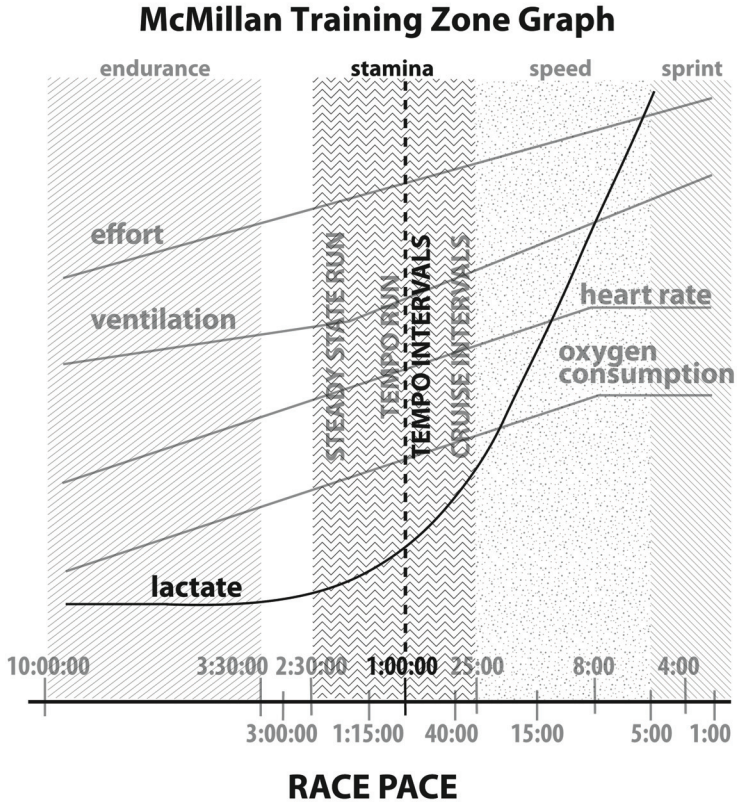
Tempo Runs



Tempo runs are slightly more intense than steady-state runs and are designed to increase your stamina. As the name suggests, you really improve your running tempo, or rhythm, with these workouts. They last between 15 and 40 minutes and are run between your 40:00 to 75:00 race pace – right at your lactate threshold. Tempo runs are meant to be "comfortably hard" so don't push the pace. Instead, find that perfect rhythm where you can maintain your pace without it getting too difficult. Your heart rate will likely be between 85 and 90% of maximum.

If you're a Speedster, I recommend keeping your tempo runs on the shorter end of the range (15 to 25 minutes). Very slowly over time, you should be able to add a few minutes as you get better at this workout. If you're an Endurance Monster, you'll find the longer tempo runs (30 to 40 minutes) more effective. Like the steady-state run, tempo runs are continuous efforts but you must preface them with a thorough warm-up.

Tempo Intervals



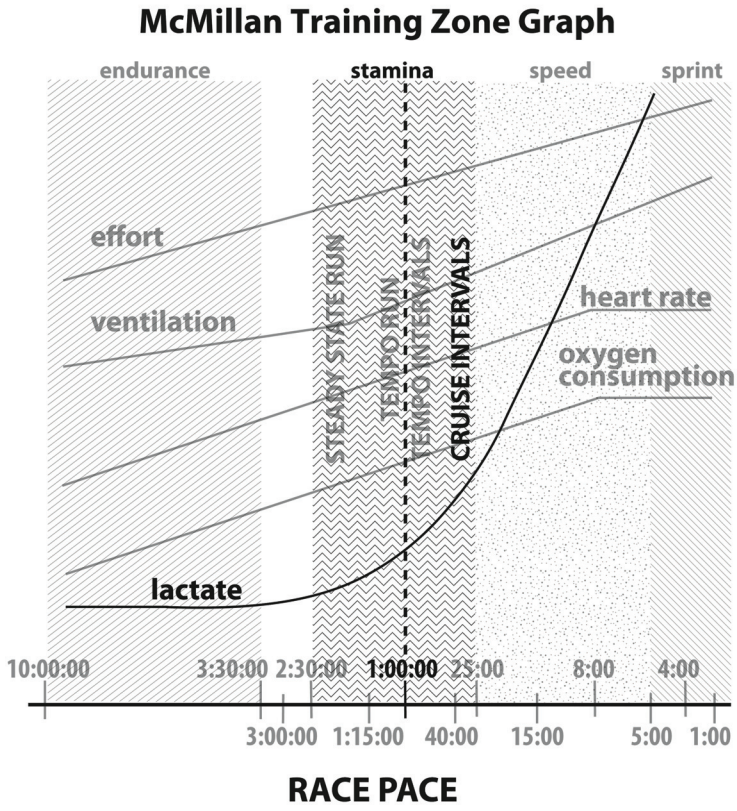
Tempo intervals are like fast tempo runs broken into two or more repeats with relatively short recovery jogs. The appropriate race paces for tempo intervals are 30:00 to 60:00 race pace and each repeat should last between

six and 15 minutes. Unlike the previous workouts, tempo intervals are the first workouts to allow for a recovery jog (or interval) between hard efforts. In this case, you jog (or walk or just rest) 2-5 minutes between each repeat then start the next one.

A tempo interval workout that I've had particular success with is two (or three) times two miles at 40:00 race pace effort with three-minute recovery jogs between repeats. Following a thorough warm-up, this workout provides a great training stimulus to prepare you for an upcoming 10K race. The effort required, the pace judgment and the mental discomfort all help immensely when race time comes. Do this workout seven to 14 days before your next 10K.

There are an infinite number of workouts runners and coaches can create with workouts where you run hard, take a break, then run hard again. So, have fun with it. Make up your own workouts. Just follow the pace, recovery and distance/duration guidelines and you'll know you are in your optimal zone for improving your stamina.

Cruise Intervals



Running coach Jack Daniels popularized the cruise interval workout. They, like the other Stamina workouts, are meant to increase your lactate threshold pace. cruise intervals are like shorter and slightly more intense tempo intervals. They last three to eight minutes and the pace is between 25:00 and 45:00 race pace. Like tempo intervals, they are followed by short recovery jogs (30 seconds to 2 minutes). You'll probably find that it's easy to run too fast on these. The tendency is to treat them like speed workouts (which are faster and we'll talk about next). However, keep it under control and work on a smooth, fast rhythm. Control in training is key to improvement.

My favorite cruise interval workout is 10 times 1000 meters (1 kilometer) with a one-minute recovery jog. This is a hefty workout so I usually have athletes start with 6 repetitions in their first cruise interval workout then move to 8 repeats in the next session and finally to the full workout of 10 times 1000 meters. The key is to control your effort. The recovery jog is so short that it encourages you to run at the proper intensity.

Nerdy Note: Slow and Fast Twitch Muscle Fibers

Whole muscles are composed of bundles of individual muscle fibers. (Think of how a cable is composed of bundles of individual wires.) These individual fibers can have different traits and have been categorized into two general types: slow-twitch and fast-twitch (though as research advances, scientists are classifying more and more subsets of muscle fibers). The slow-twitch fibers contract at a slower rate than the fast-twitch fibers. The upside to the slow-twitch fibers is that they are very resistant to fatigue thus very important for distance running. Fast-twitch fibers on the other hand tend to fatigue more quickly but are essential for fast running. Nearly all of the muscles used in running have both slow-twitch and fast-twitch fibers but the composition can vary greatly depending on the type of muscle (stabilizer or primer mover) and by your inherent genetics. The bottom line is that you want to maximize the endurance capabilities of both the slow and fast-twitch fibers while maintaining your ability to sprint when necessary. This shows why it's important to include training in all of the zones in your program.

Training Table: Stamina Zone Workouts

Workout	Pace Range	Total Volume	Repeat Duration	Recovery Duration	Notes
Steady State Run	1:15:00 - 2:30:00 race pace	25-90	N/A	N/A	Possibly the best workout to raise base fitness; first workout to require a warm-up and cool-down
Tempo Run	40:00-75:00 race pace	15-40	N/A	N/A	Very helpful at improving lactate threshold pace
Tempo Intervals	30:00-60:00 race pace	20-60	6:00-15:00	2:00-5:00	First workout where there is a fast repetition followed by a recovery interval
Cruise Intervals	25:00-45:00 race pace	20-40	3:00-8:00	:30-2:00	Easy to go too fast on these and make them a speed workout instead of a stamina workout

Warming Up and Cooling Down: Some Guidelines

With Stamina, Speed and Sprint zone workouts (and all of your races), you should preface the workout with a "warm-up" and end the workout with a "cool-down." While there are as many warm-up and cool-down routines as there are runners, some general guidelines apply:

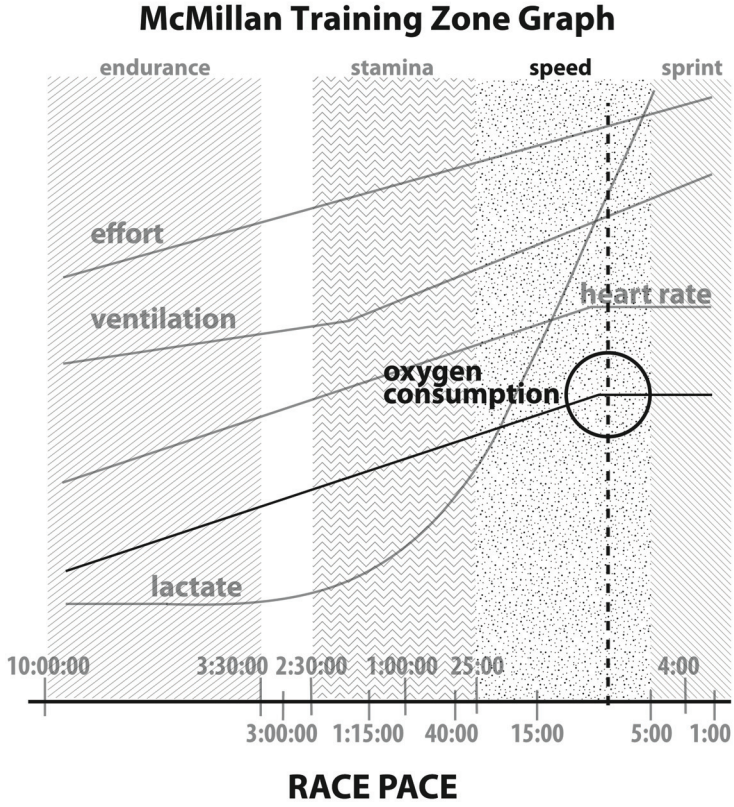
1) Run at a very easy pace for 10 to 30 minutes. Easy running promotes blood flow to the working muscles to help with uptake oxygen and nutrients for the workout/race. The soft tissues (muscles and tendons) are less likely to be injured when "warmed up" with easy running and the temperature inside the working muscles increases. All the energy-deriving pathways work optimally at this elevated temperature.
2) Not only do we need to prepare the energy-delivery system for the workout or race but we also need to get the neuromuscular system ready. Part of a good warm-up routine is to include activities to "wake up" the nervous system. Most runners do this by performing form drills – a series of exercises that promote good running technique but also stimulate the nervous system, getting it ready for fast running. (See my *Drills for Distance Runners* DVD on my website for complete information on form drills.)
3) After warming up the muscles with easy running and activating the nervous system with drills, the last part of a smart warm-up routine is to practice running at your workout/race pace (or slightly faster). Three to five "strides" – short runs lasting 10 to 20 seconds at your goal workout or race pace - help the body prepare for what you are going to ask it to do. Once you have a feel for the pace you'll be running in the workout or race, you

can finish off your warm-up with one to three strides at a slightly faster pace which appears to help workout/race pace feel easier once the workout starts or the gun goes off.

4) Cooling down after a workout or race is not as complicated as warming up. The cool-down serves to flush the waste products that may have built up during the fast running and to bring in healing, replenishing nutrients to help your muscles recover. Most runners simply jog easily for five to 20 minutes and call it a day. Some will include drills and other exercises as part of their routine but I think the most important part of cooling down is simply jogging for a short time to let the systems of the body return toward pre-workout/race levels. Don't short-cut the cool-down because it is important but also be careful not to do too much on tired, fatigued legs.
5) The final bit of advice is to find a warm-up and cool-down routine that works for you. As with every concept in this book, it's all about you. Develop your own routine that suits your physiology and psychology and is fun, repeatable and easy to implement no matter whether you are alone on a country road or getting ready for your city's largest road race.

Chapter 17

The Speed Zone



The third section of the Graph is labeled "Speed." This section corresponds to running between your 5:00 and 35:00 race pace – pretty fast running! As compared to the Stamina section, the various physiological reactions to running at this pace start to redline. Your heart rate and oxygen consumption both reach their maximum at the fast end of this zone. In fact, you've probably heard about "VO2max". Well there it is around you 8:00 to 10:00 race pace.

Breathing continues to get faster and faster and your effort is now described as "hard." Lactate is starting to really build up to nearly eight times resting levels, which means its buddy the hydrogen ion is also making the muscles more acidic and fatigued.

With speed training, you increase: you guessed it, your speed - the ability to run fast for an extended period of time. The running motion becomes more consolidated as all errant form issues (like flying elbows and funky foot plants) are eliminated. They require too much energy. Your breathing acclimates to fast, constant efforts and your legs begin to feel fast and strong. Of course, the greatest benefit is that you race faster over short distances – often a challenge for long-distance runners. Plus the mental challenge of speed training calluses you to the discomfort you will inevitably face in shorter races.

Like the other zones, to receive the adaptations described above, you simply need to train at the paces that define the Speed section of the McMillan Training Zone Graph.

Nerdy Note: VO_2max Training

While Endurance and Stamina zone training stimulate adaptations that improve the *efficiency* of several systems of your body, Speed training works to actually increase the *capacity* of several of your body's systems. Research shows that Speed Zone training:

1. increases the enzymes that help liberate energy from our fuel sources,
2. improves the lactic acid buffering capacity,
3. provides a greater stimulation and training of the fast-twitch muscle fibers and
4. results in a greater ability to extract oxygen from the blood as it perfuses the muscles (higher VO_2max).

Training Zone Snapshot

Zone	Speed
Pace Range	5:00-35:00 race pace
Common Workouts	VO_2max Intervals
Physiological Benefits	Increased VO_2max
Psychological Benefits	Better focus when tired, increased determination, familiarity to the suffering experienced in racing

Coach's Note: Breathing

I distinctly remember my first race. I was in elementary school and was selected to represent my school in "County-Wide Field Day" – an annual competition that included everything from the standing broad jump, to the softball throw, to the mile run. I ran and won the mile (and won it every year I competed which, of course, made me really like running!).

During that first race, I paced myself using my breathing. It wasn't intentional but I remember that I found that if I breathed in for two steps and out for two steps that I ran fast and kept myself from slowing down even though fatigue was setting in. I thought "in in out out" and my pace never lagged.

I never practiced this breathing pattern before the race (in fact, I never practiced running at all but I grew up in the country so we ran, walked and biked everywhere), but quickly found that I could control my performance using my breathing.

My "in for two steps, out for two steps" pattern is called a 2:2 rhythm. There are, of course, several different rhythms that runners use, depending on how fast they are running. It could be 4:2 (in for four steps, out for two) or 3:2 on easy runs. It could be 3:2 or 2:2 on faster runs and even 2:1 or 1:1 on your most challenging efforts.

I never think about my breathing when just going for an easy run but when I do a workout or a race, I use breathing to help find and control the perfect pace. You can do the same.

Over time, I thought less and less about my breathing and you will too, but if you are new to running or struggle with pacing on workouts and during races, then I suggest you focus on your breath and see what happens. I bet you'll find that if you focus on your breathing, you'll even out your pace and have more successful workouts and races. For seasoned runners, I suggest that every now and then (and especially when you are getting back into workouts and races) that you revisit your breathing.

Play around on your next workout and see what breathing pattern seems to fit your pace.

Chapter 18

Speed Workouts or VO_2max Intervals

Here's where we get to the fast stuff. These workouts are what most of us think of as "speedwork." The fast portion of the workout lasts between one and six minutes and the pace is between 5:00 and 35:00 race pace. The goal here is to spend time at your maximum aerobic capacity (or VO_2max). One of my mentors, Dr. David Martin, even calls this training "aerobic capacity intervals" in his book *Better Training for Distance Runners*.

Because the pace is fast – after all, you could only race these speeds for five to 35 minutes - you must take a recovery jog between each repeat. Research and experience has shown that a recovery jog of about one quarter to one half the distance of the repeat (or a jog for one half to the same duration as the faster running) is best. So if you run a 1200m repeat, you would jog for about 300 to 600m to recover. Alternatively, you could run four-minute repeats and take two to four minutes recovery between each. It doesn't matter whether you train by distance (on a marked path, a running track or even by a speed-distance watch) or by time (a great alternative when traveling or when no marked course is available). The goal is simply to spend ten to 30 minutes total at your VO_2max.

Two of my favorite Speed workouts are:

1) 12 times 1:00 fast with 1:00 jog – These short repeats really get the legs turning over and lungs burning. When you are time-crunched, this workout is a "get in, get out" workout that doesn't take very long but is very beneficial.

2) 3-6 x 5:00 with 3:00 jog – At some point in every race lasting less than 90 minutes, you will have a "gut check" moment where your toughness will be challenged. This workout provides an opportunity to experience this gut check several times over. Sounds terrible, I know, but I find that exposing yourself to this type of challenge in training ensures that when it's gut check time in the race, you'll be ready to push on and not give up.

While I've listed two of my favorite workouts, VO_2max intervals really drive home the idea that you can create an infinite number of effective workouts. All you have to do is stick with the guidelines that great coaches and scientists have provided and you'll know you are getting the training effects you want. So, have fun with speed workouts. Create some workouts that are your "go to" workouts like I described earlier. And create some that are fun and challenge you in different ways. You might create a workout where the repeat duration is the same (e.g., 5 x 5 minutes) and another where the repeats vary (e.g., 5 min, 4 min, 3 min, 2 min all with two minutes recovery jog). Again, the exact workout is less important that the guidelines. Follow them and the results will come, regardless of what the actual workout looks like.

