Chapter 9

The Total Heart Rate Training Program

This chapter brings many loose ends together guiding you through the process of developing a detailed heart rate-based training program. By following along with the worksheets in the appendices you'll do exactly what I would do if I was coaching you. I've used the twelve-step process described here to prepare athletes for the Olympics, world competitions and national championships. I've also used it to get novices ready for their first competitions. It works.

You may decide not to complete the worksheets that accompany this chapter because it does require a lot of thinking and soul searching. For athletes who do not have challenging goals that is understandable. But if you have high athletic aspirations, and especially if there is a sizable gap between your current capability and what is demanded by your goals, then following the step-by-step process in this chapter will greatly increase your chances of success. No one can guarantee your success, however. It will still come down to how dedicated you are to training. That's one of the reasons we all enjoy endurance sport so much—there's no one else to blame or give credit to.

The best time in the season to develop your plan using this chapter is at the start of your season, before you do the first workout. But even if you are already into your competitive season as you read this, following along with the worksheets will still give focus to the remainder of your season and help you produce better results. You may find it helpful to return to this chapter before beginning each new season to get organized and give direction to your training.

Your Training Plan

An important key to the success of a training plan based on periodization is the use of your heart rate monitor to closely gauge the intensity of each workout. Intensity has repeatedly been shown by research to be the primary determiner of fitness. Designing your training plan based on your unique heart rate zones has a lot to do with how well you perform in athletic competition.

Of course, following a plan does not mean doing so rigidly. There will be days when you shouldn't follow the plan because you are not recovered from a previous workout, or you feel a cold coming on, or for whatever reason you sense that the timing is not right to challenge your body. At times like these it is always best to do less—to go short and easy or even take the day off. To do otherwise is to risk illness, injury, burnout and overtraining. Missing one scheduled workout is preferable to missing one week, or more, of training. Always give yourself permission to do less and your fitness will bloom and your athletic career will be long and rewarding. If you are ever unsure of what to do—am I catching a cold?—the answer is to do less. When in doubt leave it out, I tell the athletes I coach.

Now it's time to bring together much of what you have learned in this book. I will walk you through the steps of designing a seasonal training plan in which heart rate regulates workout intensity. You can use the worksheets in the Appendices to help guide you and to record your plan as you follow these steps. By the time you are done with this chapter you will have a total heart rate training plan customized to your unique needs. It will look something like Figure 9.1.

Fig. 9.1 Annual Training Plan

Athlete: Tom Athlete
Annual Hours: 400
Season Goals:
1. Qualify for Boston Marathon-run 3:20 at Midwest Marathon (most important goal).
2. Run a P.B. of under 40 minutes at Hometown 10k.
3. Finish the Horribly Hilly 30k without walking.

Training Objectives:
1. Maintain coupling of high Zone 2 heart rate and pace for two hours by the end of the Base period.
2. Freebar squat 1.5 x body weight by January 22.
3. Complete a 5k race with an average cadence of 88 by April 23.
4. Take 45 seconds off of my self-test TTT time at heart rate range 141 to 143 by October 1.
5. Complete 15 minutes of Zone 5b intervals at an average pace of under 6 minutes by June 15.

Wk# Mon	Races	Pri	Period	Hours	Comments	Weights
1. Nov 7			Tran	-	Finishing off previous season.	-
2. Nov 14			"	-	"	-
3. Nov 21			Prep	7.0	Start of season.	AA
4. Nov 28			"	7.0		"
5. Dec 5			Base 1	8.0		"
6. Dec 12			"	9.5		MT
7. Dec 19			"	10.5		"
8. Dec 26			"	5.5		MS
9. Jan 2			Base 2	8.5		"
10. Jan 9			"	10.0		"
11. Jan 16			"	11.0		"
12. Jan 23			"	5.5		SM
13. Jan 30			Base 3	9.0	Wknd group run--don't race!	"
14. Feb 6			"	10.5	Wknd group run--don't race!	"
15. Feb 13			"	11.5	Wknd group run--don't race!	"
16. Feb 20			"	5.5		"
17. Feb 27			Build 1	10.0	Start Tuesday track workouts.	"
18. Mar 6			"	10.0		"
19. Mar 13	Heath Half Marathon	B	"	8.0	Rest for 3 days before race.	"

20. Mar 20			"	5.5		"
21. Mar 27			Build 2	9.5		"
22. Apr 3			"	9.5		"
23. Apr 10			"	9.5		"
24. Apr 17	Zucco 5k	C	"	5.5	Concentrate on form & cadence.	"
25. Apr 24			Peak	8.5		"
26. May 1			"	6.5		"
27. May 8	Horribly Hilly 30k	A	Race	8.5	Race Sunday. Time includes race.	-
28. May 15			Tran	8.5	3 days of rest.	MT
29. May 22			Build 1	10.0		"
30. May 29			"	10.0		"
31. Jun 5			"	10.0		SM
32. Jun 12	Post 10k	C	"	5.5	Focus on mile 1 pacing.	"
33. Jun 19			Peak	8.5		"
34. Jun 26			"	6.5		"
35. Jul 3	Hometown 10k	A	Race	6.5	Race Sunday. Time includes race.	-
36. Jul 10			Tran	3.0	5 days rest. Start Base 3 on wknd	MT
37. Jul 17			Base 3	10.5		MS
38. Jul 24			"	11.5		"
39. Jul 31			"	5.5	Finish Base 3 on Tues. Then R&R.	"
40. Aug 7			Build 1	10.0	Race refueling!	SM
41. Aug 14			"	10.0	"	"
42. Aug 21			"	10.0	"	"
43. Aug 28	Flat 'n Fast 10k	B	"	5.5	"	"
44. Sep 4			Build 2	9.5	Marathon pacing!	"
45. Sep 11			"	9.5	"	"
46. Sep18	Zinkgraf 5k	C	"	9.5	Rehearse pre-race meal.	"
47. Sep 25			"	5.5		"
48. Oct 2			Peak	8.5		"
49. Oct 9			"	6.5		"
50. Oct 16	Midwest Marathon	A	Race	9.0	Race Sunday. Time includes race.	-
51. Oct 23			Tran	-		-
52. Oct 30			"	-		-

Step 1 Find Your Lactate Threshold Heart Rate

Chapter 3 described how to go about finding the single-most important heart rate for an endurance athlete—the lactate threshold (LT) heart rate, the heart rate at which you first begin to “redline.” Recall that this is used instead of max heart rate to establish training zones since athletes gauge how intense a workout is by comparing their efforts with the feelings they’ve experienced when at their LT. This LT heart rate varies fairly widely between athletes who have the same max heart rate.

If you have not already done so, find your unique LT heart rate by going to Appendix 1 and selecting one of the two self-tests described there. Be aware that there is a learning curve associated with all such testing. Athletes invariably start too fast when using the thirty-minute time trial method. Be just a bit conservative with how fast you go in the first ten minutes of this test and you'll likely finish strongly rather than limping painfully to the finish from having been too eager at the start.

While the graded exercise test prevents you from starting out too fast it requires having an assistant who can identify ventilatory threshold (VT)—the point at which labored breathing first is heard and you find it quite difficult to talk. That, too, takes some experience gained from helping you several times on this test. After a few such tests VT becomes rather obvious. But not at first.

It is a good idea to use one of these tests at the end of each mesocycle of training, especially in the last week of the Prep, Base and Build periods so that heart rate may be adjusted as necessary before going to the next level of training.

If you are a triathlete you will need to test each sport for LT heart rate as heart rates vary by sport considerably. But if you have time to test only one right now assume that your LT heart rate for running is seven beats higher than for biking which is seven beats higher than for swimming. Knowing one LT heart rate and these typical variances will allow you estimate the other two. For example, if your LT heart rate for biking is 152 by adding seven you estimate that your run LT heart rate is 159. Subtract seven and you estimate your swim LT heart rate is 145. These estimates will do until you have time to do the other two tests.

Record your LT heart rate where requested in Appendix 1.

Step 2 Determine Your Heart Rate Zones

Now that your LT heart rate is known it's time to determine your training zones. Turn to Appendix 2 and find the appropriate table for your sport or sports. In the table find your LT heart rate in the bold numbers in the "Zone 5a" column. By reading to the left and right of this LT heart rate across the table you can see all of your training zones. Mark this row so you may refer to it later. Testing later in the season may modify your LT estimate necessitating the use of a different row of zones.

Step 3 Select an Annual Training Plan

In the following steps you will build a training plan for your season that is unique to your abilities, needs, race schedule and capacity for training workload. This training plan will serve as a "road map" for your season. You will refer to it often. At the end of each week you will use it to help organize your calendar for the coming week to. By scheduling workouts into your appointment calendar much

as you would any other important event you make sure that training does not get crowded out by the details of life. This training plan will be your guide as you go through the season.

Turn to Appendix 3 where blank Annual Training Plans (ATP) are provided. Here you will find an ATP for single-sport athletes such as runners and cyclists, and also an ATP for triathletes (you may make a copy of the appropriate page). Or go online to www.TotalHRT.com and select "Free Resources." Then save or print the appropriate ATP according to your sport. If you save it to your computer you can do all of the following in an electronic format which makes the inevitable changes in the plan much easier. A third option may be found at www.TrainingPeaks.com where a "VirtualCoach" will automatically create an ATP for you using the same instructions that follow. You may print it or use it online at this site which offers many other services to self-coached athletes. Training Peaks charges a small monthly membership fee.

Fill in the blanks on the ATP following these directions.

Step 4 Put Dates on ATP

Each of the rows on the ATP represents a week in the year. On the left side of the page, the column header "Wk# Mon" refers to the week number and the date of the Monday that week. The week numbers are already included; you just need to add the date for the Monday of each week of the season. For example, if you are starting your seasonal training for the year 2007 at the start of the new year, the date of the first Monday in January, 2007 would be written in row 1, column 1 as "Jan 1." The second row would then be labeled "Jan 8" and the third "Jan 15." Repeat this pattern using a calendar to write in the consecutive Mondays for the entire season. Your training season may start at any point on the calendar depending on when you are fully recovered from the previous season and when your races are scheduled for the coming season. It is best to allow at least fifteen weeks to thoroughly prepare for your first A-priority race of the season. You may have as many as thirty-two weeks.

Step 5 List Races

Next, on your ATP, write in all of the events you intend to do in the coming season in the column labeled "Races." Place them on the ATP in the appropriate weeks based on their dates. For example, let's say that you have an event scheduled for Saturday, January 13, 2007. It would be listed in the row marked "Jan 8" since that row includes all the dates from January 8 through January 14. If you have two events that same weekend list them both in that row.

If unsure that you will do a particular race, list it anyway. It can be removed later. It is possible that you are completing this ATP several months in advance of the race season and the dates of events may not be published yet. In this case use the approximate date based on when the event has been held in previous years.

Step 6 Prioritize Races

Once you have listed all of your planned events designate each as "A-priority," "B-priority," or "C-priority" by writing in A, B or C in the "Pri" column next to the race name using the guidelines shown in Table 9.1. Most athletes designate nearly every event as A-priority. They want to be in top shape at all times. It just isn't possible. In fact, trying to peak for every event will only lead to reduced fitness and gradually worsening performances. Peaking for an A-priority race requires decreasing the training load and including more rest starting two to three weeks before the competition. If this is done too frequently your fitness will erode over the course of the season. Do not schedule more than two or three A-priorities in one season. Treat them as extraordinary occasions and prepare using the peaking procedure explained later in this chapter.