One important note: You'll notice on the McMillan Running Calculator that I have two different pace ranges – one for Speedsters and one for Endurance Monsters – that can be selected in the top right of the Training Paces tab. This is again where individuality in training comes in. If you are a Speedster or Combo-Speedster, you can perform Speed workouts at a slightly faster pace than Endurance Monsters or Combo-Endurance Monsters. So, just think back to your PRE in the first part of the book and use the pace guidelines that I'll talk about in the next section for your type of runner.

And one more note: You must be very careful with Speed Zone training. While it is certainly great race prep for a faster short distance race, this is definitely a case where less is more. Exuberant runners (and some coaches) feel that since VO_2max intervals are so race-specific and beneficial that they should do them frequently. But, this is a potentially dangerous way of thinking because VO_2max intervals are one of the most stressful workouts on the musculoskeletal system – the system that gets injured. Far too often (especially with new and young runners) I see athletes get carried away with speed training and end up injured.

Coach's Note: Fartlek Running

New runners (and non-runners) are often taken aback when they first hear the term "fartlek." Kids snicker and adults look puzzled. But, fartlek is simply a Scandinavian word that means speed play. Instead of an organized distance-based workout on the track (like 10 times 400 meters with a 200 meter recovery jog), a fartlek run is time-based (like 10 times 1 minute with 1 minute recovery jog). When athletes can't (or don't want to) run on a track or marked course, they often perform the workout as a fartlek by converting the track workout with its distance orientation to a fartlek workout with its time orientation.

Fartlek workouts are a favorite of mine, particularly early in a training plan, because they are effort-based and take the pressure off of hitting exact splits on the track or a marked course. Almost any Stamina, Speed or Sprint workout can be converted to a fartlek run so I encourage runners who are just getting back into shape, are needing a break from the track or are facing tough conditions like wind or heat/humidity, to switch their distance-oriented workout to a fun fartlek run.

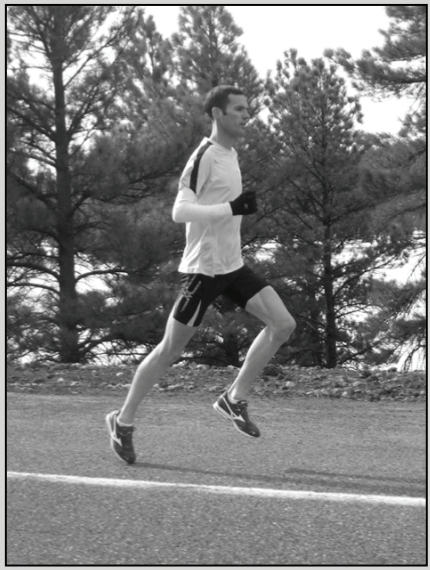
Training Table: Speed Zone

Workout	Pace Range	Total Volume	Repeat Duration	Recovery Duration	Notes
VO_2max Intervals	5:00-35:00 race pace	10-30 minutes	1:00-6:00	One half to equal of repeat duration	While very beneficial for 5K and 10K racing, runners should be careful with speedwork as it is very stressful to the musculo-skeletal system.

Coach's Note: Correct Running Form

I'll start by saying that there is no one perfect running form for all runners. We are all just so different in stature, mechanics and coordination. But, every runner can work to find his best running form. Here are a few tips:

1) Run Tall: The most important aspect of good running form is posture. Your head should be balanced over your shoulders. Your shoulders should be balanced over your hips, and your hips should be balanced over your legs.



No slouching your shoulders (a common problem since most of us are hunched over a computer all day). No head in front of your body (more thanks to the computer). No butt sticking out. My high school coach used to preach, "run tall" and it's the best advice to give on form. Just by telling runners to run tall, their

running technique improves greatly no matter how experienced a runner they are.

2) Arm Swing: It's no secret that the arms should swing front-to-back but many runners get lazy and the arms begin to swing side-to-side. Side-to-side arm swing causes biomechanical compensations in the lower body (where the injuries occur) so all runners should work to avoid this. Focusing on a front-to-back arm swing can also avoid the tendency we have for our shoulders to rise and for us to carry our arms too high. A good rule of thumb is that your hands should brush your waistband on each swing of the arms.

3) Hands: The hands should be lightly clasped while running. I was taught to hold each hand as if you are holding a tiny bird. This encourages a light grip. Gripping too tight wastes energy while gripping too loosely causes "floppy hands" which is also inefficient.

4) Foot strike: Currently, there is a lot of debate about proper foot plant (rear-foot or mid-foot), but I'm not so convinced that one is better than the other. I believe the most important factor in foot strike is not which part of the foot hits first but more importantly that the foot hits close to under your center of gravity. Landing too far in front of you (whether that is on the heel or the mid-foot) is over-striding – something to avoid. So, as long as your foot is landing close to under your center of gravity, then you are fine no matter if you land on your rear-foot or mid-foot.

More on Foot Plant

I'm indifferent when it comes to all the hullabaloo about running form and footwear. I see successful runners with all types of running form and types of foot plant. While I think we should all work to gain or maintain good running form, my opinion on running form and foot plant is that the most important running form/foot plant for you is the one that keeps you healthy. I was a mid-foot striker (often considered to be a more "correct" foot strike) but was hurt all the time. Now I'm a heel-striker and am healthy. Many people are the opposite. It doesn't matter as long as you stay healthy. A healthy runner can train more consistently over time, which is a major key to realizing your potential. Running tall encourages the foot to land more under the body (instead of in front of the body) no matter which part of the foot is touching down first.

The second consideration is that your best running form/foot plant should make you efficient. Since most of us run races of 5K to the marathon, efficiency (running economy) is more important than pure speed. We need to be able to run as economically as possible. This will keep lactic acid levels under control and lead to fast times.

The third consideration is that your best running form/foot plant should make you fast. While I've heard far too many biomechanists try to get distance runners to run like sprinters, we know that running this way is too energy-costly, which is why efficiency is ranked second in this list. But we all like to sprint at the end, and good running form and foot plant should allow us to do this. Having a powerful technique can also help us avoid injury because of the way our bodies recruit muscles when running in our most powerful position.

A few years ago, since my form was changing anyway, I developed two

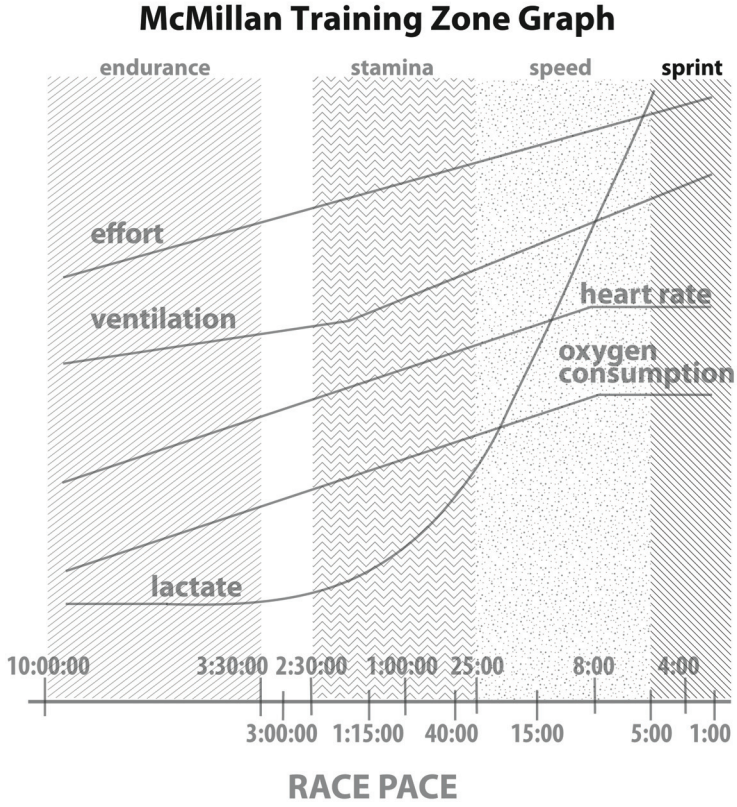
running styles. One is my heel-strike, super-efficient form that keeps me healthy and racing economically. The other is my up-on-my-forefoot sprint technique. Having both techniques in my arsenal means I can stay healthy and run efficiently, but I can also sprint when necessary. Learn to run tall first, then experiment to find your best technique for whatever type of running you do.

Watch Yourself for Better Form

In high school, we watched ourselves run past store windows, car windows or any other reflective surface we ran by. This visual feedback will help you find and perfect your best running form. Take a peek the next time you have the opportunity.

Chapter 19

The Sprint Zone



The fourth and final section of the Graph is the distance runner's "Sprint" zone. This section corresponds to running between your slightly less than 1:00 and 8:00 race paces. At these speeds, the various physiological responses are all at maximum capacity. Your heart rate and VO_2 reach maximum (though in workouts, the repeat will be over before your heart rate and VO_2 have a chance to reach their peak). Your effort is very hard and lactate shoots higher and higher, reaching 12 to 20 times normal

resting levels in some runners. Breathing, as you would expect, is at full capacity.

After Sprint training, you notice a smoother, less jerky stride when running at full speed. You feel that you are powerful and can simply fly across the ground. You begin to imagine yourself looking like the sprinters: smooth and powerful.

Sprint zone training seems to greatly affect the torso of the body as you begin to run, not just with your legs, but to generate power through your core – which many experts suggest not only improves performance but also increases your resistance to injury.

Incorporating some Sprint training into your program is often overlooked by distance runners. Too often, they think that sprinting ability doesn't help them in distance races, except maybe in the final kick to the line. However, I've found that athletes who incorporate a small amount of Sprint zone training into their programs are less likely to be injured, tolerate Stamina and Speed Zone training better and have more powerful "kicks" at the end of racing, all good qualities to have.

Nerdy Notes: Neuromuscular and Lactic Acid Tolerance Training

There are two key adaptations that occur from training at paces that elicit these kinds of responses. The first is neuromuscular – the coordination between the nervous system and the muscles. Research indicates that during this fast sprinting, groups of individual muscle fibers become more coordinated in their "firing" (contracting) so that you can achieve greater power and speed. Likewise, different whole muscle groups (like the quadriceps, for example) get "in sync" with each other resulting in faster turnover and a smoother stride. Basically, the body becomes efficient and coordinated at turning your legs over very fast. Your running economy and power improves.

The second adaptation affects the bicarbonate buffering system that we discussed in the Stamina zone section. Since training at this pace creates large accumulations of lactic acid (lactate and its compatriot, the hydrogen ion), it challenges the body's ability to remove these by-products. With repeated exposure to elevated lactate (and associated hydrogen ion) levels, the body improves its ability to quickly remove it, which is why many coaches call this aspect of Sprint zone training "lactic acid tolerance training."

Training Zone Snapshot

Zone	Speed
Pace Range	<1:00-8:00 race pace
Common Workouts	Lactic Acid Tolerance Intervals, Neuromuscular Training (Leg Speed)
Physiological Benefits	Improved ability to buffer lactic acid, improved neuromuscular coordination and better running economy
Psychological Benefits	Learn to relax at maximum effort and while battling lactic acid buildup

Chapter 20

Sprint Workouts

The final workouts are Sprint workouts. These help your top-end speed and consolidate your stride and form. Sprint workouts can be divided into two types based on their purpose:

1. Lactic Acid Tolerance – the ability to run fast even when the muscles are flooded with lactic acid, to improve the ability to buffer high levels of lactic acid (bicarbonate buffering system) and

2. Neuromuscular Development (Leg Speed) – improving the coordination between the nervous system and the muscles as well as improving your running economy.

Lactic Acid Tolerance Intervals

Lactic Acid Tolerance Intervals comprise the first workout. Like the Speed workout described in the previous chapter, they are repeated hard efforts with recovery jogs in between. They last only 30 to 70 seconds and are run at about your 2:00 to 8:00 race pace effort with very long recovery intervals. It's usually recommended that you take two to five times the duration of the fast running as a recovery jog before starting the next hard effort (or one to two times the distance of the repeat). For example, if you run a repeat 200m, then you would jog for 200 to 400m before beginning the next one.

The goal is to flood the muscles with lactic acid and then let them recover. Your leg strength and ability to buffer lactic acid will improve, allowing you to sprint longer. My absolute favorite lactic acid tolerance

workout is 6 times 45 seconds with two to three minutes jog between. Running very hard for 45 seconds will definitely build up a lot of lactic acid – providing the ultimate opportunity for your buffering system to improve and mimicking what you experience at the end of a short race.

Neuromuscular Strides (Leg Speed)

You're probably familiar with neuromuscular workouts but most runners call them "Strides" though you may call them wind sprints, pickups, striders or stride-outs. They're not unlike the fast accelerations that you do right before a race. Strides work to improve your sprinting technique by teaching the legs to turn over quickly. It's really the neuromuscular system that we're trying to develop here which is why they are shorter than lactic acid tolerance intervals. They last only 10 to 30 seconds because unlike the lactic acid tolerance intervals, we don't want lactic acid to build up during each stride. Lactic acid buildup (and more correctly, the increased acidity in the muscles due to the hydrogen ion part of lactic acid) inhibits the nervous system and interferes with the neuromuscular adaptations that we want. As I like to say, these workouts are not “heavy breathing” workouts but are simply challenging your neuromuscular system.

Accordingly, after each stride, you must jog easily for a minimum of 30 seconds and up to a minute and a half to make sure the muscles are ready for the next one. Not allowing for sufficient recovery after each stride is a common mistake. Take advantage of the longer recovery. It will allow you to put more effort into each stride, which really helps develop your speed.

As you might imagine, the pace for strides is very fast – 1:00 to 4:00 race pace. Note that this is not all-out sprinting. Run fast but always stay under

control. These are quick efforts where you practice good form. You'll be amazed at how much your finishing kick improves with these workouts.

You can incorporate some strides or "pick-ups" during the middle of your run or at the end. To perform, run fast for 15 to 25 seconds then jog easily for 30 seconds to a minute and a half before beginning the next one. Begin with four strides and build up to 10 to 20. Or, if you like running fast on the track, then you can do "ins and outs" where you stride for half a lap then jog easy for half a lap. Repeat this for four, six, eight or even 10 laps.

Training Table: Sprint Zone Workouts

Workout	Pace Range	Total Volume	Repeat Duration	Recovery Duration	Notes
Lactic Acid Tolerance Repeats	2:00-8:00 race pace	4-8 minutes	:30-1:10	2-5 times the duration of repeat	Flood the muscles with lactic acid then allow them to clear it then repeat.
Neuro-muscular Leg Speed	1:00-4:00 race pace	5-10 minutes	:10-:30	:30-1:10	Not "heavy breathing" workouts but instead help develop better running technique and a faster "kick" at the end of a race.

Coach's Note: Maintain Your Mobility

I have a saying, "You have to work on your tissues because we all have our issues!" Running causes our tissues (muscles and tendons primarily) to "tighten up." On the positive, tightness helps us store energy with each stride and makes running more efficient. (The body uses the stored energy to help in the propulsion phase of each stride.) Research shows that a degree of tightness improves running economy, something very desirable for runners.

The problem is that the tissues can become too tight and our risk of injury goes up. The key is to balance the tightening of the tissues with exercises to keep the mobility in your tissues at an optimal level – where you get the most out of the energy return from tight tissues but not so much that you get injured. It's a constant back and forth.

There are a multitude of ways to maintain your optimal mobility – massage (self or from a therapist), flexibility exercises, using a foam roller, active release therapy (ART), Graston, etc. Try several and see what works for you. You may be fine with just one method but most runners find they must tackle mobility with a few different methods.

One last note, just as we are all different in how we should train, we are also different in how much mobility work we need. If you are flexible and mobile and never struggle with injury, then you only need a minimal amount of mobility work. If, however, you are tight and/or are frequently injured, then you need to make mobility work a top priority.

So, no matter if you are an injury-free, optimally mobile runner or a frequently injured and super-tight runner, repeat after me, "You have to work on your tissues because we all have our issues!"

Chapter 21

Training Zone Recap

Pretty simple, huh? Train within the pace ranges that categorize the different zones and you'll derive the specific benefits that those zones offer. By understanding these adaptations, you now fully understand what each run is doing for you. This is a very important but often overlooked part of the training process. Each and every run must have a purpose and you should know it. This isn't meant to take the fun out of your training, but more to help you decide what is most appropriate for each workout so that you have more fun, reach your potential and race your fastest.

When I make a training schedule for a runner, each and every workout lists its particular purpose. The purpose doesn't have to be overly detailed but it should convey the goal of the workout. For example, if a runner is doing a tempo run (i.e., Stamina zone training), the goal is clear: to increase the speed of the lactate threshold. It reminds the runner of the Stamina zone and that in order to receive the optimal stimulus that will result in the appropriate adaptation the run has to be at a medium effort. Going faster (the tendency with Stamina training) isn't better if the goal is to improve Stamina so this keeps the runner in check as he/she performs the workout.

This way of thinking makes things simple and improvement a virtual guarantee. Runners usually err when they either

1) don't know the purpose of a workout and then run too fast or too slow or

2) they don't abide by the rules that govern optimal training in a particular zone. (Refer back to this book often as you march through your training plan so you remember exactly how to perform each workout.)

You, of course, will now avoid this common trap because by knowing the specific race paces that define the parameters of each training zone, you can simply set your pace to match the zone and voilà, the adaptations will occur. (Of course, it's more work than that which is why there are several important chapters to follow!)