Table 9.1. Race priorities.

Priority	Number in a Season	Description	Special Preparation
A	1-3	Most important races. Your success is chiefly defined by their outcomes.	Taper for 2-3 weeks prior and follow Peak procedure.
B	4-8	Of secondary importance. You want to do well at these events, however.	Reduce training for 3-5 days prior.
C	Unlimited—be cautious!	Least important. Use as tune-ups, hard workouts, fun events or growth as an athlete.	No special prep—treat these as workouts.

You must be cautious with the number of C-priority events. There is a psychological "cost" every time you toe a start line. Over-racing can easily result in burnout. C races are typically done for one of four reasons—as a tune-up before an A race, as a hard workout, as a social activity with friends or as a learning experience. For novices C races are a great way to learn more about the sport so doing several the first year will speed up their growth as an athlete. Experienced athletes already know what the sport is like so should have a very good reason for doing a C-priority event.

In the "Pri" column on your ATP write in the A-, B- or C-priority for each event in the "Races" column.

Step 7 Set Goals

This is perhaps the most important part of completing your ATP as it has a direct relationship to your satisfaction with the season when it is over. Give this a lot of thought.

The ATP provides spaces for three seasonal goals at the top of the page. I've found that three is about right for nearly every athlete. When there are too many goals something gets neglected. You may have fewer, but no more than three.

You've probably heard this before, but it's worth repeating. Your goals should be well-defined by including two basic elements—what exactly you want to achieve and when you want to achieve it. Goals should also be measurable. It isn't enough to set a goal of, "Race faster." Goals should be more along the lines of, "Complete the XYZ Race on May 7 in less than 40 minutes." The more tightly you define your goals the easier you will find it is to work toward their successful accomplishment.

Goals should be event outcomes that are determined mostly by you rather than others. A goal to, "Win the XYZ Race" has a lot to do with who is there that day and how fit they are. It is better to set a performance goal, such as a time or strategy that you believe will win the race. The exception is when you know exactly who the competition is and what they are capable of doing in a race.

I once coached an athlete to race in the Olympic Trials for triathlon. He had to finish in at least third place to make the Olympic team but the course was brand new and quite hilly and the weather hot and humid so we didn't know what time might accomplish that. However, we knew everyone who would be in the race and what to expect of them. So our goal was to, "Finish third or better at the Dallas Trials on May 28." He finished strongly in a come-from-behind third.

Make your goals event-outcome-oriented—how you want to do in the A-priority races. Almost everyone wants to set a goal of, "Have fun!" That's commendable but assumed. If you're not a professional athlete who is trying to make money from the sport, fun is the only reason you're doing it. Fun is simply defined by people in different ways. For some it means being competitive; for others it has to do with socializing. By all means, have fun, but also set race-performance goals that will stretch you as an athlete.

Step 8 Determine Limiters

By now your goal or goals should be listed at the top of the ATP. Can you achieve them? There should be at least a seed of doubt or the goal is too easy. If there is no question at all about your potential for success then the goals aren't going to challenge you and training will have little purpose. When most effective, goals are just beyond your current grasp. You should feel the need to train tenaciously and wisely to achieve them.

Here's something for you to ponder: Why can't you achieve your goals now? If you knew you could achieve them now they would be accomplishments rather than goals, wouldn't they? Since there is a bit of uncertainty about your performance capacity relative to your goals there is obviously something lacking which stands between you and immediate success. The purpose of your training is to "fix" this performance "limiter."

A limiter is a *race-specific* weakness. It's not merely a weakness. For example, you may have a weakness when it comes to racing on hilly courses. But if your A-priority races are all flat then this weakness is *not* a limiter. If we know what your limiters really are and train in such a way as to make them much stronger then you will be able to achieve your goals. It's that simple.

The key question is, what are your limiters? Answering this question is the single most important thing you can do right now to move toward achieving your goals. Most athletes never ask this question. They train absentmindedly doing whatever is most enjoyable at the time. If they are good in the hills they do lots of hill work. If endurance is their strength they do mostly long workouts. Those who are blessed with great speed do short, fast workouts. It never dawns on these athletes that until they improve whatever it is that is holding them back they will never make a performance breakthrough. Continuing to focus on their strengths while giving lip service to their limiters means there will be little change in performance.

So, what *are* your limiters? The possibilities are endless including everything that affects your athletic development in such broad categories as training, lifestyle, nutrition, time available for exercise, athletic equipment, training environment, support, susceptibility to illness and injury, poor tactics and strategy, lack of race experience, poor body composition, insufficient sleep and psychological stress. While you need to examine yourself in terms of each of these categories, we will concern ourselves here primarily with training, and, even more specifically, the Training Triad described in Chapter 6.

Let's see if we can figure out what your strengths and weaknesses are in terms of the six abilities that make up the Training Triad. Sidebar 9.1 will start you down the path to determining your limiters.

Sidebar 9.1

What Are Your Weaknesses?

Read each statement below and decide if you agree or disagree as it applies to you. Check the appropriate answer. If unsure, go with your initial feeling.

A=Agree D=Disagree

A	**D**	
___	___	1. I'm stronger at the end of long, hard workouts than my training partners.
___	___	2. I'm confident of my endurance at the start of long races.
___	___	3. In the weight room I can lift more weight than most in my competition category.
___	___	4. The shorter the race, the better I perform.
___	___	5. I'm often told that my technique is excellent.
___	___	6. As the intervals get shorter, I get better.
___	___	7. I prefer to compete in long events rather than short ones.

___ ___8. I have always been better at sprints than endurance.
___ ___9. I handle hills, wind or rough water better than most in my competition category.
___ ___10. I can hold a strong pace for a long time.
___ ___11. My cadence or stroke rate is usually higher than others with whom I train and race.
___ ___12. I like races to come down to a sprint at the end.
___ ___13. I've always been better in endurance sports than in power sports.
___ ___14. I prefer a lower cadence or stroke rate than most in my competition category.
___ ___15. I'm more muscular than most athletes of my age and sex in my sport.
___ ___16. I could always jump higher than other kids in school.
___ ___17. I can accelerate my cadence or stroke rate without losing form.
___ ___18. My cadence is short and quick.
___ ___19. I really like long, slow, easy workouts.
___ ___20. I was always pretty good at sports such as basketball, football, baseball, softball or tennis.
___ ___21. I prefer a low cadence or stroke rate.
___ ___22. In school I could almost always beat the other kids in sprints.
___ ___23. To speed up I accelerate my cadence or stroke rate.
___ ___24. I have some trouble in races if the pace accelerates frequently.
___ ___25. The longer the workout or race the better I do.
___ ___26. I have great "lasting" ability in a race with a strong, steady pace but not great all-out speed.
___ ___27. I enjoy lifting weights.
___ ___28. I prefer workouts that are short, but fast.
___ ___29. My arm or leg turnover is quite high compared with most others in my sport.
___ ___30. I have always been able to throw, kick or hit a ball farther than most others.

SCORING: For each of the following sets of statements, count and record the number of "Agree" answers you checked.

Statement numbers		
2, 7, 13, 19, 25:	Number of "Agrees"	____ Endurance score
3, 9, 15, 21, 27:	Number of "Agrees"	____ Force score
5, 11, 17, 23, 29:	Number of "Agrees"	____ Speed Skill score
1, 10, 14, 24, 26:	Number of "Agrees"	____ Muscular Endurance score
4, 6, 18, 20, 28:	Number of "Agrees"	____ Anaerobic Endurance score
8, 12, 16, 22, 30:	Number of "Agrees"	____ Power score

Recall from Chapter 6 that the Training Triad's abilities—endurance, force, speed skill, muscular endurance, anaerobic endurance and power—are what determine how well you do physically in training and competition. Sidebar 9.1 gives you a gauge of how you stack up in each of these six abilities. The higher your score

for a given ability the more likely that is one of your strengths and is something you should rely on when setting race strategy.

What we are most concerned with here, however, are your limiters. A score of 3 or less in any of the abilities indicates a weakness. Again, this is not necessarily a limiter. To determine if a weakness is a limiter you must compare it with what is demanded of your A-priority events in order to achieve your goals. Whenever an event demands a certain ability for success and you have a weakness in that ability then you have a limiter. To determine what is required to achieve your performance goals for each A-priority competition you plan on doing complete the questionnaire in Sidebar 9.2.

Sidebar 9.2

A-Priority Event Success Determiners

List your A-priority event or events.

1. _____
2. _____
3. _____

Answer “yes” or “no” to each of the following questions for each event listed above.

● Endurance: To achieve my race goal I must be able to finish what seems to me to be a very long distance.

Event #1 Yes_____ No_____
Event #2 Yes_____ No_____
Event #3 Yes_____ No_____

● Force: To achieve my race goal I must be able to go up hills, deal with strong headwinds, handle very rough water or overcome some other form of resistance very strongly.

Event #1 Yes_____ No_____
Event #2 Yes_____ No_____
Event #3 Yes_____ No_____

● Speed Skill: To achieve my race goal I must be able to perform with a smooth and efficient technique—I can’t afford to be even a little bit sloppy with my form.

Event #1 Yes_____ No_____
Event #2 Yes_____ No_____
Event #3 Yes_____ No_____

● Muscular Endurance: To achieve my race goal I must be able to maintain a moderately high, steady effort at the extreme edge of my capability for a long time.

Event #1 Yes_____ No_____
Event #2 Yes_____ No_____
Event #3 Yes_____ No_____

● Anaerobic Endurance: To achieve my race goal I must be able to change pace frequently throughout the race often greatly exceeding my lactate threshold heart rate.

Event #1 Yes_____ No_____

Event #2 Yes_____ No_____
Event #3 Yes_____ No_____

● Power: To achieve my race goal I must be able to sprint at maximum effort several times during the event or at the finish.

Event #1 Yes_____ No_____
Event #2 Yes_____ No_____
Event #3 Yes_____ No_____

Summary: Determine the Training Triad demands for each of your A-priority events by checking of the abilities you indicated with "yes" above.

Event #1
_____ "Yes" for Endurance
_____ "Yes" for Force
_____ "Yes" for Speed Skill
_____ "Yes" for Muscular Endurance
_____ "Yes" for Anaerobic Endurance
_____ "Yes" for Power

Event #2
_____ "Yes" for Endurance
_____ "Yes" for Force
_____ "Yes" for Speed Skill
_____ "Yes" for Muscular Endurance
_____ "Yes" for Anaerobic Endurance
_____ "Yes" for Power

Event #3
_____ "Yes" for Endurance
_____ "Yes" for Force
_____ "Yes" for Speed Skill
_____ "Yes" for Muscular Endurance
_____ "Yes" for Anaerobic Endurance
_____ "Yes" for Power

What Sidebar 9.2 tells you is what abilities are required for success in your A-priority events. By comparing event success requirements with your weaknesses from Sidebar 9.1 limiters are determined. This in turn indicates where your training focus needs to be. For example, if you determined in Sidebar 9.1 that a weakness you have is muscular endurance and Sidebar 9.2 indicates that at least one of your events requires good muscular endurance for success, then this ability is a limiter for you. You should now be able to identify your limiters using Sidebar 9.3.

Sidebar 9.3

What Are Your Limiters?