McMillan Training Zones & Workouts

Endurance Zone

- Recovery Jogs
- Long Runs
- Easy Runs

Stamina Zone

- Steady State Runs
- Tempo Runs
- Tempo Intervals
- Cruise Intervals

Speed Zone

- Speed / VO_2max Intervals

Sprint Zone

- Lactic Acid Tolerance Intervals
- Neuromuscular Leg Speed Workouts

Coach to Coach:

When I first started coaching, the one thing that became apparent was that coaches used lots of names for the same type of training. They'd say do 10 x 400m at "race pace" and they'd also say do 6 x 1 mile at "race pace". I soon learned that you had to ask a few questions to figure out exactly what they were actually talking about. After all, 10 x 400m at mile race pace is certainly very different than 10 x 400m at 10K race pace. And, 10 x 400m at mile race for a 4:00 miler is very different than 10 x 400m for a 10:00 miler. I quickly was able to create a decoder so whenever I read or talked to Lydiard, Vigil, Martin, Daniels, Pfitzinger, Noakes, Squires or any of the other great coaches, I could understand what they meant using their terminology. Kind of like Roman vs. Greek mythology. They had the same gods just called them different names. My hope with this section is that we get to the nitty-gritty of training zones and workouts so you can always connect whatever a coach is saying to these simple training zones and workouts. I also find that athletes respond very well to these terms since they connect directly to what benefits the athletes will receive.

Learning from the Best: Guy Avery

I met Guy Avery through my old college roommate. Guy had just started *Peak Running Performance* – a newsletter on time-proven training methods as well as recent research into endurance performance. I was doing some writing at the time and he asked me to submit articles for *Peak*. Within a year, I quit my job at a physical therapy clinic and went to work full-time as *Peak's* managing editor. The most valuable part of the job wasn't the writing though, it was the learning.

Avery was a stand out runner at Sienna College who went on to become a publishing wiz. I had never met someone with such an in-depth knowledge of running and training. Guy devoured everything written about training – from books and magazines to research articles. He knew it all and had the ability to communicate it. Guy really gave me a jumpstart on my path toward coaching. Despite having just finished my bachelor's degree in Exercise Science, I distinctly remember telling him, "I have so much to learn." After spending two years working for Guy, I felt like I had earned a PhD in running.

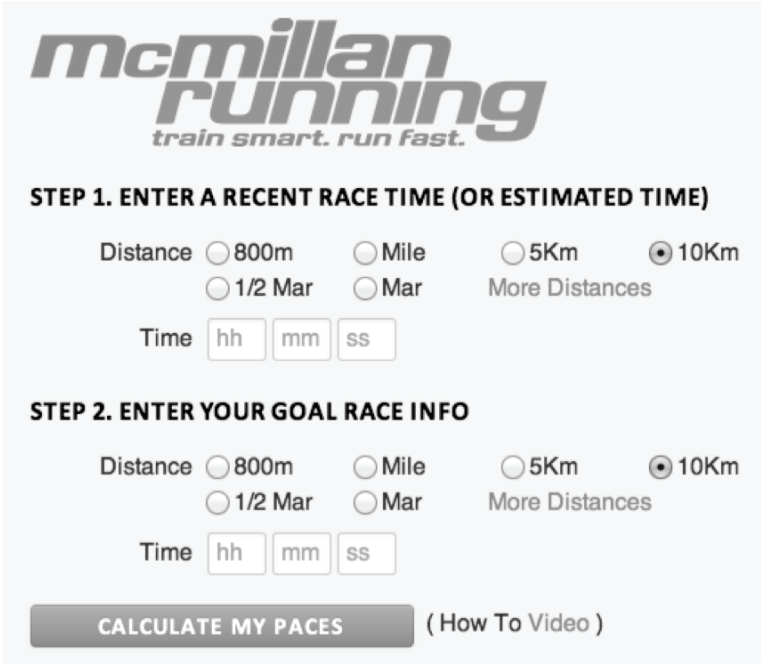
Guy is one of the best coaches in America though most have never heard of him. He quietly goes about helping athletes from mid-packers to high-schoolers. He writes occasionally (though not nearly enough in my opinion) and I am deeply indebted to him for giving me my start in writing and coaching.

Step #4: The McMillan Running Calculator

Chapter 22

The McMillan Running Calculator

Okay, before we go any further, I know what you're saying. "This is great but I have no idea what my exact 1:00:00 race pace is and I certainly don't know what my 8:00 race pace is! Help!" Wonder no more. While in graduate school, I created the McMillan Running Calculator, which estimates your equivalent race performances and provides your precise training paces for each training zone using a current race time at any distance. Millions of runners have used and verified the calculator over the years, making it one of the most proven training tools for today's runner. Since you'll want to use my precise paces for all your workouts visit my website, www.mcmillanrunning.com, and calculate your race times and optimal training paces. You can print out your results and follow along as I explain each aspect of it and how it provides the final link to training like the pros.



Visit www.mcmillanrunning.com to calculate your training paces and race times.

Tab #1: Race Times

After entering your distances and times in to the calculator and clicking "Calculate My Paces", you'll see two sets of race times – one based on your current fitness level (labeled "current times") and one for your goal performance level (labeled "goal times"). When I say "Race Times", I mean what would be an equivalent race time at one race distance based on a recent race time at another distance. For example, if you currently run 37:24 for 10K, you might wonder what you could run for a 5K or for the marathon or for a 30K or 15K. Using the McMillan Running Calculator, you'll now know. Of course, I must say that these are "estimates" of what you can run. Actual results will vary depending on the course, the weather, if it's your day or not and a myriad of other factors. However, I think you'll find that within a small degree of variation, these estimates are accurate. (Do keep in mind that a 5K runner is unlikely to run the equivalent time in the marathon off of 5K training. She would obviously need to train for the marathon to accomplish this equivalent time.)

Knowing what you could run at an upcoming race based on a recent performance can take the guesswork out of your race planning. You'll be able to set more realistic race goals and better determine an appropriate race pace. The results are performances that are more consistent with fewer "bad" races – something all runners long for.

You'll also see that I've included equivalent performances for your goal time. This shows you what you need to get your times down to for other race distances down to in order to accomplish your goal. For example, if you are a 45-49 year old female and want to qualify for Boston, you need to run 3:55:00. If you enter this as your Goal Time, you'll see that in order to run this time, you need a half-marathon performance that is roughly 1:51:40. It's a great way to know if you are in the ballpark to hit your goal

or you still need more fitness.

CURRENT TIMES vLT *8:20* vVO2 *7:10*

Distance	800m	1Mi	2Mi	5Km	4Mi	8Km
Time	3:11.1	7:05.8	15:04.5	24:38	32:01	40:35
Pace/Mi	-	7:05	7:32	7:56	8:00	8:10

10Km	15Km	10Mi	1/2 Mar	25Km	Mar
51:09	1:19:15	1:25:30	1:54:02	2:17:00	4:00:00
8:14	8:30	8:33	8:42	8:49	9:10

GOAL TIMES vLT *8:10* vVO2 *7:02*

Distance	800m	1Mi	2Mi	5Km	4Mi	8Km
Time	3:07.1	6:56.9	14:45.7	24:07	31:21	39:45
Pace/Mi	-	6:56	7:22	7:46	7:50	8:00

10Km	15Km	10Mi	1/2 Mar	25Km	Mar
50:05	1:17:36	1:23:43	1:51:40	2:14:09	3:55:00
8:04	8:20	8:22	8:31	8:38	8:58

The McMillan Running Calculator will calculate your race times for every distance from 100 meters to 100 miles. Just select the distances you want displayed in the distance selection box under the race times output. Hit "Show All" to list all equivalent performances.

And, remember your lactate threshold (vLT) and VO_2max (vVO_2) from the training zones? Well, the calculator even provides those to you as well!

CURRENT TIMES vLT *8:20* vVO2 *7:10*

Distance	100m	200m	400m	500m	800m	1000m
Time	20.8	41.6	1:27.0	1:53.5	3:11.1	4:11.3
Pace/Mi	-	-	-	-	-	-

1500m	1600m	1Mi	2000m	1.5Mi	3000m
6:33.6	7:03.0	7:05.8	9:00.6	11:05.1	14:01.3
-	-	7:05	7:15	7:23	7:31

3200m	2Mi	4000m	3Mi	5Km	6Km
14:58.8	15:04.5	19:17.3	23:35	24:38	29:48
7:32	7:32	7:45	7:52	7:56	8:00

4Mi	8Km	5Mi	10Km	12Km	15Km
32:01	40:35	40:50	51:09	1:02:12	1:19:15
8:00	8:10	8:10	8:14	8:20	8:30

10Mi	20Km	1/2 Mar	15Mi	25Km	30Km
1:25:30	1:47:50	1:54:02	2:11:57	2:17:00	2:46:37
8:33	8:41	8:42	8:48	8:49	8:56

20Mi	25Mi	Mar	50Km	50Mi	100Km
2:59:31	3:47:16	4:00:00	4:51:08	8:52:29	11:41:33
8:59	9:05	9:10	9:22	10:39	11:17

100Mi
23:05:43
13:51

Tab #2: Training Paces

The second, and I think most important, function of the McMillan Running Calculator is that it also calculates your optimal Training Paces, also listed on your printout. As was discussed in the last section, there are certain specific race paces that govern certain training zones and these training zones break down into specific types of workouts which have even more defined training pace ranges for optimal development. So, included in the Calculator worksheet are your optimal Training Pace ranges. Believe me, this will really take the guesswork out of your training and give you the confidence that every time you lace up your shoes, you are doing the best training possible to make yourself faster. The challenge is simply to be patient, obey the optimal training pace zones and sit back and wait for the adaptations to occur.

On the Training Paces section of the printout, you'll recognize the four training zones that we just discussed: Endurance, Stamina, Speed and Sprint. These boxes contain the optimal training pace range for each of the key workouts that I recommend for each training zone. No more guesswork as to the proper pace for your best training. Just look up the workout and read across to find the fastest and slowest paces you should run to receive optimal training results.

For the Endurance Workouts box, I've listed the optimal pace ranges for three types of workouts: recovery jogs, long runs and easy runs. Remember in an earlier chapter where we defined the parameters for ideal Endurance zone training? Well, here it is specific to you and your current fitness level. Just keep your pace in the appropriate range for the workout you're doing and the results will amaze you.

Like the Endurance Workouts box, the appropriate pace ranges for the three other training zones are listed. In addition, I've given a breakdown

into appropriate paces for varying distances of repeats so if you're doing a variety of different repeats then you know exactly what times you should run. For example, if you are doing a Speed workout of 1200m, 2 x 800m and 4 x 400m then you simply need to look for those repeat distances within the Speed workouts section. This will give you a goal time range for each of these distances. The same goes for some of the Stamina workouts and the Sprint workouts.

Also, note that you can display Speedster or Endurance Monster paces. (Remember this from the PRE?) I've found that these two types of runners need slightly different pace ranges for optimal speed and sprint training. If you're a speedy runner moving up to longer distances, it's likely that the Speedster pace ranges will work best for you. The longer the run the better for you? Then stay with the Endurance Monster ranges for maximum benefit. Just scroll to the top right of the training paces box on the website to toggle between the Speedster and Endurance Monster paces. (You can even switch between your paces in minutes per mile and minutes per kilometer in this area as well.)

Finally, it's important to note that there is an optimal pace "range" not just one target time. This takes into account your day-to-day performance variations, meaning that if you feel "on" one day you may run near the fast end of the range while if you feel sluggish, you may run near the slow end. As long as you stay in the listed pace range, you're training optimally.

I always suggest that during your first workouts, just shoot for the slow end of the range. Training too fast, too soon is the quickest way to failure. As you do more and more workouts, you should find that the same effort level results in faster and faster times until you are running at the fast end of the range. If the slow end feels too fast or the fast end feels too slow, then it's likely that you are in worse or better shape than the race

performance you entered in the calculator. Another race might help refine your estimates of your current fitness level.

ENDURANCE PACES

Recovery Jogs	10:08 - 10:55
Long Runs	9:05 - 10:25
Easy Runs	9:04 - 10:01

STAMINA PACES

Steady State Run	8:30 - 8:52
Tempo Run	8:10 - 8:27
Tempo Intervals	8:00 - 8:19

Cruise Intervals

1Mi	7:58 - 8:11
1200m	5:56 - 6:06
1000m	4:57 - 5:05
800m	3:58 - 4:04
600m	2:58 - 3:03
400m	1:59 - 2:02

SPEED PACES

400m	1:44 - 1:50
800m	3:37 - 3:48
1000m	4:40 - 4:52
1200m	5:36 - 5:57
1600m	7:48 - 7:59

SPRINT PACES

100m	0:21 - 0:23
200m	0:44 - 0:49
300m	1:08 - 1:18
400m	1:35 - 1:44
600m	2:34 - 2:40

Coach's Notes: Using the McMillan Running Calculator

1) Re-Calculating Your Paces: As you train for your race, your fitness will improve and soon you may find it hard to stay within the pace ranges that you calculated at the start of your training plan. That's normal. I suggest that every runner re-calculate their paces every three to eight weeks (we usually have a race in that time-frame anyway) to update the optimal training paces. Even if you don't race, I suggest you update your race time by 1-2% every now and then, especially if you find you are easily running faster than the fast end of the suggested range on all your runs and specialty workouts. Don't "race" the calculator but if you find you have gained fitness, re-calculate so you have more appropriate paces.

2) Building from Current Fitness to Goal Fitness: I designed the training paces to take you to the next level of fitness. So, if you put in a 10K time of 39:45, the training paces are designed to push you faster. I think this is why the Calculator has become so popular – it works! With smart training, you'll find that your current fitness soon advances to your goal fitness, right when you are ready to race.

Next Step

Now that you have a detailed worksheet for your optimal training paces, you can lace up your shoes knowing exactly what pace you should run in each and every type of workout. It's just like cooking a meal. You take the ingredients; mix them in the right order and in the right amounts (based on your individual tastes) and Hey presto! -you have a delicious meal.

Calculator Comparisons

I'm certainly not the first coach or scientist to create training tables and calculators. Since our sport's beginning, coaches and athletes have come up with methods for calculating training paces and expected race times. Here are some of the more popular. I recommend reading *Lore of Running* by Tim Noakes, MD for a full scientific evaluation of several of the prediction tools mentioned here.

Rule of Thumb
In our sport's infancy, coaches created several "rules of thumb" for the athletes they coached. An example of is: to estimate your 10K time, simply double your 5K time and add one minute. There is a similar one for the marathon. Double your half-marathon time and add five to seven minutes. And, there are also conversions for all different distances. These seemed to work with more competitive runners but not so well with beginners and those in the back of the pack.

The Four Second Rule
There were also simple methods for determining your training paces. For example, the "Four-Second Rule" stated that your race pace (per 400 meters) increased by four seconds as you lengthened the race distance from 5K to 10K to half-marathon to marathon. For example, if

your 5K pace per 400 meters is 90 seconds then your 10K pace per 400 meters would be 94 seconds. This one, created by famous British Coach Frank Horwill, is surprisingly accurate across the pack of runners. Of course, it only gives you 5K, 10K, half-marathon and marathon paces, which isn't quite all the paces you need.

RunningTrax

In the 1960s, Dr. Gerry Purdy (who has a PhD in Computer Science as well as Exercise Physiology) took things to the next level. With access to newly-developed computing power, Purdy, along with James Gardner, created what became known as RunningTrax, which was published in a book of the same name. They were able to take thousands of world-class, real-world performances and create a prediction equation – essentially fitting the data to one line across a wide range of distances. This equation would create a "TraxScore" for each runner and various training paces and race predictions could be computed from that score. The system was very powerful because it was one of the first to harness the power of the computer and tons and tons of data.

I liked RunningTrax but got tired of flipping back and forth through the book with each runner I coached. I also found the training paces to be a little "off" for certain types of runners, mainly because the methodology used for calculating training paces wasn't as precise as it should be. Of course, we know a lot more about training physiology now than they did in the 1960s so we have to cut them some slack.

Oxygen Power

In the late 1970s, legendary coach and physiologist, Jack Daniels and Jimmy Gilbert used physiological data (instead of Purdy's real world data) to create what they called "Oxygen Power" and published their tables in a small booklet of the same name. Created at a time when VO_2max was thought to be the King Bee in distance running success,

Oxygen Power created a prediction equation that gave a VDOT score for each runner – based on the runner's predicted VO_2max and a physiological concept called "fractional utilization" of VO_2max – the ability of runners, no matter their ability level, to run at a given percentage of VO_2max for a given length of time.

As with Purdy's book, I got tired of flipping back and forth in Oxygen Power to find the training paces and race predictions for each runner. I, like Noakes, found that Oxygen Power predicted race times for events lasting more than two hours that were too fast for all but Endurance Monsters. I suspect this is because other factors besides VO_2max play a more critical role in races of this duration.

The Williams Pace Calculator

One of my favorite tools for calculating training paces is the Bob Williams Pace Calculator. Unlike the books of Purdy and Daniels where you had to flip back and forth to find training paces and race times, Williams' tool was more like a slide rule. On one side, you find your track training information and on the other side, you find your road training information. Simply slide the tool to your performance level and it shows you your corresponding training paces. It's not a complete source for all the information a coach wants but is very useful when it comes to workout paces.

The McMillan Running Calculator

In contrast to the other methods above, the McMillan Running Calculator works in several different, yet important, ways:
First, it uses a combination of real-world results (like Purdy) and physiological data (like Daniels), taking the best of both worlds.
Second, unlike Daniels where VO_2max data is the driving force, the McMillan Running Calculator uses the pace at lactate threshold as its most important physiological parameter. Time and time again, the

lactate threshold has been shown to be the most important determinant of distance running performance and my Masters thesis focused on this relationship between lactate threshold and predicted running speed, which became the basis for my Calculator.