By comparing the results of Sidebars 9.1 and 9.2 I know my Training Triad ability limiters are (check each that applies to you):

_____ Endurance
_____ Force

_____ Speed Skill
_____ Muscular Endurance
_____ Anaerobic Endurance
_____ Power

In addition, I believe my other limiters are (check any that apply to you):
_____ My lifestyle is not conducive to good training.
_____ My nutrition is poor.
_____ My time available for exercise is inadequate.
_____ My athletic equipment is outdated or otherwise inadequate.
_____ My training environment (weather, terrain, access to training facilities) is inadequate.
_____ I receive little support from my family and friends for my training and racing.
_____ I catch colds easily.
_____ I get injured easily.
_____ I have a tendency to overtrain.
_____ My race tactics and strategy are poorly planned or implemented.
_____ I lack race experience.
_____ My body composition is holding me back.
_____ I get insufficient sleep.
_____ I experience a lot of psychological stress.

Step 9 Establish Training Objectives

Let's use an old analogy to understand what this is all about. A chain (your performance) is only as strong as its weakest link (your limiter). A chain will always break at its weakest link. Making all of the other links stronger does no good—the chain continues to break at the weak link. Until the weak link is made stronger the entire chain is weak. Make that one link stronger, however, and the whole chain gets stronger.

In like manner, the things you need to accomplish in training in order to strengthen your "weak links"—your limiters—are called "training objectives." Strengthen these links by achieving certain objectives in training and your performance takes a great leap forward. Ignore them and you will always "break" at the same place in A-priority races.

There are five spaces at the top of the ATP where the objectives of your training are to be listed. This can be a real head scratcher. Let's see if we can figure it out.

You now know from Sidebar 9.3 what your limiters are. So the first question is, what do you do about them? The answer, of course, is to "fix" them. Even with concentrated training, it's unlikely that in one season they will become your greatest strengths (a score of "5" on Sidebar 9.1), but you need to start moving in that direction. How can you do that? Simple, you need to devote more training to

your limiting abilities than you are doing now. And how do you train the abilities that are your limiters? This was explained in Chapter 6. Table 9.2 summarizes how to train each ability. For more details see Tables 6.1 and 6.2. Appendix 5 provides specific workouts for each ability.

Table 9.2. How to train the abilities.

Ability	How to train the ability
Endurance	Long, steady workouts done in Zone 2, especially the upper half of Zone 2.
Force	Weight lifting or other strength training. Resisted, (hills, tethers, drag devices) sport-specific workouts done with short (<2 minutes) intervals in Zones 3 and 4 and long recoveries.
Speed Skill	Very short repeats done at high cadence or stroke rate with long recoveries. High frequency important. Too brief for heart rate to be an effective intensity gauge.
Muscular Endurance	Long (6-12 minutes) intervals with short recoveries, or long (20-60 minutes), steady efforts done in Zones 3, 4 and 5a.
Anaerobic Endurance	Short (2-4 minutes), fast intervals with about equal recovery durations done in Zone 5b.
Power	Very short (less than 20 seconds) sprint intervals with long recovery durations (several minutes) at Zone 5c effort (so short that heart rate may not be effective).

The objectives to be listed on your ATP could be referred to as “sub-goals”—things you must accomplish in training to show that you are making progress toward correcting your limiters. Since you now know what your limiters are and the types of workouts you will do to make these abilities stronger, you need to know when you’ve made measurable progress. That’s why you have training objectives.

You’ll be tempted to skip this part of the ATP because it requires deep thought and painstaking analysis. Don’t overlook this section. If you do, your training plan will never have the focus needed to really kickstart your athletic performance. This step gives a deeper meaning to all of the work you have done so far and a focused direction to your training.

The following are some examples of training objectives listed by ability. These may give you some ideas about what yours might be. Give this some thought and then list your training objectives at the top of your ATP. There is room for five. You’ll need at least one objective for each limiter. Be sure to indicate when you anticipate achieving the objective. This date should be in advance of your A-priority race for which that improved ability is needed for success.

<u>Endurance Objective examples</u>

- Within a six-week period complete six, four-hour workouts in Zone 2 with the last on July 8.

- Maintain coupling of high AeT heart rate and pace for two hours by the end of the Base period.

Force Objective examples

- Freebar squat 1.5 x body weight by January 7.

- Average over 400 watts for one-minute climb on 8% grade by January 14.

Speed Skill Objective examples

- Complete a 5k race with an average cadence of 88 by August 12.

- Complete a 1000-meter time trial with an average cadence of 45 to 55 by February 4.

Muscular Endurance Objective examples

- Take 30 seconds off of my self-test TTT time at heart rate range 141 to 143 by September 2.

- Improve pace by 20 seconds for one mile at Zone 5a by August 12.

Anaerobic Endurance Objective examples

- Complete 15 minutes of Zone 5b intervals at an average pace of under 6 minutes by August 19.

- Complete a 1.5-mile time trial faster than 10 minutes by June 17.

Power Objective examples

- Sprint up Bell Road hill in under 10 seconds from a standing start by June 24.

- Increase maximum instantaneous power to more than 1000 watts by May 6.

Step 10 Assign Mesocycles

You'll be glad to know that the hard part, the part that makes your brain hurt, is now done. What remains is far less thought-provoking but no less important. The next task in completing your ATP is to periodize your season. That means assigning mesocycle periods to each week of the year.

In Chapter 8 you learned about the six mesocycles—Prep, Base, Build, Peak, Race and Transition. Table 8.1 provided a summary of these periods showing

how long each mesocycle lasts, what the purpose is and what Training Triad abilities are emphasized in each. You may want to glance at that table once again to refresh your memory before completing this portion of your ATP.