Third, whereas most methods (RunningTrax and Oxygen Power) fit a line to data to create one equation into which any distance and/or time can be inserted to predict another performance, the McMillan Running Calculator uses the concept that distances close to one another are stronger (and therefore better) predictors than distances far apart. This may seem like a no-brainer but this is very different than most other prediction models. In most models, your 800-meter performance (for example) is just as strong a predictor of your marathon time as your half-marathon performance (because all the data is fit to one prediction equation that is applied across all distances). Not so in the McMillan Running Calculator. Underlying its functionality is the belief that your half-marathon time is a much stronger prediction of marathon time than the 800 meters (to again use this example). This creates a system that provides more "weight" to the races around your chosen distance to more accurately predict performance.

In the other training pace generators, I was always lacking some of the training paces I wanted and needed. So, in the McMillan Running Calculator, I list all the training paces a runner needs to train each of the four training zones and for all of the key workouts that you just read about. Lastly, I wanted to put all of this training information in one handy worksheet instead of having to flip back and forth in a book so I put it online so runners could use it for free to access their race predictions and training paces. Now, over 10 million runners have verified the McMillan Running Calculator, making it one of the most tested and proven methods for calculating races and paces.

Coach to Coach:

I created the calculator out of necessity. I was coaching such a wide variety of runners – some fast, some not so fast – and needed a way to give them optimal training paces for all different types of runs and workouts. I never dreamed it would become so popular but I'm so pleased that it helps runners and coaches know their exact training pace – something that I always believe allows the runner to get the most from each and every workout. And, it gives the runner such confidence that they are doing things right – beneficial to not only the runner but to the coach as well.

You'll find that the calculator is a great starting-point for the training of your athletes. And like everything you are reading in this book, you'll quickly learn how to apply the calculator to your individual athletes. For example, you'll have some athletes who are "fast trainers" and train on the fast end of the pace range for each and every run and workout. You'll also have some that are "slow trainers" and are always on the slow end of the range. You'll find that one isn't better or worse than the other. They are just different. Using this information, you can better prescribe pacing for each different athlete (fast end for the fast trainer, slow end for the slow trainer), ensuring a successful workout for each runner.

You may even find runners who need to train at the fast end of the pace range for workouts that match their strengths as a runner and the slow end of the pace range for workouts that are their weaknesses. Again, it's a tool to be used to help you help your athletes and will likely need subtle tweaks to its use based on your experiences with each athlete.

Learning from the Best: David Martin

I first heard Dr. David Martin speak at an American College of Sports Medicine conference when I was in graduate school. I immediately knew he was my kind of guy. He was speaking on the physiology of distance running but I could tell that he was as much a coach as a physiologist. He was grounded in science but knew the real-world realities of training and racing. Nearly all my mentors are like this. After all, he had guided the careers of such greats as Olympians Steve Spence, Keith Brantly and many others.

Shortly thereafter, we met in person and over the years, I've come to value each of our talks more and more. Dr. Dave, as he is lovingly called, has this wonderful way of summing up an important concept into one catchy phrase or sentence. His "Do-Do" rule is an example. Here's how it goes: "It's not how much training you DO, rather, it's how well you recover from the training you DO DO. Because, if you get

injured or sick from DOing too much, you are in deep DOO DOO." Dr. Dave says, "The Do-Do Rule" covers a multitude of sins for the runner and has never been proven wrong."

His book *Training for Distance Runners* (written in 1991 with Seb Coe's father Peter) was the first book I read to really give each training zone a full scientific and coach-oriented description. The four training zones I use in this book are based on the four training zones in his books.

Dr. Dave has always been available to help me, answer questions, share a meal or just offer an encouraging word as I began my coaching career. He has given so much to the sport. From his lectures to coaches and athletes, to his books to his meticulous detailing of expected weather conditions at every World Championships and Olympic Games. (He is largely credited with coming up with the hydration strategy that helped Meb Keflezighi and Deena Kastor win medals at the Athens Olympic Games.)

There will never be another Dr. Dave and I'm very thankful for each of the times I've been with him. U.S. distance running owes a big thank you for all his efforts. The latest edition of his book, called *Better Training for Distance Runners*, is a must-have resource for all serious runners and coaches. Chapter 5 in particular is one of the best, most concise essays on training ever produced.

Step #5: The Finer Points

Chapter 23

The Finer Points

Let's now dive into some of the finer points that will put the finishing touches on your training and help you through the little issues that pop up when you are actually working your plan. For example, you'll need to know how to adjust your plan when things out of your control interfere. You'll need to know how to add more weeks to your 12-week plan in case you have more time before your goal race. You'll need to evaluate your goal time that you wrote down earlier in the book and may want to run a few predictor workouts to further validate that time. After determining your goal pace, you may even want to add some pace practice workouts to your plan just to dial in goal pace. And, you'll eventually want to mix up your training plan the next time you use it with fun new workouts. In this section, I'll address all these issues which I believe will serve you well not only through this training cycle but for others to come.

Chapter 24

Seven Lessons for Adjusting Your Plan

I'm sorry, but now that you've designed the world's greatest training program, get ready to change it. That's the hard part for many runners. You design this wonderful program and you want to stick to it. But, you can't. Inevitably, something will come up. The weather will turn and you'll need to alter the workout. Your child will be up all night with an illness ruining the good sleep you wanted before your important workout. Or, a work project will interfere and "squeezing" in the workout never seems to work. It's just a fact of life and you must accept it. But, over the last two decades of coaching, I've learned a few lessons for when you have to adjust your training. Apply them and you'll likely keep moving toward your goal – even though your ideal plan isn't intact.

Lesson #1: Respect the "rhythm" of your schedule

By rhythm, I mean the flow of stress and rest across your week. When you have to adjust your program and move workouts around, remember Rule #1 and respect your stress/rest cycle. Let's say you normally do a hard workout on Thursday (maybe it's a tempo run) and your long run is normally on Saturday morning. But, due to work you have to move the tempo run to Friday. This will compress the stress and not allow the usual (and essential) recovery between the Thursday workout and the Saturday long run. So, you are risking failure and injury if you do back-to-back stressful days (tempo run Friday and long run Saturday). You'd be better off skipping one of the workouts to make sure you aren't risking overtraining. Or, you could move the tempo run to Wednesday if you have enough advance notice but again, you have to look at the days prior to make sure your stress/rest rhythm isn't compromised.

My bottom line is that you are better off erring on the side of more rest than you are compressing the stress. Sometimes, it's just a good idea to skip a workout and just get an easy run in.

Lesson #2: Don't sacrifice recovery after a race

I know you're motivated to "hit it hard" after racing. After all, racing is so much fun and when it goes well, you really want to get out there and tear it up again. But, remember that a race is the most stressful training that you do. As a result, you'll need to add EXTRA recovery after a race, not just the normal recovery you take after a hard workout. For example, if you normally do a workout on Tuesday but you raced on the prior Sunday, you are smart to move that Tuesday workout to Wednesday or Thursday. Again, you need to make sure you are recovered. An error runners commonly make is to perform a hard workout too quickly after a race. The mind is certainly ready but the musculoskeletal system is often still compromised and I just think that why risk an injury? An extra recovery day (or two) after a race is a smart adjustment to make.

Lesson #3: Maintain your long Run

Over the course of your running career, the one workout that I believe will help you the most is the long run. Endurance is the base of all running performance (See Rule #3) and the long run is the most important workout for developing endurance. As a result, I say that any time you have to adjust your training week, make sure you maintain your long run. I'd prefer to skip any other workout than to skip the long run, even if that means moving the long run to midweek and skipping a speed workout because your weekend will be full of other activities.

Lesson #4: Maintain your Frequency of Running

Another rule is that you will do best if you maintain your frequency (number of days running per week), even if you have to skip key workouts. The body likes routine so I try, even if I can't (or shouldn't) do

my hard workout, to still get out for even a short jog just to keep my body in its routine.

Lesson #5: Err on the side of conservative & don't squeeze in workouts
I am not a fan of squeezing in workouts. This strategy rarely results in a positive workout so I say err on the side of conservatism and skip the workout (and maintain your frequency - see Lesson #4).

Lesson #6: Sacrifice anything & everything to get to the line healthy
Being the fittest spectator stinks. So, when you are adjusting your plan, make sure none of your changes increase your risk of injury. Typically, this comes from compressing the stressful days (i.e., moving them close together). But, it may also mean reducing your volume or adding extra recovery days to make sure your musculoskeletal system is recovering. I frequently say, "One workout or race doesn't make or break a training cycle" so be open to adjusting your plan to stay healthy.

Lesson #7: Never try to make up a botched workout
We've all been there. You go out to do your workout and it just isn't happening. The body and possibly the mind just isn't showing up today and you have to bag it. For many runners, they just can't get past this and go out later in the day (or the next day) to repeat the workout. This CAN work but most often doesn't. There usually was a reason for your bad workout and it typically has to do with needing more recovery. So, resist the urge to make up a workout and just move on. This may take a lot of mental fortitude but in the end, you'll find you usually have an exceptional workout your next time out.

As with most things running, use common sense and don't let your emotions lead you to do something ill- advised. Then you can easily (and frequently) modify your training plan just like I do for the runners I coach.

Chapter 25

Tune-Up Races

Another adjustment you will likely have to make to your plan is to add in tune-up races. If you're like most runners, then you enjoy racing throughout your training cycle and include 1-4 races as you build toward your peak race. Obviously, you'll need to insert these races into your plan and then, most importantly, adjust the training around the race.

Let's return to my half-marathon training program and I'll show you how I would insert a tune-up race and then adjust the workouts around it.

In my lead-up to the half-marathon, I have a 10K that I want to run. A 10K a few weeks out from a half-marathon is a great tune up and will give me another change to test my fitness. I can then insert my finishing time into the McMillan Running Calculator and see what half-marathon time is predicted based on my 10K time. This will give me an idea of whether I'm in the ballpark with my half-marathon goal time or not.

My 10K is scheduled for Day 7 of Week #9. Now, as you look at my plan, you'll see that I originally had a fast finish long run on that day. I think the 10K will be a suitable substitute for the fast finish long run so I'm going to pencil in the 10K.

mcmillan running GREG'S COMBO-SPEEDSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	~~TR: 5-7 miles~~ 4x2 MILE	OFF or 40-60 mi	~~50-60 min~~ 40	~~FFLR: 14-16 miles w/ last 2-4 miles fast~~ 10K RACE
10	Half Marathon	OFF	LS: 50-60 min ~~w/ 10 x 15 sec fast w/ 1 min easy within run~~	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	SS: 6-8 miles	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

KEY:

The next thing to do is to look at the days preceding and following the race. I'll want to make sure that I'm sensitive to my preparation for the 10K (I don't want to have too hard of a workout just prior to the race). And, I'll want to respect that the race will take a lot out of me (physically and mentally) so I'll want to provide adequate recovery after the race.

In looking at the few days prior to the race at the end of Week #9, I'm concerned about the tempo run workout (5-7 miles) on Day 4. This workout is a stamina workout and a 10K race also falls within the Stamina zone. (Remember that these are not my strengths so I'll have two weakness workouts in the same week, which I was already concerned about.) As a result, I essentially will have two very similar challenges within four days. I'll change that tempo run to a faster fartlek run (because I'm a Combo-Speedster) and let the race be the stamina stimulus for the week. I'll use a favorite workout of mine: 4 x 2 min with 1 min jog in place of the tempo run.

mcmillan running GREG'S COMBO-SPEEDSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	~~TR: 5-7 miles~~ 4x2 MILE	OFF or 40-60 mi	~~50-60 min~~ 40	~~FFLR: 14-16 miles w/ last 2-4 miles fast~~ 10K RACE
10	Half Marathon	OFF	LS: 50-60 min ~~w/ 10 x 15 sec fast w/ 1 min easy within run~~	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	SS: 6-8 miles	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

KEY:

Now, if I were an Endurance Monster, I'd be less concerned about the workout and race since they both would be strengths. But, I'd still be inclined to change the tempo run to a progression run (60 minute run with the last 10 minutes fast), which I've found works great as a tune-up workout for Endurance Monsters.

mcmillan running ENDURANCE MONSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	~~PR: 5-7 miles~~ PR: 60MP	OFF or 40-60 mi	~~30-40 min~~ 50-60 min	~~FFLR: 14-16 miles w/ last 2-4 miles fast~~ 10K RACE
10	Half Marathon	OFF	~~LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run~~	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	SS: 6-8 miles	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

Back to my plan, my last change to the days leading into the race would be a slight reduction in the length of the run on the day before the race. I would reduce that run to 30-40 minutes instead of 50-60 minutes. This will drop my mileage for the week so I may even rethink what I did to Week #8 where I reduced its mileage in PRE Exercise #2 since I had so many higher weeks in a row. Ultimately, I'll probably switch Week 8 back to what I had originally planned and make Week #9 my recovery week now that I've added the race.

All that's left now is to look at the days after the race to make sure I have adequate recovery time. As you would predict, I'll remove the faster running from the Day 2, Week #10 workout and shorten the run a bit. This will ensure that if I'm a little sore or tired after the race, I'll get recovered for the more important workout of Week #10, the speed workout on Day 4.

mcmillan running GREG'S COMBO-SPEEDSTER PLAN

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	~~TR: 5-7 miles~~ 4x2 MILE	OFF or 40-60 mi	~~50-60 min~~ 40	~~FFLR: 14-16 miles w/ last 2-4 miles fast~~ 10K RACE
10	Half Marathon	OFF	LS: 50-60 min ~~w/ 10 x 15 sec fast w/ 1 min easy within run~~	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	SS: 6-8 miles	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

KEY:

You can tell that I like to methodically march through a training plan, thinking about the effects it will have physically and mentally and always looking out for any potential troubles. But, I've come to realize that that's part of the success my athletes have had. We make the plan fit their lives and adjust constantly.

As you insert your races, follow these guidelines. Realize that how you adjust is uniquely yours so you may train differently around your races than your training partner and that is okay. Just be smart. Use common sense and learn as you go.

Coach's Note: How Often Should I Race?

Race frequency is a popular topic among runners and coaches and there really is no consensus on what is best. As you would expect now having read most of this book, I think it comes down to individuality. Some runners like to race a lot so it's a positive for them and some runners prefer to focus on a just a few race efforts across a year.

Some runners can also use races as workouts – giving a good effort but not worried that they aren't at their best (and may run slower than they like or be beaten by others whom they usually beat). These runners can obviously race frequently since most of their races are more workouts than they are races. Some runners can't imagine pinning on a bib number and not giving it 100%. These runners have to be more selective when it comes to races and typically need to be in good shape before toeing the line. And, we can't discount the social aspect of racing. It's fun to go run hard then hang out with like-minded folks on a weekend morning. It can keep you motivated for the upcoming training.

I often find myself wishing that young runners (like those in high school) would race less. (I've seen race schedules for high school runners where they are racing twice per week for several weeks in a row!) However, I observe that the older athletes who race more frequently seem to maintain their fitness level better than older athletes who race infrequently. (If you are over 40 then you may want to race every 2-5 weeks.) But, in the end, it really does come down to your personality, what you like and don't like, and how it fits into your overall training and racing goals.

Chapter 26

Adding Training Modules

I mentioned way back in Step #1 that I was providing the last 12 weeks before your race so we could focus on the most race-specific training as we went through the PRE. But, it's common for runners to have more than 12 weeks of training before their goal race. In this chapter, I'm going to present what I call Training Modules that can be added to the start of your race-specific training to get to the number of weeks you have before your peak race. They are presented in four-week modules but you can omit weeks where necessary to get to the exact number you need.

(One note, I'm not a fan of extremely long training plans. I think it's just too hard to stay focused on a goal too far out. I prefer training plans where the goal is more immediate. Twenty-four weeks is the longest I like to plan but my preference is 12 to 20 weeks – the shorter the better.)

Below are the training modules that I often use when adding more weeks to the programs from Step #1. As with the 12-week programs, these are generic modules and you will likely have to make a few modifications so that they dovetail with where you are when you start the program and fit your particular traits as a runner. The more experienced you are, the easier it is to make these modifications but I hope you are feeling more and more confident that you have the tools to add these modules in a smart way.

Mileage Base Modules

Below are the modules for each runner (2-3 days, 4-5 and 6-7 days running per week) that can be used when you simply want to build your base mileage. These are often a great option after you've returned to training following a recovery and return-to-running period.

You'll notice that each includes only easy runs and long runs and is progressive from Week #1 to Week #3. Week #4 is a recovery week to let the body adapt to the mileage from the previous weeks. Again, you may need to modify the module based on where you are in your training (ready to run more than in the module, or needing to run a little less). Adjust it to fit but make sure you follow the pattern of the weekly progression and the recovery week. That should keep you injury-free and ready for the next phase of training.

McMillan Training Module: **MILEAGE BASE** for **2-3 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Mileage Base	OFF	30-45 min	XT or 30-45 min	40-50 min	OFF or XT	XT or 30-45 min	LR: 45-60 min
2	Mileage Base	OFF	45-60 min	XT or 30-45 min	50-70 min	OFF or XT	XT or 30-45 min	LR: 50-70 min
3	Mileage Base	OFF	45-60 min	XT or 30-45 min	50-70 min	OFF or XT	XT or 30-45 min	LR: 70-90 min
4	Mileage Base	OFF	30-45 min	XT or 30-45 min	40-50 min	OFF or XT	XT or 30-45 min	LR: 45-60 min

McMillan Training Module: **MILEAGE BASE** for **4-5 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Mileage Base	OFF	40-50 min	XT or 40-60 min	60-70 min	OFF or 40-60 mi	50-60 min	LR: 75 - 100 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	70-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Mileage Base	OFF	50-60 min	XT or 40-60 min	70-90 min	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Mileage Base	OFF	40-50 min	XT or 40-60 min	60-70 min	OFF or 40-60 mi	40-50 min	LR: 75 - 100 min

McMillan Training Module: **MILEAGE BASE** for **6-7 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Mileage Base	XT or 55-65 min	60-75 min	60-70 min	60-75 min	XT or 55-65 min	60-70 min	LR: 90-105 min
2	Mileage Base	XT or 55-65 min	80-100 min	60-70 min	80-100 min	XT or 55-65 min	60-70 min	LR: 105-120 min
3	Mileage Base	XT or 55-65 min	80-100 min	60-70 min	80-100 min	XT or 55-65 min	60-70 min	LR: 105-120 min
4	Mileage Base	XT or 55-65 min	60-75 min	50-60 min	60-75 min	XT or 55-65 min	50-60 min	LR: 90-105 min

Workout Base Modules

Below are 4-week Workout Base Training Modules. These modules build your fitness base in preparation for your race-specific training by adding two types of workouts to your regular volume of running. The first is the steady state run that helps to build your stamina and is one of the hallmarks of Arthur Lydiard's base training program. In each module (2-3, 4-5 and 6-7 days per week running), the Steady State Run progresses from week to week. The other type of workout is a leg speed workout. These are either done by time (2-3 and 4-5 days per week running) or distance (6-7 days per week running). In both cases, these workouts help build your leg turnover in advance of faster race-specific training.