In the column marked “Period” you will write in the name of the mesocycle assigned to each week. You’ll do this by working backwards from each of your A-priority races. As Table 8.1 shows there is a range of weeks for each mesocycle. For example, the Base period is six to twelve weeks long. How do you decide the duration of your mesocycle given such wide ranges? There are two parts to the answer.

The first part is that when preparing for your first A race of the season you should always schedule at the high end of each range, especially when it comes to the Base period. You are more likely to do twelve rather than six weeks of Base early in the season. For subsequent A races in the season the lower end of each range is more commonly used since your fitness is fairly well established from months of prior training. Later in the season, when preparing for a second or third A race, the Base period may even be omitted. More on that later.

The second part of the answer to how many weeks should be included for each mesocycle is a bit more complex and more or less involves your age. It actually has to do with your capacity for recovery but this is largely determined by how many years you’ve been on the planet. Young athletes generally recover more quickly than older athletes and therefore may schedule longer mesocycles. That means young athletes will have more days or weeks of challenging training before taking a rest and recovery (R&R) break. The older athlete needs these breaks more frequently since they are more easily overtrained.

Some of the mesocycles are made up of sub-periods. For example, the entire Base period is made up of Base 1, Base 2 and Base 3, and the Build mesocycle has sub-periods Build 1 and Build 2. The Base and Build sub-periods each end with several days of R&R. The athlete trains hard for several days and then rests for a few days. While the young athlete trains hard for about three weeks before taking a few days of R&R, the older athlete only goes hard for about two weeks before taking a break.

So, I know what you’re thinking: “What does ‘older’ mean?” While it may be explained by age it is better defined by your capacity for recovery. I’ve known 35-year-olds who recovered slowly and I’ve also known athletes who were 55 yet recovered quickly. A quick gauge of which category you fall into may be determined by how you spring back after an anaerobic endurance workout. If after doing fifteen minutes or more of intervals in Zone 5b you find it typically takes you more than 48 hours to be ready to go hard again then you are an older athlete regardless of your age. If unsure about this simple test just use your age until you get a better gauge. If you are under 45 assume you are young and if

beyond that age let's classify you as older for the purposes of completing your ATP for now.

Once we know your age category we can decide how long your sub-periods of each mesocycle are. Table 9.3 summarizes the period durations by age.

Table 9.3. Mesocycle sub-period durations by age category.

Period	Young Athlete	Older Athlete
Prep	2-6 weeks	2-6 weeks
Base 1	4 weeks	3 weeks
Base 2	4 weeks	3 weeks
Base 3	4 weeks	3 weeks (repeat)
Build 1	4 weeks	3 weeks
Build 2	4 weeks	3 weeks (repeat)
Peak	1-2 weeks	1-2 weeks
Race	1-2 weeks	1-2 weeks
Transition	1-4 weeks	1-4 weeks

Notice that the older athlete repeats Base 3 and Build 2 thus doing twelve weeks of Base training (four sub-periods of three weeks each) and nine weeks of Build (three sub-periods of three weeks each). The young athlete also does twelve weeks of Base but only eight of Build—one week less. The older athlete needs that extra week of hard training because this mesocycle tends to be the most challenging so spreading it out a bit over a longer timeframe is beneficial for the athlete who doesn't recover quickly.

With all of this in mind, it's time to complete the "Period" column on your ATP. You'll fill in this column by working backwards. Start with the first A-priority race of the season. At the intersection of the Period column and appropriate A-race row write in "Race." Then count up two rows and write in "Peak" for both of these weeks. The next two mesocycles vary based on your age category. (Take another look at Figure 9.1 if unsure about the procedure so far.)

If you have classified yourself as a young athlete count up four weeks and write in "Build 2" for each of these weeks. Again, count up four weeks and write in "Build 1." Do the same for Base 3, Base 2, and Base 1. If you are an older athlete assign three weeks to each of these periods.

Then the top two to six weeks are labeled "Prep" regardless of your athletic age. How many of these you schedule depends on when your previous season ended and how ready you are to start focused training again. If unsure that you are ready it's best to take some more time off.

Finally, the week after your first A race write in "Tran"—short for Transition. If this first Transition mesocycle comes early in your season then I'd strongly suggest that you take a few days off from training. This may only be three to seven days.

The idea is to give not only body but your mind a break also. Feel free to just goof off for a few days. But if you can't stand the thought of not exercising just do one short workout in Zone 1 daily. But keep in mind that the purpose here is to rest and rejuvenate by not having a routine or workouts that *must* be done.

The first macrocycle on the season is now complete. It was the easy one. Basically, we just followed a formula to plan it. For the subsequent macrocycles you have a few decisions to make and some mesocycles that are left out. For example, when scheduling beyond the first A race you will not repeat the Prep period and probably not Base 1 or Base 2 either. However, you may want to return to Base 3 after the first Transition period if your basic abilities (endurance, force or speed skills) have declined in the last few weeks. This is not unusual following a long Peak and race period. You may even want to do Base 3 twice, if you have enough weeks. If your basic abilities, especially endurance, are lacking it will greatly detract from training and racing the rest of the season. If your basic abilities are still strong you may want to start back into training with a Build 1 or Build 2 period. But don't short change basic the abilities in order to do more high heart rate training.

Using Figure 9.1 as a model, finish filling in the "Period" column on your ATP through the end of the season. Later on, should you decide that the plan you have isn't right you can always make changes. I've coached few athletes who made it all the way through a season with no ATP adjustments.

Step 11 Set Weekly Training Hours

As you can see, we're working our way down to more and more detailed aspects of your training. You've now got most of the ATP complete and we have a general idea of what you will do in training. What remains are the specifics such as setting the number of hours you will work out weekly—your volume. Once volume is determined you're ready to take care of the final details—the actual workouts.