As usual, you'll notice that Week #4 is a recovery week with slightly less mileage. It's just good practice to take a recovery week every few weeks to allow the body to rest and recover from one phase before you advance to the next training phase.

McMillan Training Module: **WORKOUT BASE** for **2-3 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Workout Base	OFF	30-45 min	XT or 30-45 min	40-50 w/ 2 Mi SS	OFF or XT	XT or 30-45 min	LR: 45-60 min
2	Workout Base	OFF	45-60 min	XT or 30-45 min	LS: 10-12 x 30 sec w/ 1 min jog	OFF or XT	XT or 30-45 min	LR: 50-70 min
3	Workout Base	OFF	45-60 min	XT or 30-45 min	40-50 w/ 4 Mi SS	OFF or XT	XT or 30-45 min	LR: 70-90 min
4	Workout Base	OFF	30-45 min	XT or 30-45 min	LS: 15-20 x 30 sec w/ 1 min jog	OFF or XT	XT or 30-45 min	LR: 45-60 min

McMillan Training Module: **WORKOUT BASE** for **4-5 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Workout Base	OFF	40-50 min	XT or 40-60 min	70-80 min w/ 4 Mi SS	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Workout Base	OFF	LS: 10-12 x 30 sec w/ 1 min jog	XT or 40-60 min	70-80 min w/ 6 Mi SS	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Workout Base	OFF	40-50 min	XT or 40-60 min	70-80 min w/ 6 Mi SS	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Workout Base	OFF	LS: 15-20 x 30 sec w/ 1 min jog	XT or 40-60 min	80-100 min w/ 8 Mi SS	OFF or 40-60 mi	40-50 min	LR: 90-105 min

McMillan Training Module: **WORKOUT BASE** for **6-7 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Workout Base	XT or 55-65 min	LS: 10 laps 100m w/ 100m jog	60-70 min	70-80 min w/ 4 Mi SS	XT or 55-65 min	60-70 min	LR: 105-120 min
2	Workout Base	XT or 55-65 min	LS: 10 laps 200m w/ 200m jog	60-70 min	70-80 min w/ 6 Mi SS	XT or 55-65 min	60-70 min	LR: 105-120 min
3	Workout Base	XT or 55-65 min	LS: 12 laps 100m w/ 100m jog	60-70 min	80-100 min w/ 8 Mi SS	XT or 55-65 min	60-70 min	LR: 105-120 min
4	Workout Base	XT or 55-65 min	LS: 12 laps 200m w/ 200m jog	50-60 min	80-100 min w/ 10 Mi SS	XT or 55-65 min	50-60 min	LR: 90-105 min

Prep - Hills Modules

Below are modules for a preparatory training segment using hill workouts. Each module includes workouts detailed in Chapter 44. All the workouts progress across the 4-week module and help strengthen the legs, build tolerance to lactic acid and are a great preface to almost any race-specific training phase.

mcmillan running

McMillan Training Module: **HILLS** for **2-3 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Hills	OFF	30-45 min	XT or 30-45 min	Medium Hill Repeats: 4 reps	OFF or XT	XT or 30-45 min	LR: 45-60 min
2	Hills	OFF	45-60 min	XT or 30-45 min	Medium Hill Repeats: 6 reps	OFF or XT	XT or 30-45 min	LR: 50-70 min
3	Hills	OFF	45-60 min	XT or 30-45 min	Medium Hill Repeats: 8 reps	OFF or XT	XT or 30-45 min	LR: 70-90 min
4	Hills	OFF	30-45 min	XT or 30-45 min	Medium Hill Repeats: 6 reps	OFF or XT	XT or 30-45 min	LR: 45-60 min

mcmillan running

McMillan Training Module: **HILLS** for **4-5 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Hills	OFF	40-50 min	XT or 40-60 min	Medium Hill Repeats: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Hills	OFF	LS: 10-12 x 30 sec w/ 1 min jog	XT or 40-60 min	Long Hill Repeats: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Hills	OFF	40-50 min	XT or 40-60 min	Medium Hill Repeats: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Hills	OFF	LS: 15-20 x 30 sec w/ 1 min jog	XT or 40-60 min	Long Hill Repeats: 10-12 reps	OFF or 40-60 mi	40-50 min	LR: 90-105 min

mcmillan running

McMillan Training Module: **HILLS** for **6-7 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Hills	XT or 55-65 min	LS: 10 laps 100m w/ 100m jog	60-70 min	Medium Hill Repeats: 6-8 reps	XT or 55-65 min	60-70 min	LR: 105-120 min
2	Hills	XT or 55-65 min	LS: 10 laps 200m w/ 200m jog	60-70 min	Long Hill Repeats: 8-10 reps	XT or 55-65 min	60-70 min	LR: 105-120 min
3	Hills	XT or 55-65 min	SS: 4-6 Mi	60-70 min	Medium Hill Repeats: 10-12 reps	XT or 55-65 min	60-70 min	LR: 105-120 min
4	Hills	XT or 55-65 min	LS: 12 laps 200m w/ 200m jog	50-60 min	Steep Hill Repeats: 8-10 reps	XT or 55-65 min	50-60 min	LR: 90-105 min

Prep - Speed Modules

Below are the training modules for athletes looking to build speed before beginning their race-specific training. I advise these before beginning the more stamina-oriented training of longer races like the marathon.

mcmillan running

McMillan Training Module: **SPEED** for **2-3 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Speed	OFF	30-45 min	XT or 30-45 min	FR: 8-10 x 1 min on 1 min off	OFF or XT	XT or 30-45 min	LR: 45-60 min
2	Prep - Speed	OFF	45-60 min	XT or 30-45 min	FR: 4-5 x 2 min on 1 min off	OFF or XT	XT or 30-45 min	LR: 50-70 min
3	Prep - Speed	OFF	45-60 min	XT or 30-45 min	FR: 12-15 x 1 min on 1 min off	OFF or XT	XT or 30-45 min	LR: 70-90 min
4	Prep - Speed	OFF	30-45 min	XT or 30-45 min	FR: 6-8 x 2 min on 1 min off	OFF or XT	XT or 30-45 min	LR: 45-60 min

mcmillan running

McMillan Training Module: **SPEED** for **4-5 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Speed	OFF	SS: 4 Mi	XT or 40-60 min	FR: 12-15 x 1 min on 1 min off	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Prep - Speed	OFF	LS: 10-12 x 30 sec w/ 1 min jog	XT or 40-60 min	SP: 6 x 800m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Speed	OFF	40-50 min	XT or 40-60 min	SP: 4-5 x 1 Mi w/ 600m-800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Prep - Speed	OFF	TR: 2-3 Mi	XT or 40-60 min	SP: 12-16 x 400m w/ 200m jog	OFF or 40-60 mi	40-50 min	LR: 90-105 min

mcmillan running

McMillan Training Module: **SPEED** for **6-7 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Speed	XT or 55-65 min	SS: 4-6 Mi	60-70 min	SP: 12-16 x 400m w/ 200m jog	XT or 55-65 min	60-70 min	LR: 105-120 min
2	Prep - Speed	XT or 55-65 min	LS: 10-12 x 30 sec w/ 1 min jog	60-70 min	SP: 6-8 x 800m w/ 400m jog	XT or 55-65 min	60-70 min	LR: 105-120 min
3	Prep - Speed	XT or 55-65 min	40-50 min	60-70 min	SP: 5-6 x 1 Mi w/ 600m-800m jog	XT or 55-65 min	60-70 min	LR: 105-120 min
4	Prep - Speed	XT or 55-65 min	TR: 3-4 Mi	50-60 min	SP: 12-16 x 400m w/ 200m jog	XT or 55-65 min	50-60 min	LR: 90-105 min

Prep - Stamina Modules

Similar to the Prep – Speed Module above, the Prep – Stamina Module is perfect for athletes looking to build stamina before beginning their race-specific training. I advise these before beginning the more speed-oriented training of shorter races like a 5K or 10K.

mcmillan running

McMillan Training Module: **STAMINA** for **2-3 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Stamina	OFF	30-45 min	XT or 30-45 min	CI: 4-5 x 1000m w/ 200m jog	OFF or XT	XT or 30-45 min	LR: 45-60 min
2	Prep - Stamina	OFF	45-60 min	XT or 30-45 min	SS: 4 Mi	OFF or XT	XT or 30-45 min	LR: 50-70 min
3	Prep - Stamina	OFF	45-60 min	XT or 30-45 min	TI: 2-3 x 2000m w/ 400m jog	OFF or XT	XT or 30-45 min	LR: 70-90 min
4	Prep - Stamina	OFF	30-45 min	XT or 30-45 min	TR: 2-3 Mi	OFF or XT	XT or 30-45 min	LR: 45-60 min

mcmillan running

McMillan Training Module: **STAMINA** for **4-5 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Stamina	OFF	40-50 min	XT or 40-60 min	CI: 6-8 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Prep - Stamina	OFF	LS: 10-12 x 30 sec w/ 1 min jog	XT or 40-60 min	SS: 6 Mi	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Stamina	OFF	40-50 min	XT or 40-60 min	TI: 3-4 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Prep - Stamina	OFF	LS: 15-20 x 30 sec w/ 1 min jog	XT or 40-60 min	80-100 min w/ 8 Mi SS	OFF or 40-60 mi	40-50 min	LR: 90-105 min

mcmillan running

McMillan Training Module: **STAMINA** for **6-7 DAYS** per week runners

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Stamina	XT or 55-65 min	LS: 10 laps 100m w/ 100m jog	60-70 min	CI: 8-10 x 1000m w/ 200m jog	XT or 55-65 min	60-70 min	LR: 105-120 min
2	Prep - Stamina	XT or 55-65 min	FR: 10-12 x 1 min w/ 1 min jog	60-70 min	SS: 6-8 Mi	XT or 55-65 min	60-70 min	LR: 105-120 min
3	Prep - Stamina	XT or 55-65 min	LS: 12 laps 200m w/ 200m jog	60-70 min	TI: 4-5 x 2000m w/ 400m jog	XT or 55-65 min	60-70 min	LR: 105-120 min
4	Prep - Stamina	XT or 55-65 min	FR: 10-12 x 1 min w/ 1 min jog	50-60 min	TR: 4-5 Mi	XT or 55-65 min	50-60 min	LR: 90-105 min

Using Training Modules – A Real-World Example

Now, let's say that I have 16 weeks until my goal race. If we go back to my original half-marathon training plan (I'm showing it without any of the adjustments we've been making to it so it's easier to read), you see that it's 12 weeks long with 3 weeks of preparatory workouts before beginning my race-specific half-marathon weeks. With 16 weeks of training till my race, I would remove the weeks (highlighted) that precede the half-marathon training. That gives me 7 weeks of preparatory training available before the 9 weeks of half-marathon training.

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Prep - Hills	OFF	40-50 min	XT or 40-60 min	Hills: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	80-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Prep - Hills	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-60 min	Hills: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
5	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
6	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
7	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
8	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	TR: 5-7 miles	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
10	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
11	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	SS: 6-8 miles	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
12	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

KEY:

min = minutes
km = kilomters
LR = Long Run (p. XX)
PR = Progression Run (p. XX)
SP = Speed Workout (p.XX)
LS = Leg Speed (p.XX)
Mi = miles
OFF = No exercise
FR = Fartlek Run (p. XX)
TI = Tempo Intervals (p.XX)
SS = Steady State Run (p.XX)
Hills = Hill Workout (p.XX)
m = meters
XT = cross-training
CI = Cruise Intervals (p.XX)
FFLR = Fast Finish Long Run (p.XX)
TR = Tempo Run (p.XX)

Since I'm a Combo-Speedster and have an idea of what works best for me, I'd look at the training modules earlier in the chapter and select a hill module and a mileage base module to provide the seven weeks I need at the start of my program. I would put the mileage base module first (Weeks #1 to #3, note that I'm leaving off the 4th week of the Mileage Base since I only have three weeks available for that phase) since I like just easy running as a transition from my recovery phase (which I would have taken before beginning this training cycle) and any key workouts. Next, I would insert the hill module for the next four weeks (Weeks #4 to #8). I've found that hills work really well for me before I begin faster workouts. You may or may not be like me so you can simply insert what you think will work best for you. Here is what my (unadjusted from my PRE) training plan would look like:

mcmillan running

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Mileage Base	OFF	40-50 min	XT or 40-60 min	60-70 min	OFF or 40-60 mi	50-60 min	LR: 75-100 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	70-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Mileage Base	OFF	50-60 min	XT or 40-60 min	70-90 min	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Hills	OFF	40-50 min	XT or 40-60 min	Medium Hill Repeats: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
5	Hills	OFF	LS: 10-12 x 30 sec w/ 1 min jog	XT or 40-60 min	Long Hill Repeats: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
6	Hills	OFF	40-50 min	XT or 40-60 min	Medium Hill Repeats: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
7	Hills	OFF	LS: 15-20 x 30 sec w/ 1 min jog	XT or 40-60 min	Long Hill Repeats: 10-12 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
8	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
10	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
11	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
12	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5 min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
13	Half Marathon	OFF	80-90 min	XT or 40-60 min	FR: 4 x 2 min w/ 1 min jog	OFF or 40-60 mi	30-40 min	RACE: 10K
14	Half Marathon	OFF	50-60 min	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
15	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
16	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

Obviously, I'm at an advantage here because I know what works for me through my experiences racing over the last 30 years. But, I really like this way of stacking modules to build out a program. You may or may not have as good an idea of what modules to put where but I hope you at least now can make an educated guess as to how to supplement the 12-week programs provided in Step #1 of this book. Just be smart. Use good judgment and be attentive to how you feel from the training. Then, you can make any adjustments based on how it's going.

Chapter 27

The Fine Art of Peaking

Now that we have your full plan complete and you have all your tune-up races inserted, let's talk about how to get ready for not just a good race but a great race. This involves what is called Peaking or Tapering. Peaking is the strategy where an athlete adjusts his training over the last 1-3 weeks before his goal race so that his body "super-compensates" or adapts to all the training that has been done and is ready for a peak performance.

Over the last few years, I think I've finally figured this peaking thing out. It took a while because, like many coaches, I fell into the standard "tapering" model we've all been taught. Problem was, tapering (i.e., a large reduction in training volume over the last 2-3 weeks before your key race accompanied by an increase in intensity) didn't work consistently. The results were just as hit-or-miss as not tapering at all.

So, I threw "tapering" out of my vocabulary. I replaced it with "peaking." Semantics? Maybe. But by studying peak performance research - both physiological as well as psychological - as opposed to just the tapering research, I've been able to dial in how to truly peak on race day. It works for all athletes no matter where you find yourself in the pack come race day.

Here are my secrets for your peaking phase -- the last 14 days before your race:

Secret #1: Don't change your weekly running routine
Our bodies and minds like routine. If you run four days per week, then run four days per week during your peaking phase. If you run six, then run six. You'll feel flat if you suddenly run less frequently than normal.

Exception: Runners who are nursing a sore muscle or niggling injury may take an extra day off each week during the peaking phase. But, don't take it the day before the last long run or the race if you don't normally rest the day before your long runs. You'll risk feeling flat on race morning.

Secret #2: Reduce weekly training volume, but not too much
Over the last 10-14 days before your race, you should progressively reduce the volume of your running. (You see this in the training plans from Step #1 in this book). Two weeks out from the race, I like to reduce the *daily* volume by 10-20 minutes or so. The week of the race, reduce approximately 20-30 minutes. This, along with the normal reduction in your long run length as the race nears, will drop your overall running volume in line with what we know from research (and, more importantly, from practical experience) to the level that allows the body to get prepared for a peak performance. Don't make the common mistake of dropping your volume too much. This takes your body out of its routine and can leave you stale on race day. My opinion is that more runners fail because of tapering too much rather than not enough.

Secret #3: Keep the engine revved
While we may want to reduce the volume of running, we do not want to reduce the intensity of our workouts. In fact, we may want the intensity to increase. You want to keep your engine revved, the pumps primed. Never race your workouts, but during the peaking phase, don't back off in them either. I've found that some fast running in the peaking phase helps bring the body and the mind to tiptop condition on race day.

Secret #4: Plan your strategy and stick with it
Most distance runners have the same race strategy -- start conservative, build into race pace, run as efficiently as possible and get as deep in the race as possible before you have to pull out your superman or superwoman powers to get you to the finish line. Yours may vary,

depending on your strength and preferences. No matter what your strategy, however, stick with it. For most runners, their pre-race strategy is the best strategy. Be open to change if the conditions change, but for the most part, you know what you need to do so just get out of your own way and let the race unfold as planned.

Secret #5: Reflect on training to build confidence

I like athletes to reflect on training in two ways. First, think back to a particularly tough workout, something where you didn't feel great but you gutted it out. You were tough. This shows that you can do it. You ARE tough. You can handle the ups and downs of running and get to the finish line. After this retrospection, think back to your best workouts or races. Really re-live them in your mind. Bolster your confidence knowing that you are fit, fast and ready. Bring on the race! Get excited to go out there and perform like you know you can! Your training successes should build your confidence.