Weekly volume is the product of duration and frequency—how long and how often you workout. For example, if you workout for two hours each day and seven days a week your volume is fourteen hours. Setting volume is done in one of two ways. You may either determine how many weekly hours you have available for training or you may decide the seasonal volume ("Annual Volume" at the top of the ATP) necessary to achieve your goals.

The first is the easier to figure out. You simply subtract all of the weekly commitments and demands on your time from 168, the number of hours in a week. To compute your available training hours for each week see Sidebar 9.4. If you're a busy person, as most athletes are, this little exercise will tell you the average number of weekly hours you have available for training. Multiply the result by 50 and you know approximately how many annual hours you can train. That number is placed at the top of the ATP where it says, "Annual Volume."

Sidebar 9.4

How Many Training Hours Do You Have?

Everyone, no matter how busy, has 168 hours available each week of the year. We can choose to use the hours in anyway we want. For athletes, some hours need to be devoted to working out. How are your 168 hours used each week? Below estimate how many hours are spent in each non-exercise category each week.

Sleep	_____
Work	_____
Eat	_____
Family time	_____
Personal hygiene	_____
Housework	_____
Home maintenance	_____
Goofing off (TV, etc)	_____
Other (non-exercise)	_____
Total Hours Spent	_____
Training Hours	_____ (168 minus Total Hours)

If your available training hours are fewer than you believe you could handle each week then setting your weekly hours for the season is pretty easy. Simply schedule the time you have available for each week with the exception of R&R and “Race” weeks every third or fourth week depending on your training-age category as explained in Step 10. Write in your training hours for each non-R&R and “Race” week of the season in the “Hours” column on your ATP (refer to Figure 9.1 for guidance). For the R&R weeks figure you will train from sixty to eighty percent of whatever your available hours are. Where you fit in this range depends on how close you are to your physical volume limit in the other weeks. If quite close—in other words, the other weeks are likely to leave you quite tired even though you could have done a bit more if there were more hours available—then make the R&R weeks sixty percent of a “normal” week. If you know you could handle a lot more hours than are available to you then multiply by eighty percent to set R&R weekly hours. Obviously, there is a lot of guessing going on here so you could use some other multiplier between sixty and seventy percent if that seems appropriate.

How much training time do you schedule if the demands on your time are not restrictive? To answer this you need to first understand annual training hours, or how much time you devote to training in an entire year. Once we know that number you can schedule the time for each mesocycle based on what has been shown to work for other athletes.

Your annual hours includes everything you do in all workouts intended to improve your Training Triad abilities from Chapter 6. Besides your sport-specific workouts this includes strength training and all cross-training activities. Use Table 9.4 to

help you decide what your annual volume should be. This table is based on the duration of your longest A-priority event and the level of your season's goals. For the sake of simplicity the goals are divided into "finish the race" and "high performance." The first is easy to understand. The second is defined only by your aspirations relative to your known level of performance. If achieving your goals is going to push you to your physical limits then they are high performance.

Table 9.4. Suggested Annual Volume based on race duration and race goal.

A-Priority Race Duration	Annual Volume for Goal of "Finish the Race"	Annual Volume for Goal of "High Performance"
Up to 3 hours	200-400	500-1000
3 to 8 hours	300-500	600-1000
More than 8 hours	450-600	700-1000

There is a lot of room in the suggested annual volume ranges in Table 9.4. It best not to increase your hours from one year to the next by more than fifteen percent. So select a number from the appropriate range that is only slightly more than what you have done in past seasons.

Record your Annual Volume at the top of the ATP. To set weekly hours find your annual volume in the top row of Table 9.5. Using this Table you may now complete the "Hours" column on your ATP. For example, if annual volume is 400 hours then the Prep period is 7.0 hours, Base 1, week 1 is 8.0 and Base 1, week 2 is 9.5 hours.

Table 9.5. Weekly Training Volume

Period	**Week**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**	**750**	**800**	**850**	**900**	**950**	**1000**
Prep	All	3.5	4.0	5.0	6.0	7.0	7.5	8.5	9.0	10.0	11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0
Base 1	1	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	12.5	14.0	14.5	15.5	16.5	17.5	18.5	19.5
	2	5.0	6.0	7.0	8.5	9.5	10.5	12.0	13.0	14.5	15.5	16.5	18.0	19.0	20.0	21.5	22.5	24.0
	3	5.5	6.5	8.0	9.5	10.5	12.0	13.5	14.5	16.0	17.5	18.5	20.0	21.5	22.5	24.0	25.5	26.5
	4	3.0	3.5	4.0	5.0	5.5	6.5	7.0	8.0	8.5	9.0	10.0	10.5	11.5	12.0	12.5	13.5	14.0
Base 2	1	4.0	5.5	6.5	7.5	8.5	9.5	10.5	12.5	12.5	13.0	14.5	16.0	17.0	18.0	19.0	20.0	21.0
	2	5.0	6.5	7.5	9.0	10.0	11.5	12.5	14.0	15.0	16.5	17.5	19.0	20.0	21.5	22.5	24.0	25.0
	3	5.5	7.0	8.5	10.0	11.0	12.5	14.0	15.5	17.0	18.0	19.5	21.0	22.5	24.0	25.0	26.5	28.0
	4	4.0	5.5	6.5	7.5	8.5	9.5	10.5	12.5	12.5	13.0	14.5	16.0	17.0	18.0	19.0	20.0	21.0
Base 3	1	4.5	5.5	7.0	8.0	9.0	10.0	11.0	12.5	13.5	14.5	15.5	17.0	18.0	19.0	20.0	21.0	22.5
	2	5.0	6.5	8.0	9.5	10.5	12.0	13.5	14.5	16.0	17.0	18.5	20.0	21.5	23.0	24.0	25.0	26.5
	3	6.0	7.5	9.0	10.5	11.5	13.0	15.0	16.5	18.0	19.0	20.5	22.0	23.5	25.0	26.5	28.0	29.5
	4	4.0	5.5	6.5	7.5	8.5	9.5	10.5	12.5	12.5	13.0	14.5	16.0	17.0	18.0	19.0	20.0	21.0
Build 1	1	5.0	6.5	8.0	9.0	10.0	11.5	12.5	14.0	15.5	16.0	17.5	19.0	20.5	21.5	22.5	24.0	25.0
	2	5.0	6.5	8.0	9.0	10.0	11.5	12.5	14.0	15.5	16.0	17.5	19.0	20.5	21.5	22.5	24.0	25.0
	3	5.0	6.5	8.0	9.0	10.0	11.5	12.5	14.0	15.5	16.0	17.5	19.0	20.5	21.5	22.5	24.0	25.0
	4	4.0	5.5	6.5	7.5	8.5	9.5	10.5	12.5	12.5	13.0	14.5	16.0	17.0	18.0	19.0	20.0	21.0
Build 2	1	5.0	6.0	7.0	8.5	9.5	10.5	12.0	13.0	14.5	15.5	16.5	18.0	19.0	20.5	21.5	22.5	24.0
	2	5.0	6.0	7.0	8.5	9.5	10.5	12.0	13.0	14.5	15.5	16.5	18.0	19.0	20.5	21.5	22.5	24.0
	3	5.0	6.0	7.0	8.5	9.5	10.5	12.0	13.0	14.5	15.5	16.5	18.0	19.0	20.5	21.5	22.5	24.0