Secret #6: Have fun and smile

Let's face it. Most of us aren't going for an Olympic gold medal here. We are simply enjoying the challenge of doing our best. There is no real pressure, so quit putting so much on yourself. (I even have to remind the Olympic-level runners I coach of this.) We run for fun, and you should remember that. Have fun! I encourage runners to smile a lot in the final days before a race. Smiling puts you in a better mood, and that can play a big role on race day.

It's only through having a positive, happy mindset focused on doing your best, combined with a well-trained body that is rested but revved and fueled and hydrated that helps you race at your best. If you look at my training plans at the start of this book, you see that I've used these lessons to plan the peaking weeks and I think that is part of the reason so many runners have had success with these training programs.

Chapter 28

Can I Achieve My Goal?

Since we're talking about peaking for your goal race, let's talk about your goal time. At the start of the book, I asked you to note your goal time and suggested that the more important question isn't what should my goal time be but rather, can I achieve it? One of the most common questions I get asked is, "How much faster can I run?" While there is no clear way to know how much a runner can improve across a smart training program, my research has shown that there are some good estimates for improvement. In general, runners usually improve between 0 and 10% from training cycle to training cycle depending on a number of factors:

1) We know that new runners have the opportunity to improve more than experienced runners. It's not uncommon for new runners to take large chunks of time off from race to race. This is the fun time for running where nearly every race results in a new personal best (PR). Of course, all good things must come to an end and as runners get more experienced, the PRs are harder to come by.

2) Runners trying a new distance can improve their times more than runners who have raced that distance many times. Many runners get into the sport by joining a marathon training group. Over the first two to four years, they enjoy improvements in their marathon times. Often, they will then switch to the 5K, 10K or half-marathon. While they are experienced marathon runners, they are new to the shorter distances. As a result, they often enjoy big improvements over the first year or two of focusing on these new distances.

3) Another factor that impacts your ability to improve is whether the demands and limitations of your chosen race distance match your

strengths or not (think Speedster vs. Endurance Monster). If the race matches your strengths, then you will usually improve rapidly but may reach your peak performance quicker.

For situations where the race demands are not your strength, then my research is variable. At times, this scenario allows a runner to greatly improve because she works on her weakness and it becomes less of a weakness. On the other hand, there are athletes who just can't seem to overcome their weakness and thus don't improve much at a race distance that doesn't match their strengths. In the end, I believe it comes down to how "extreme" you are in your type.

If you are a pure endurance-oriented runner (a runner who performs much better than his peers in longer workouts and races) then it is unlikely that you'll see great improvements in your short-distance racing no matter how much time and effort you put into working on your weaknesses. If, however, you are a Combo-Endurance Monster, then you can expect that your weaknesses will improve with focused training so you will likely see a bit more improvement over short distances.

The same goes for the Speedster (a runner who performs much better than her peers in shorter workouts and races). If you are a pure Speedster, then it may be hard to improve much in the longer distances whereas a Combo-Speedster (like myself) can often overcome the weakness in endurance and stamina with smart training.

It's good to be aware of this important point about improvement. I've seen some Speedsters who enjoyed great success at races that match their strength get very, very frustrated that they can't run at the same level in longer races. And, the same goes for Endurance Monsters who dominate the longer races but really struggle at the shorter distances. Keep this in mind when setting your goals.

4) Age is another factor in performance improvement but it's not as clear-cut as you might think. Your ability to perform well even as you age appears to be determined by your genetic ability (talent) and your training age (the number of years you've been training). A decade or two ago, we felt that once you hit 40, your performances would start to decline. But, today's runners are challenging that idea.

We are seeing some very talented runners getting into the sport at a later age and they are running fantastic times. You've probably even seen some of these older yet fast runners at your local races. So, it really does come down to talent and training age. Runners with modest talent who have been training since their youth may not see improvements as they reach the masters category while runners with high talent who start running later in life are often setting new PRs into their 50s. And, we even see some very talented runners who were very, very good early in life keep training and racing. These athletes may not set new PRs in their later years but they are not slowing down as much as scientists would predict.

As a result, I'm hesitant to put any limitation on runners just because of age. I think there is a lot to be said for talent (often unknown to many future great runners) as well as desire and motivation.

Given these caveats, it's just very hard to predict performance improvements but here's what I've found:

1) New runners can expect improvements of 3-10% each year in their goal races until they get more experienced in the sport.
2) Runners who switch to a new event that matches their strength can expect improvements in the 2-7% range for the first 2-3 years, after which performance improvement will level off.

3) Runners who switch to a new event that does not match their strength can expect 0-4% improvement in the first 1-2 years before a plateau is reached
4) Older runners who are new to the sport can expect to improve similar to younger new runners but may find that they plateau quicker than younger runners.
5) Older runners who have been running for years, are unlikely to see any significant improvement and are better off creating new PRs that are related to age. They are also encouraged to not focus so much on time improvement but on how they can stave off the natural decline in performance that happens with many (though not all) runners as they age.

You can take these estimates of improvement into account when you set your time goal. If you need to improve by 25% to qualify for Boston then you'll know that that may take you two or more training cycles to get there. If, on the other hand, you need a 3% improvement in your time and are relatively new to the sport, then you will know you are in the ballpark.

Taking all of this into consideration, what is your goal time for your goal race and how does it compare to what you can run right now (or the estimated time you can run from the McMillan Running Calculator)? Do a little math and see how you stack up given the parameters listed above. If you are on track, then it's a green light. Go for it! If it appears your goal isn't likely, then it's time to reassess and adjust your goal.

Chapter 29

Specialty Workouts

Before you put away your training plan, let's talk about one last thing that can really help you add fun and effectiveness to your plan. If you remember in Step #3, we detailed the workouts that fit within each of the four training zones: Endurance, Stamina, Speed and Sprint. These workouts form the bulk of your key sessions to get ready for your race. But, there are a number of other types of workout that you may want to include in your program – predictor workouts to use as another way to determine if your goal is realistic; goal pace workouts to really dial in your race pace and a few other types of workouts that can add some fun to your training. In this section, I want to describe some of these workouts. Feel free to sprinkle a few throughout your training program. Just apply what you learned in the PRE exercises to make sure they fit nicely within your plan.

Chapter 30

Predictor Workouts

Because we all want to feel confident that we can hit our goal time, runners enjoy doing predictor workouts. As the name implies, predictor workouts are used to predict what race shape you are in. Great coaches and athletes created these through the years and I find them to be very helpful/motivating to the athlete. Here is a look at some great predictor workouts that I use with athletes.

5K Predictor – 2 times 1.5 miles with 400-600 meters recovery jog
Ten to 14 days before your 5K, if you can run two repetitions of 1.5 miles at your goal pace with a 400 to 600-meter recovery jog between, then you will likely hit your target in the race. Of course, you will need to build up toward this workout across a few weeks (and include smart training in all four training zones) but over the years, this has become a very good predictor of your ability to hit your goal time. If you can't maintain your goal time in this workout, then you may want to adjust your expectations.

10K Predictor Workout – 3 times 2 miles with 600-800 meters recovery jog
Just as with the 5K predictor workout, if you can run this workout 10-14 days before your 10K race, it shows that you are fit enough to achieve your goal time. Since this is a tough workout, you may have to build up to it over a few weeks. Many runners start with six times one mile at goal 10K pace with 400-meters recovery jog then a week or two later advance to a two-mile repeat followed by four times one mile. As you can see, the goal is to gradually build toward the three times two-miles.

Half-Marathon Predictor Workouts
A great predictor of your half-marathon ability is an eight-mile medium-

hard effort run. I say "medium-hard" because this isn't an eight-mile race. If you think of an eight-mile race as your 100% effort for eight miles then our half-marathon predictor workout would be run at 85-90% of your best effort.

As you would expect, this isn't an easy workout but I, along with many other runners and coaches, find that whatever pace you can average for the eight-mile predictor run is the pace you can average when you race a half-marathon.

This workout usually fits nicely into your training plan two to three weeks before your half-marathon. Just make sure you take two to three very easy days after the workout to ensure full recovery.

Marathon Predictor Workouts
For the marathon, there are two great predictor workouts that I use:

#1) Fast Finish Long Runs
The fast finish long run has quickly become a mainstay for competitive marathoners. I learned it from Gabriele Rosa - the coach of world record holder Paul Tergat - but many other coaches and athletes have used it successfully for years. In the fast finish long run, you run the first eight to 12 miles of a 14- to 18-mile long run at your normal steady running pace. However, over the last three to 10 miles of the run, you run faster and faster.

Fast finish long runs are very tough workouts so you shouldn't do them very often or run too many of them in any one marathon training cycle. I suggest alternating a weekly fast finish long run with a more typical weekly long, steady run. If you can run three of these fast long runs in the last six to eight weeks prior to your marathon, they become a very accurate predictor of your best marathon pace.

Lastly, you shouldn't "taper" for your fast finish long runs. Instead, go into each one as you would any other long run, otherwise the pace you achieve isn't as accurate a predictor of your best marathon pace.

#2) Yasso 800s

The second prediction workout comes from Bart Yasso at *Runner's World* and is called Yasso 800s. The theory behind Yasso 800s is that your time in minutes and seconds for a workout of 10 times 800 meters (two laps of the track) with equal recovery time is the same as the hours and minutes of your marathon time. For example, if you can run 10 times 800 meters in three minutes and 20 seconds with three minutes and 20 seconds recovery, then this predicts that you can run three hours and 20 minutes for your marathon. Run 2:40 for the 800s and you can run 2:40 for the marathon.

My experience, though, is that Yasso 800s predicts about five minutes too fast for most marathoners. Using the example above, my experience has been that 10 times 800 meters in 3:20 with 3:20 recovery yields closer to a 3:25 marathon for most competitive runners. Because this workout provides such a great training stimulus in addition to being a good predictor, I try to include it two or three times in a marathon training cycle, starting with 6-8 times 800 meters and building to ten 800-meter repeats 3-4 weeks before the marathon. It not only provides a good predictor of marathon pace but allows you to chart your increasing fitness - a big confidence builder.

I typically use both of these predictor workouts with each marathoner I coach and recommend that you do the same. These two workouts give you a great overview of your total capabilities - your endurance and durability (fast finish long run), and your aerobic capacity (Yasso 800s). Taken together, I find them to be very, very accurate.

Caveats

Each of these predictor workouts assume that you have done all the prerequisite training for a marathon - consistent volume of running, long runs, stamina workouts, etc. You can't just go run one of the predictor workouts and expect it to be accurate if you've not done the training. Without the proper prerequisite marathon training, you may find yourself in a world of trouble late in the race!

Finally, the predictor workouts are for a normal marathon - one with mostly flat terrain and good marathoning weather. Adjustments have to be made for difficult courses, races where the weather can affect the race (hot/humid conditions or windy conditions) or races where you may not have support from either race competitors, the crowds or volunteers. In these cases, you would be wise to be more conservative and create a race plan that is appropriate for that particular race.

With all that said, remember that all predictors are estimates. We just cannot control how you will feel on the day, what the weather will be like, how your competition will pan out and numerous other factors. However, I've found that the predictor workouts described above offer runners helpful information that can aid in race planning. Prepare the best you can, have faith in yourself, use these predictor workouts to establish a smart race plan and hope for the best on race day.

Chapter 31

Goal Pace Workouts

For many runners, their goal pace, no matter if their goal is a mile, 5K, 10K, half-marathon or marathon, falls within one of the four training zones. But even if it doesn't, it's still very important to include workouts where you practice your exact goal race pace. Over the years, I've developed several goal pace workouts that I place throughout a training program that gradually yet steadily build you toward peak fitness and help you "groove goal pace" so that you have it down pat before race day.

There is a big caveat to these goal pace workouts. You must have a good base of fitness before attempting them. If you are new to running or just getting back into it, you are better off simply training to get fit first, then focusing on goal pace workouts rather late in the training cycle.

As you can see from the table below, I insert these goal pace workouts gradually over time. (Some programs will have all five goal pace workouts whereas others have only one or two.) The early workouts in the table are shorter, yet still at your goal race pace. The later workouts are longer and more challenging but by then goal race pace should be feeling more and more comfortable. Workouts for the 5K and 10K are repetitions with recovery intervals whereas goal pace workouts for the half-marathon and marathon are continuous. You'll even recognize some of the goal pace workouts since they are also predictor workouts from the previous chapter. Make sure you take an easy recovery day or two after these workouts.

By the time you finish the 5th goal pace workout in the progression, your neuromuscular system should have really "grooved goal pace" which will help you with proper pacing during the race.

McMillan 5K Goal Pace Workouts	
16 x 200m w/ 200m jog	Run 16-20 weeks before your goal race
12 x 400m w/ 400m jog	Run 12-16 weeks before your goal race
8 x 600m w/ 600m jog	Run 8-12 weeks before your goal race
6 x 800m w/ 400-800m jog	Run 4-8 weeks before your goal race
5 x 1000m w/ 500-1000m jog	Run 1.5-3 weeks before your goal race

McMillan 10K Goal Pace Workouts	
16 x 400m w/ 400m jog	Run 16-20 weeks before your goal race
8 x 800m w/ 400-800m jog	Run 12-16 weeks before your goal race
8 x 1200m w/ 800m jog	Run 8-12 weeks before your goal race
6 x 1600m w/ 800-1000m jog	Run 4-8 weeks before your goal race
5 x 2000m w/ 1000-1200m jog	Run 1.5-3 weeks before your goal race

McMillan Half-Marathon Goal Pace Workouts	
3 x 3000m w/ 800m jog	Run 16-20 weeks before your goal race
3 x 3 Mi w/ 1000m jog	Run 12-16 weeks before your goal race
2 x 4 Mi w/ 1200m jog	Run 8-12 weeks before your goal race
6 Mi	Run 4-8 weeks before your goal race
8 Mi	Run 1.5-3 weeks before your goal race

McMillan Marathon Goal Pace Workouts	
4 Mi	Run 16-20 weeks before your goal race
4 x 3000m w/ 800m jog	Run 12-16 weeks before your goal race
8 Mi	Run 8-12 weeks before your goal race
3 x 3 Mi w/ 1000m jog	Run 4-8 weeks before your goal race
12 Mi	Run 1.5-3 weeks before your goal race

Chapter 32

Hill Workouts

It's rare that you find a great distance runner who didn't get fast by training on hills. I find that hill training is one of the best workouts that you can do. It provides great stimulus to the cardiorespiratory system, develops your ability to buffer lactic acid (remember the bicarbonate buffering system?), strengthens the legs, practices leg turnover that matches common race distances like the 5K and 10K yet avoids the pounding that is associated with traditional speedwork. When hills are encountered during races, they pose no threat to you and you can run them better and more efficiently than other runners, both uphill and downhill. They don't fall nicely into one of the four training zones but are certainly a benefit to all runners. Here are the various types that you can include in your training plan.

One note for all hill training: There is no one uphill (or downhill) running form for all runners. But, you need to find the form that works best for you. So, I encourage you to play around with your uphill and downhill running technique during these workouts. Lean more forward then more backward on some. Think about lifting your knees at times then on other repeats, focus on more back kick. Do the same with your arms (higher on some and lower on others). Play around. Experiment. See what works for you.

Long Hills:
Long hills are performed on a gradual slope and last around two to three minutes. You run at a medium-hard effort (around 30:00 race effort for most runners). At the top, you turn around and jog slowly back down to the bottom of the hill before beginning again. Most runners find that four to eight repetitions are optimal for a long hill workout.

Every now and then, pick up the pace on the downhills for a bit to find your best downhill technique. Don't do too much of this faster downhill running but in small doses, downhill running helps you find your best technique.

Medium Hills:
Medium hills are performed on a moderately steep slope and last 45 to 60 seconds. The effort is "hard" which is around 15:00 race effort for most runners. As with the long hills, once at the top, you simply turn around and jog down as your recovery before starting the next repeat. Eight to 12 repetitions works well for medium hills.

Steep Hills:
As the name suggests, steep hills are performed on a steep hill. However, they only last 10 to 30 seconds so they are over fast. Because they are short and steep, the effort is very hard (around 5:00 race pace for most runners). The idea behind these very short, steep hill repeats is that you rarely recruit a large proportion of your muscular power during running (even fast running) so these efforts help train this full recruitment of muscle fibers which may help in performance and injury prevention.

Hill Circuits:
My favorite type of hill workout is the hill circuit. This workout was popularized by my mentor, Arthur Lydiard, so I naturally gravitate to it. In the hill circuit, you not only run up the hill as in the other workouts, but you include other elements throughout the circuit. In Lydiard's famous hill circuit, his runners would run strongly up the moderately sloped hill then recover at the top. Once recovered, they would do several short sprints/strides to build leg speed before running strongly down the hill. Once at the bottom, they would recover again before doing more strides. If you have a hill that has flat running at the top and bottom, I recommend you include Lydiard's hill circuit in your plan.

Long Hill Climbs:
A frequent workout athletes did in the first Olympic training team I coached was the long hill climb. At our camp, we had a 20K (12.4 mile) hill that the athletes ran strongly up once per week. It wasn't a race but it was a very strong effort that lasted over an hour. Most coaches have found that any long hill climb that lasts between 30 minutes to an hour works great. Of course, you have to have access to such a hill so this type of workout is usually only available to runners living in mountainous areas.

Hilly Runs
Of course the easiest type of hill training for all runners who live in areas with hills is to simply run over hill courses from time to time. When running over a hilly route, attack the uphills and at times, also push the downhills faster. Over time, this frequent exposure to uphill and downhill running will greatly improve your fitness.

No Hills?

What if you live in a flat area but are running a hilly race? That's a common question I get and there are two very good solutions. The best is to run your hill workouts on a treadmill. You can play around with the incline setting to get the perfect "hill" for what you want. Just remember that there is a lag in building up the pace for the uphill and reducing the pace as you recover between each repeat, which makes treadmill hill workouts harder than true hill repeats.

Some runners in flat areas also use parking garages or bridges for their hill training. Obviously, you are limited in variety but it's better than nothing.

Chapter 33

Combo Workouts

Up to now, nearly every workout described challenges just one training zone. But, runners and coaches often like to perform workouts that cross multiple zones. I call these Combo Workouts and suggest all racers include some in their training. After all, most races cross multiple zones at some point whether it's just the finishing sprint or due to the escalating fatigue. Here are a few of my favorites:

Progression runs:
A progression run is a continuous run that progresses from one training zone to a faster zone. For example, you can start a run in the Endurance zone for ¾ of the run then increase your pace to the Stamina or Speed zone for the last ¼ of the run. Again, the specifics aren't the key ingredient; it's the process of moving from zone to zone. I've had particularly good results when applying this principle to long runs. These are called fast finish long runs and they really help fix the fade that can occur in the marathon. In the fast finish long run, you run the first half of the run at your normal long run pace but then over the second half of the run, you begin to pick up the pace so that the last 30 minutes to one hour is at a hard effort.

Alternating combos:
An alternating combo workout includes, you guessed it, running that alternates between zones. A common alternating combo workout bounces between the Stamina zone and the Speed zone. For example, run 10 minutes in the stamina zone, take a two minute recovery jog then run four one-minute repetitions in the speed zone with the one minute recovery jog between each. After the 4th one-minute repeat and recovery jog, you again run 10 minutes in the stamina zone. Then, you follow this

up with another set of one-minute repeats in the speed zone (i.e., 10 min Stamina, 4 x 1 min Speed, 10 min Stamina, 4x 1 min Speed). Some runners then end the workout with another 10-minute stamina zone run. As with all training, this is just an example. Using the concept of alternating from one zone to the other, you can create some really fun and effective workouts.

The Cut-down:
The cut-down workout is similar to the progression run but whereas the progression run is continuous, the cut-down workout includes rest intervals between reps. For example, I really like the mile cut-down workout which starts with a mile run at the slow end of the stamina zone. Then, after a one to two minute recovery jog, you run 1200 meters at the fast end of the stamina zone. After another one to two-minute recovery jog, you run 800 meters at the slow end of the speed zone. Again, take a one to two minute recovery jog and finish with a 400 meter repeat at the fast end of the speed zone (for Endurance Monsters) or the slow end of the sprint zone (for Speedsters).

Others? :
There are an infinite number of combo workouts that you can create. The key is to be sensible in your planning and then adjusting it as you go should you find the workout too taxing or not taxing enough. I've listed some of my favorites but play around in training. You might just stumble upon the one workout that takes your performance to a new level.

The Marathon Long Run

It's no secret that training to complete a marathon requires long runs. What has been a secret, however, is that training to race a *faster* marathon requires several specialized long runs. Experienced marathoners should incorporate the long runs below into their marathon plans to achieve their fastest time on marathon day.

Long and Steady: Lydiard's Tried-and-True Long Run
The tried and true long run for the last 50 years has been Arthur Lydiard's long, steady run. Lydiard found that by running for two to three hours at an easy, yet steady pace (preferably over a hilly route), the body and mind developed the endurance to withstand the race-specific workouts in the rest of the marathon training plan.

Long Run with Surges: Squires' Boston Beater
A unique aspect to legendary coach Bill Squires' marathon long runs is that they include surges. On nearly every other long run throughout your plan, he suggests you throw in "surges" every 10 minutes. These surges may last only 30 seconds or up to 10-12 minutes, and the pace varies based on the duration of the surge. Athletes find that surges help avoid boredom and provide a faster average pace across the long run.

Fast-Finish Long Run: Rosa's Way to the Winner's Circle
With his athletes winning every major marathon across the planet, it's no wonder that Gabriele Rosa's training is influential. A unique aspect of Rosa's plan is to finish the last few miles of the long run fast. "Fast" means 2:30:00 race pace for the last four to eight miles, but also running the last 10 minutes as fast as possible. This "emptying the tank" long run is quickly becoming a staple in the marathon plans of elite and

competitive distance runners. It's likely one of the most challenging long runs you will do, but the benefits are worth the effort – namely that you overcome the late marathon fade that so many runners experience.

Long Run at Marathon Pace: Pfitz's Advanced Marathon Long Run
Specificity is a crucial concept in marathoning. While the long run is the most specific in terms of duration, for sub 3:30 marathon runners, it's also important to practice your goal marathon race pace within the long run. Olympian and Coach Pete Pfitzinger advises a couple of long runs where you run 12 to 15 miles of your total long run at your goal marathon pace. Come race day, you'll find it easier to dial into your goal pace. An example would be a total long run of 20 miles with 12 miles in the middle at goal marathon pace. Again, this only works for athletes whose regular long run pace is slower than marathon pace.

Pace-Change Long Run: Variety in Pace Gets You Ready to Race
Athletes in championship marathons like the Olympics must practice changing their pace, because rarely are these events run at an even pace. Run like the Olympians by alternating a fast mile (5-15 seconds faster per mile than your normal long run pace) with a slower mile (5-20 seconds slower than your normal long run pace). An example: if your regular long run pace is 7:00 per mile, then a pace change long run should include 20 total miles with 8 miles in the middle of the run alternating between 6:45 pace and 7:45 pace. As your marathon approaches, you may even be able to alternate between 6:45 pace and 7:15 pace. This is a very tough long run, but is great for marathoners who expect to need to "change gears" throughout the race due to tactics or terrain (i.e., hills).

If you have a marathon coming up, try incorporating each of these types of long runs. Not only will you ensure the ability to go the distance, but also you'll be able to go the distance fast.

Chapter 34

The Finer Points: Summary

As I mentioned at the start of this book, most runners just blindly follow a generic plan. But you now know that your training plan can be infinitely better. While Steps #1 through #4 lay the groundwork, I have found that Step #5 allows me to do an even better job working with athletes.

Athletes want to practice race pace. They want to know if their goal is realistic. They want to have confidence that when something comes up, I'm giving them the best advice on how to modify their program. And, they don't want to just do the same program over and over. They want variety. They want combo workouts and hill repeats and different races. I bet you do too and now you can refer to Step #5 at any time to remind yourself of these finer points as you train, race and train again.

My Final Plan

Before we get to the final Step in our journey, I thought I'd present how my plan has turned out thanks to walking through Steps #1 through #5 and making all the adjustments for my type, mileage, tune up races, etc. It's always rewarding to finalize a program and reap the rewards of the intelligent application of these principles. I feel really good about this plan and though I know I'll have to change it as life happens, I look forward to using it.

McMillan **HALF MARATHON** Training Plan: **4-5 DAYS** of running per week

WEEK	PHASE	1	2	3	4	5	6	7
1	Mileage Base	OFF	40-50 min	XT or 40-60 min	60-70 min	OFF or 40-60 mi	50-60 min	LR: 75-100 min
2	Mileage Base	OFF	50-60 min	XT or 40-60 min	70-90 min	OFF or 40-60 mi	50-60 min	LR: 90-105 min
3	Mileage Base	OFF	50-60 min	XT or 40-60 min	70-90 min	OFF or 40-60 mi	50-60 min	LR: 105-120 min
4	Hills	OFF	40-50 min	XT or 40-60 min	Medium Hill Repeats: 6-8 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
5	Hills	OFF	LS: 10-12 x 30 sec w/ 1 min jog	XT or 40-60 min	Long Hill Repeats: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
6	Hills	OFF	40-50 min	XT or 40-60 min	Medium Hill Repeats: 8-10 reps	OFF or 40-60 mi	50-60 min	LR: 105-120 min
7	Hills	OFF	LS: 15-20 x 30 sec w/ 1 min jog	XT or 40-60 min	Long Hill Repeats: 10-12 reps	OFF or 40-60 mi	50-60 min	LR: 90-105 min
8	Half Marathon	OFF	50-60 min	XT or 40-60 min	CI: 8-10 x 1000m w/ 200m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
9	Half Marathon	OFF	80-90 min	XT or 40-60 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
10	Half Marathon	OFF	LS: 50-60 min w/ 10 x 15 sec fast w/ 1 min easy within run	XT or 40-60 min	TR: 3-5 miles	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
11	Half Marathon	OFF	80-90 min	XT or 40-60 min	SP: 6-8 x 1200m w/600m jog	OFF or 40-60 mi	50-60 min	FFLR: 14-16 miles w/ last 2-4 miles fast
12	Half Marathon	OFF	PR: 50-60 w/ last 10 min fast	XT or 40-60 min	TI: 3 x 2 miiles w/ 5 min jog	OFF or 40-60 mi	50-60 min	LR: 14-18 miles
13	Half Marathon	OFF	80-90 min	XT or 40-60 min	FR: 4 x 2 min w/ 1 min jog	OFF or 40-60 mi	30-40 min	RACE: 10K
14	Half Marathon	OFF	50-60 min	XT or 40-60 min	SP: 5-6 x 1 mile w/ 800m jog	OFF or 40-60 mi	50-60 min	LR: 105-120 min
15	Peak	OFF	FR: 8-10 x 1 min on 1 min off	XT or 40-50 min	TI: 4-5 x 2000m w/ 400m jog	OFF or 40-50 min	40-50 min	FFLR: 12-14 miles w/ last 2-4 miles @ goal HM pace
16	Peak	OFF	CI: 4-5 x 1000m w/ 200m jog	XT or 30-40 min	FR: 8-10 x 1 min w/ 1 min jog	OFF or 30-40 min	30-40 min	RACE: Half Marathon

Coach to Coach:

Confidence comes from a sound training plan. Steps #1 through #4 help you build that plan for your athletes. But the devil is in the details and by using the ideas in this section, you've been able to maintain and advance the confidence of your athletes simply by being able to make smart adjustments to their training, by being able to prescribe goal pace workouts at just the right time to show them that they can do it and by being able to mix things up based on how they are feeling. I'm confident that by using the ideas in this book, you will be able to better help your athletes and become the coach you know you can be.

Learning from the Best: Gabriele Rosa

Throughout the 1990s and into the 2000s, no one could argue that Italian coach Gabriele Rosa was the best marathon coach in the world. His athletes won nearly every important marathon across the globe, setting course and world records in the process. Year after year, Rosa produced champion runner after champion runner.

In the year 2000, Rosa started a program called Discovery USA to help U.S. distance running. Modeled after the ultra- successful, Discovery Kenya that produced all his Kenyan champions, the program was meant to take promising post-collegiate distance runners, put them in a training camp for 12 weeks and then send them out to conquer the distance running world the same way Discovery Kenya's athletes were doing.

My friend Brian was one of the Discovery USA athletes and when the first on-site coach left one year into the program, Brian suggested that I would be a good replacement. (Rosa was the head coach but an on-

site coach was hired to oversee the training in the U.S. camps.) Soon, I was on a plane flying to the Boston Marathon where I was to meet Rosa for an interview (just prior to his athlete winning the race!).

I got the job and Rosa and I hit it off. I spent the next two years learning Rosa's training system, spending time with him, his great Kenyan runners and gaining experience working with top level U.S. runners. Rosa's marathon program was rigorous but simple:

1) In a marathon plan, fit runners should focus on speed first then stamina as the race nears. In Rosa's words, "The early training should fatigue the runner from the *speed* of the training. The later training should fatigue the runner by the *duration* of the training." This fit nicely with what I learned from Lydiard – the most race-specific training should go closest to the race. Get fast first so the marathon workouts aren't limited by your leg speed then begin to challenge yourself to simply endure the longer workouts.
2) A cornerstone of Rosa's marathon plan was the fast finish long run. His fast finish long run really helps runners avoid the late race fade. They are extremely tough runs but you need this type of effort to callous you to what you'll face in the marathon.
3) Another aspect of Rosa's program was variety. His training touched all the training zones developing a well-rounded athlete.
4) Lastly, I learned from Rosa that it's best to "get in and get out" of a training program. This means that athletes can only focus for so long so it's best to keep the training cycles as short as possible. Most of the year, the athlete is building basic fitness and the better the basic fitness, the shorter the race-specific phase needs to be.

After working with Rosa and high-level athletes, my confidence grew that I could help not only the back and middle of the pack (the bulk of my athlete stable) but I could also help the front of the pack as well.

Step #6: The 10 Rules of Running

Chapter 35

Go Run!

Okay. Enough reading. Put the book down and go for a run. After all, you have a new training plan that is just waiting to be started. You've even adjusted your new plan to make it your own and you now understand each workout and at what pace you should run it. So, get out there and breathe some fresh air! It will give you time to digest all that you've just learned. I guarantee that you'll come back to reading with more clarity about your training and racing. You'll have insights into how you are going to implement all this information. And, you'll even have some more things that you need to consider as you get to chasing your goals.

Chapter 36

The 10 Rules of Running

I hope you had a good run. Up to this point, we've talked about how your training should be different than that of your training partner. We've talked about the specific changes that you should make in your training plan based on your PRE. We've talked about how the training zones and workouts should be run in precise pace ranges that are specific to you. We've talked a lot about how individualized your training should be. Now, however, it's time to take a step back and learn some general rules that apply to all runners before you go out there and take on the world.

We're lucky. Over the last 100 years, coaches and athletes have tried virtually every type of training you can think of – even some really crazy stuff like running 300 miles per week or running speedwork everyday. While I feel sorry for the athletes who were the guinea pigs for those training ideas, we really benefit from the knowledge that has come from that last century of training and racing.

In this section, I want to walk through the 10 Rules of Running that I've learned from great coaches and athletes. In other sports, they always talk about "the fundamentals." Well, these are running's fundamentals. I encourage you to always read through this section before you launch into a new training cycle. It will remind you of the basic principles that lead to successful running.

Chapter 37

Rule #1: Obey Your Stress/Rest Cycle

My first coaching mentor, Guy Avery, used to say "Optimal Stress + Optimal Rest = Optimal Progress." This simple phrase is very instructive for the runner and coach. Every training stress (whether an easy run or hard workout) must be followed by an appropriate rest period (recovery with no running, cross training or easy running) in order for the body and mind to optimally increase its fitness.

Avery suggests that too many runners and coaches focus only on the "stress" part of the equation – the workouts, the mileage, and the races and often ignore the "rest" component – days off, easy running, cross-training, sleep, nutrition, relaxation. But, in order to advance your fitness to its highest level, you must balance both the stress and the rest. The greater the training or racing stress, then the more rest you will require.

Too many runners "under-rest" after hard training and racing and thus stunt their fitness progress. Avery is a master of this stress/rest cycle concept and proposes that each runner understand and obey the stress/rest cycle in order to avoid injury and perform maximally. It's a simple concept but one most runners (particularly beginners and young runners) disobey. We get excited about training and train too hard, too soon and too often, resulting in escalating fatigue and injuries.

Remember back to when we labeled the specialized workouts in your training plan as "quick recovery" and "long recovery"? That exercise is precisely what this rule of running is all about. It's clear that just by making sure at the outset of your training that you include enough recovery after key workouts (and even more recovery after "long recovery" workouts), you can ensure that you obey your stress/rest cycle.

Then, as you actually implement the training, you can watch for periods where you feel your body isn't recovering and simply shift a few workouts around to add more recovery days. So, heed Avery's advice and make sure you focus on your individual recovery rate just as much as you do the workouts and races in your training plan so you can set up your training for "optimal progress."

Chapter 38

Rule #2: Beware the Rule of Too's

If you like instant gratification, running probably isn't the sport for you. Nearly all of the benefits from running come very gradually (over weeks, months and indeed, years) and that's just the way the body likes it. As you read in Rule #1 (stress + rest = progress), the body is designed to adapt to training but it takes some time (especially for the musculoskeletal system – the muscles, tendons, ligaments and bones). Push it:

- *too* hard,
- *too* soon or
- *too* often

and you'll end up injured and over-trained. That's why this training principle is called the Rule of Too's. Think "gradual adaptation" and your body will thank you (and your race performances will continually improve).

Don't fall into the trap of "crash training." Crash training is a recipe for injury so be smart and keep your training at a level that your body can adapt to. That level of training is usually a bit less than what you could actually do.

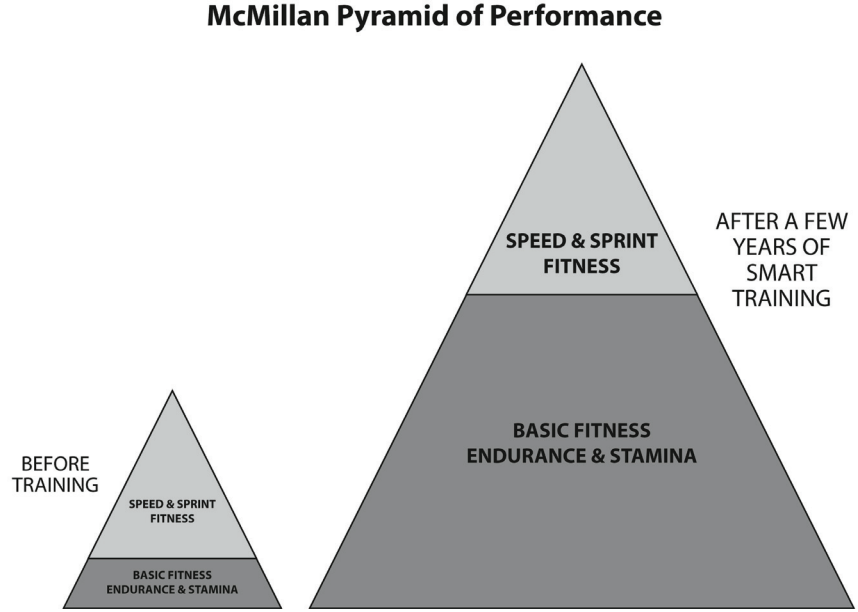
Again, remember back to the exercise in the PRE where we talked about your sweet spot in mileage. This exercise is a good example of one way to avoid breaking the Rule of Too's. By looking ahead and identifying potential trouble areas, you can prevent injury. You can make slight adjustments (objectively) so that when you are actually doing the training, getting fitter and feeling more motivated to attack your training (and operating more subjectively and emotionally) that you don't overdo

it. Again, just a little preventive care can go along way to staying healthy. Always remember, running isn't always about what you *can* do but more often about what you *should* do.

Chapter 39

Rule #3: Endurance is Paramount to Racing Success

As you learned throughout this book, running performance is a combination of your basic fitness (qualities that come from endurance and stamina) and your speed fitness (qualities that come from your speed and sprinting ability). When you were born, you had both basic fitness and speed fitness as represented by what I call your Pyramid of Performance (taller pyramid equals faster racing) shown below.



While this may be a relatively simple view of all that goes into your performance, it illustrates the point that when you begin training, your performance is not as great as it will be after a few years of training. More importantly, however, is that the greatest improvement in your performance over the course of your running career comes from

improvements in your basic fitness. (Notice how large the base of the pyramid gets after a few years of running.)

Runners can certainly improve their speed and sprinting ability (the top of the pyramid gets bigger with training) but this can only improve a relatively small amount. But, look at the base. Over a few years, you can markedly improve your endurance and stamina thus providing a larger base and pushing your total performance much, much higher.

Here's a great example of how important the endurance and stamina components are. Brett Gotcher, one of the world-class runners I coach, ran 4:33 for the mile as a freshman in high school. His coach, Dan Gruber, did an excellent job of building Brett's basic fitness so that by the time Brett was a senior, he could double his freshman mile time, running 8:55 for two miles. Then, while at Stanford University, Brett continued to build his endurance and stamina so that by graduation he could now run his freshman mile pace three times in a row (14:04 for 5,000m).

Since joining my group of Olympic hopefuls, we've continued Brett's development. It's remarkable that he can now run his 5K (3.1 mile) race pace from high school for the full 26.2 miles in the marathon! It really is amazing how much the basic fitness can improve over time and Brett's progression is testament that the pyramid of performance will continually rise if you add a hefty dose of endurance and stamina training across your running career.

The bottom line is that you need both aspects of fitness to run your best. But, while speed and sprint workouts are fun to do and you get a quick fitness boost, smart runners and coaches know that it is your basic fitness (endurance and stamina) that is the most important over the long term. Build your base larger and higher and then you can stack your speed fitness on top of it, leading to faster race performances.

Chapter 40

Rule #4: Learning Effort (or Calibrating Your Inner GPS)

All training must come down to your own internal effort level. Pace, heart rate and any other external measure that you can monitor should simply be a means to learn how your effort level varies across the training zones. I call this concept, "calibrating your inner GPS", and I believe it's vitally important.

Why? You may ask. By calibrating your inner GPS, you'll be ready for whatever a workout or race throws at you. Whether you're dealing with bad weather, undulating terrain, fatigue, or even just having "one of those days," you'll be able to adjust your workouts and races to achieve the best performance on the day. And I find that consistently good performances across a training cycle lead to great performances in races.

The Stamina zone provides a particularly good opportunity to connect with your effort level since it includes two very noticeable thresholds – the ventilatory and lactate thresholds. In training, if you exceed these thresholds you feel it. You know that you've gone "over the edge" and your breathing escalates and lactic acid begins to build up in the legs. Stamina workouts require a tremendous amount of precision, and thus are great at teaching effort.

As you go through your training program, monitor closely how you are feeling in each type of run in each type of zone. Over time, you'll really dial in your effort level and then, no matter what happens on workout or race day, you'll be able to deliver your best performance.

Chapter 41

Rule #5: Build Yourself into a Complete Runner

A complete runner isn't just a runner who includes a variety of workouts in his plan. It goes beyond just the running. A complete runner is one who is resistant to injury and prepared for faster running. Outside of running, this means becoming a better overall "athlete." Nearly all runners need to include a variety of non-running (or ancillary) exercises to build our injury resistance and to help us run faster. Ancillary exercises include core training, strength training, mobility/flexibility training, balance training and a host of specific exercises to address the common injuries (plantar fasciitis, Achilles tendonitis, shin splints, IT band syndrome, runner's knee and a variety of hip/hamstring/low back maladies).

Like all the concepts in this book, however, what you need to do to become a complete runner can vary greatly from what your training partners need to do. The difference is your inherited athletic ability and your athletic history. Some runners were born great athletes with strong bodies (not necessarily muscular but strong) and good neuromuscular coordination. (You can thank your parents for that!) These are the folks who can pick up a new sport very easily and do well in it almost immediately. These athletes are nearly complete runners from the start so they usually only need a minimum amount of ancillary training.

Other runners, however, have less inherited athletic ability and very little athletic background. These runners, as you would guess, need a lot more ancillary training to build themselves into better athletes. What we are now learning is that this may be the core difference in runner performance as well as the ability to stay injury-free. (Though sometimes

the naturally talented athletes improve so rapidly that they violate the Rule of Too's as well).

So, as you go through the training make sure you not only include a lot of variety in workouts but create your own "Complete Runner Program" that includes all the ancillary work that you need to stay healthy and run faster. There are now lots of resources for ancillary programs. I even created a set of DVDs that address core training and drills for distance runners. You can find them on my website: www.mcmillanrunning.com.

Chapter 42

Rule #6: The Body and Mind Like Variety

In this book, you've learned about the four training zones as well as all the different workouts that fit within these zones. I encourage you to include some workouts from all four zones as you go through your training. Not only does this make training fun and interesting but I've found that the body (and mind) adapt more quickly to training when it is varied. This only makes sense since the body adapts to whatever stresses you place on it. Provide more types of stress and the body will in turn adapt quickly to prepare for these stresses in the future.

So, when it comes to workouts, that's why I like to include lots of variety in my training programs. You see this in the program you selected in Step #1 of the book. From time to time, it's good to repeat a workout so you get a marker of your improvement. Over the course of your training plan, however, make sure to include a bit of every type of workout just to make sure your performance never plateaus and you are continually developing your fitness.

Here's a good example: Let's say you need to work on stamina for an upcoming race. A tempo run is one of the best stamina workouts that you can do so you could simply perform a tempo run each week for four to six weeks to build your stamina. However, I found through my graduate studies as well as my work with thousands of athletes, that while a tempo run each week will improve your stamina, doing a variety of stamina workouts will actually boost your stamina more. So, instead of the same workout week-in and week-out, I advise runners to include several types of workouts within a training zone. It makes the training more fun and more effective.

Week	Lacking Variety	Lots of Variety
1	TR: 15 min	CI: 8 x 1000m w/ 200m jog
2	TR: 20 min	TR: 20 min
3	TR: 25 min	TI: 5 x 2000m w/ 400m jog
4	TR: 30 min	SS: 50 min

Chapter 43

Rule #7: Basic Fitness vs. Race-Specific Fitness

As I explained earlier in the book, your training year includes two general types of training. First, there is training to build your basic fitness (remember the Pyramid of Performance from Rule #3?). This training involves consistent weekly mileage, consistent long runs and a focus on endurance and stamina zone training with a secondary sprinkling of the other types of training (speed, sprint, hills, etc.).

Second, there are periods of time when you are getting ready for a race (race-specific training). This training involves more focus on the workouts that will get you ready for your event. That may mean an advancement of your basic fitness for longer races like the marathon (longer long runs, marathon-specific long runs, etc.) or it may mean you focus more on speed and sprint training as your shorter distance race approaches.

Great athletes and coaches have found that it is best if the bulk of your year is focused on building your general fitness. After all, it is the base of the pyramid of performance that is the most important. The consensus is that around 60-70% of your year's training should focus on building your basic fitness. The other 30-40% of the year is devoted to getting race ready.

One thing that coaches have observed is that as you get more and more experienced as a runner, you can shorten the race-specific training phases. This may seem counterintuitive but it actually has three important benefits. First, experienced runners should know exactly how long it takes to get in peak shape for a race and it's likely that it takes less

time than it did when they were less experienced. As a result, the experienced runner doesn't require as many workouts and weeks of race-specific training to be ready for a peak performance. Second, race-specific training is often the most stressful on the body so shortening the race-specific phase of training helps reduce injury risk. And third, a shorter race-specific phase reduces the risk of burnout and boredom. The runner simply can't be totally focused and training extremely hard for too long. Better to keep the race-specific phase as short as possible.

Some runners worry about not being race-ready during their base fitness phase of training. While you may not be in peak shape (this should be saved for your goal race anyway), coaches and athletes have found that they can, in fact, still race well on basic fitness training. In fact, I read one time that a great training strategy is to do basic fitness training until your race performances plateau and then, and only then, should you begin to focus on race-specific workouts.

The take-home message is that we must adhere to the Pyramid of Performance and focus most of the year on basic fitness with limited times where we focus on race-specific training.

Chapter 44

Rule #8: Find Your Sweet Spot

Just as we talked about finding your sweet spot in mileage for each week, you should also search for your sweet spot in intensity. You'll know you've hit it when you have consistently good workouts, your races are positive and you find the whole running experience challenging but at a level that your body and mind can adapt to.

Runners who find themselves struggling in workout after workout and are not having success in race after race, are often outside of their sweet spot in training. In these cases, the fix is usually to reduce the weekly volume by 10-20% *and* to reduce your effort in workouts by 10-20%. Sometimes, you are just training a bit too much and too hard for your body to adapt.

Of course, the biggest challenge is not finding your sweet spot. It's maintaining it. The reason is that your sweet spot is constantly moving. High stress in your life lowers your sweet spot in training (lower volume and less intense key workouts). Low stress in your life means you can train a little bit more (and more intensely). And lastly, as you gain experience, your sweet spot evolves as well.

So, it's not a one-time situation. It's one that you must constantly be evaluating. In time, you'll be better at recognizing when you are out of your sweet spot and can quickly adjust before injury or burnout sets in.

One final note: It's okay to challenge yourself outside of your sweet spot every now and then. You may have periods of the year when you want to run more miles than you normally do. The same goes with times when you challenge yourself with intensity. Both are fine as long as you know

you are pushing your limits and must accept some "bad" workouts and races as a result. You will also have to raise your focus on injury prevention during these periods. You can't (and shouldn't) train above your sweet spot for too long but it's fun to challenge yourself and find your limits at times.

Chapter 45

Rule #9: Designing for Success

Everyone knows that motivation is a key to success. That's why I believe your training should be set up to build your motivation. How do you do this? By designing a training plan where your workouts have the best chance of being a success. This doesn't mean that every workout is easy. But it does mean that you'll use what you've learned from the PRE to set up your training for positive results. And, you know how this goes - a positive workout builds your confidence and motivation and is usually followed by more positive workouts and thus more motivation. This is the scenario we want to plan for, not hope for.

Put in strengths mostly, weaknesses sparingly, plan ahead for stressful times (no weakness workouts during stressful times) and adjust on the fly for success. Never hurt your momentum, motivation or confidence but be prepared for the tough days and let them slide.

I find that runners who obey all the principles, rules and tips that I've included in this book, have a high chance of achieving their goals – not because the training is magical but because it fits within their busy lives. And because the training fits not only within their busy lives but also fits with their type of runner, the workouts, more often than not, go well. And this, my friends, leads to a wave of motivation that leads to breakthrough performances.

Chapter 46

Rule #10: Respect that You Change

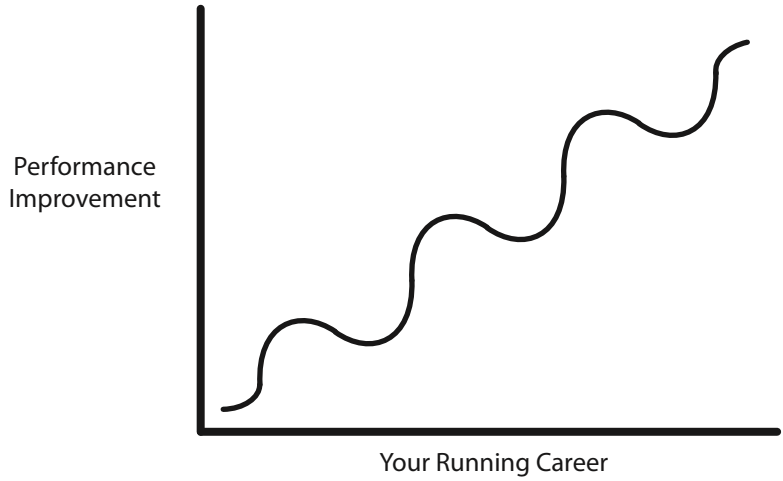
We are not robots. We are living and adapting organisms. What does this mean for the runner? It means that you change from training cycle to training cycle.

On the positive, you accumulate benefits in one training cycle and carry them over to the next one, thus building your overall fitness from season to season and year to year. It also means that you can adapt to more and more volume and intensity, which typically leads to faster and faster racing. Experience teaches you your strengths and weaknesses and allows you to better dial in training for better results. And, you gain vital understanding of how to mentally handle hard training and the inevitable mental challenge of racing fast despite ever increasing discomfort.

On the negative, there will be times across your running career when you can't train the way you want. You may have planned or unplanned breaks from training (injury, illness, family duties, work commitments, etc.) and you will have to constantly identify these varying periods and design your training plan to work with whatever ability to train you have available at that moment.

I had to do this when my son was born. He was a terrible sleeper, which meant I didn't get the recovery I needed. While I wanted to train more, I just had to accept that due to the lack of consistent recovery, I just had to back off on my running. At times like this, you simply can't run as much mileage as you usually do. You also may not be able to do as many race-specific workouts as you like. That's just the way life is and it's the same no matter if you are in the back of the pack, the middle of the pack or the front of the pack.

For new runners, these changes in ability to train often cause confusion. The expectation is that training is a one-way upward path. Instead, it's like an upward sine wave (see Graph below) with periods where you are ascending rapidly and periods where improvement seems stalled or reversing.



The key is to recognize it, live through it and emerge ready for the next big jump in improvement.

Coach to Coach:

I spent the better part of my teens and early 20s, reading everything I could get my hands on when it came to running – books, research articles, magazines, etc. I read them all. What I found (particularly in the older running books and articles that I collected) was this set of general principles I call the Rules of Running. They came through again and again no matter whether I was reading a book that was 50 years old or an article on a present-day coach or athlete who was having success.

As coaches, our job is simply to learn from the past and use this to our advantage as we work to help our athletes fulfill their potential. As you create your training programs, make sure you review these Rules of Running. They have served me well and I'm sure they will serve you well too.

Learning from the Best: Nobby Hashizume

I first met Nobby Hashizume at a coffee shop in Boulder, Colorado in the early 2000s. He and Olympic Bronze Medalist, Lorraine Moller, were planning a speaking tour of the U.S. for world-renowned coach Arthur Lydiard. Little did I know how important this meeting would be!

Over the next few years, Nobby would become a key coaching mentor and readily share his knowledge of the Lydiard and Japanese training systems.

Nobby is Japanese and was a coach for a Japanese corporate team but he felt Lydiard's principles were so important that he moved to New Zealand and studied at the feet of the master coach for a year – a running pilgrimage if you will. Now living in the U.S., Nobby works tirelessly to continue Lydiard's legacy through the *Lydiard Foundation*.

Thanks to Nobby, I have met many of the world's all-time greatest runners and coaches. He's an encyclopedia of Lydiard info and always available to provide insight into Lydiard's principles.

Since he is still in such close contact with top Japanese coaches and athletes, I've learned a lot about the Japanese system from him as well. Nobby understands that it's not the "formula" that is the secret to Lydiard and Japanese training. It's the principles and how these are applied to each different athlete. Sound familiar? This concept is the basis for my coaching philosophy and this book.

I encourage all runners and coaches to visit the *Lydiard Foundation* online to learn more about Arthur Lydiard and his training methods.

The Finish Line

We did it! Give yourself a big high five and pat on the back. I had a lot of fun walking you through the process I use to create and execute custom training plans for my athletes. I hope you did too.

We started with a simple idea: To make a training plan that is truly individualized just for you, taking into consideration your particular traits as a runner. We then walked through the four training zones and each type of workout. We learned that proper pacing is key to getting the biggest bang for your buck as you train and we learned the lessons from all the great coaches and athletes from the past. We even got a lesson on how to modify the plan when things come up and even learned some fun additional workouts we can add to this plan and future plans to keep the training fun.

All that's left now is for you to lace up your shoes and get to training. As you do, I'll leave you with my final thoughts: I believe the training process doesn't have to be complicated. I believe that the training principles discovered by great coaches and athletes over the last century combined with the guidance of exercise science can help you train smarter and run faster. And, I believe all runners and I mean ALL runners (that means you too) who follow the six easy steps in this book can create or tweak training plans that are more individualized and in the end, more beneficial to help you with your one true goal – to run faster.

I've worked with thousands of runners over the last 20 years and the one lesson I've learned is that if you combine a dedicated runner with a smart training plan, they will go out and achieve things they never thought possible. I wish you all the best as you go out and become YOU (Only *Faster*).

References

Avery, Guy. The Most Important Law of Training. *Peak Running Performance*. 1996 Jan/Feb.

Daniels, Jack. 2005. *Daniels' Running Formula*. Second Edition. Human Kinetics.

Lydiard, Arthur, and Garth Gilmore. 1978 *Running the Lydiard Way*. World Publications.

Martin, David, and Peter Coe. 1991. *Training Distance Runners*. Leisure Press/Human Kinetics.

McMillan, Greg. Calibrating Your Inner GPS. *Running Times* 2006 Mar.

McMillan, Greg. The Marathon Long Run. *Running Times* 2008 Oct.

McMillan, Greg. Don't Taper. Peak! *Running Times* 2008 Nov.

McMillan, Greg. Work Your Weakness. *Running Times* 2009 Sept.

McMillan, Greg. Think Tall for Good Running Form. *Running Times* 2011 Oct.

Noakes, Tim. 2003. *Lore of Running*. Human Kinetics.

Purdy, Gerry and James Gardner. 1970. *Computerized Running Training Programs*. TAFNews Press.