	4	4.0	5.5	6.5	7.5	8.5	9.5	10.5	12.5	12.5	13.0	14.5	16.0	17.0	18.0	19.0	20.0	21.0
Peak	1	4.0	5.5	6.5	7.5	8.5	9.5	10.5	11.5	13.0	13.5	14.5	16.0	17.0	18.0	19.0	20.0	21.0
	2	3.5	4.0	5.0	6.0	6.5	7.5	8.5	9.5	10.0	11.0	11.5	12.5	13.5	14.5	15.0	16.0	17.0
Race	All	4.0	5.5	6.5	7.5	8.5	9.5	10.5	12.5	12.5	13.0	14.5	16.0	17.0	18.0	19.0	20.0	21.0

Step 12 Schedule Heart Rate-Based Workouts

Appendix 4 suggests weekly microcycle patterns for various types of endurance sports according to your level of experience and the mesocycle. Appendix 5 provides a sampling of heart rate-based workouts by Training Triad abilities. In this step you will combine these two to fit your exact needs by matching training with your limiters, strengths, weekly routine and time available.

Turn to Appendix 4 and select the weekly microcycle training pattern for each mesocycle of the season that best matches your experience level and type of sport (steady state or variably paced). Then, for each microcycle pattern select the exact workouts you will do each day from Appendix 5. Note that the workouts in Appendix 5 are coded. Simply write the codes for the workouts you've selected in the daily spaces for the rows marked as "Workout Codes."

All that now remains is to set a training time for each workout. This done using Table 9.6. The "Hours" column on your ATP indicates how much training time is planned for each week. Take the time for a given week and find that same number in the "Weekly Hours" column of Table 9.6. By reading across the seven columns to the right of that number you'll see how to distribute the time for each day of the week. For example, let's say your hours for a given week on your ATP are 8.0. The seven times to that right of that are 2.0, 1.5, 1.25, 1.25, 1.0, 1.0 and 0. This tells you how many hours to workout each day when you have eight hours planned for a week. You may put those times on whichever days work best for you. If you are using Appendix 4 the figures suggest daily duration levels. The daily hours stay the same whether you are doing one workout a day or multiple workouts. For example, if you are doing two-a-days and have 2.0 hours planned for that day you could do two, one-hour workouts.

Table 9.6. Daily Training Hours. May be two-a-day workouts or even three-a-day for elites.

Weekly Hours	**Suggested Daily Hours**						
3.0	1,0	0.75	0.75	0.5	0	0	0
3.5	1.5	0.75	0.75	0.5	0	0	0
4.0	1.5	1.0	1.0	0.5	0	0	0
4.5	1.5	1.0	0.75	0.75	0.5	0	0
5.0	1.5	1.0	1.0	1.0	0.5	0	0
5.5	1.5	1.25	1.0	1.0	0.75	0	0
6.0	1.5	1.25	1.0	1.0	0.75	0.5	0
6.5	1.5	1.25	1.0	1.0	1.0	0.75	0
7.0	1.5	1.5	1.25	1.0	1.0	0.75	0
7.5	2.0	1.5	1.25	1.0	1.0	0.75	0
8.0	2.0	1.5	1.25	1.25	1.0	1.0	0
8.5	2.0	1.5	1.25	1.25	1.0	1.0	0.5
9.0	2.0	1.5	1.5	1.25	1.0	1.0	0.75

9.5	2.5	1.5	1.5	1.25	1.0	1.0	0.75
10.0	2.5	2.0	1.5	1.25	1.0	1.0	0.75
10.5	2.5	2.0	1.5	1.5	1.0	1.0	1.0
11.0	2.5	2.0	1.5	1.5	1.5	1.0	1.0
11.5	3.0	2.0	1.5	1.5	1.5	1.0	1.0
12.0	3.0	2.0	2.0	1.5	1.5	1.0	1.0
12.5	3.5	2.0	2.0	1.5	1.5	1.0	1.0
13.0	3.5	2.5	2.0	1.5	1.5	1.0	1.0
13.5	3.5	2.5	2.0	2.0	1.5	1.0	1.0
14.0	4.0	2.5	2.0	2.0	1.5	1.0	1.0
14.5	4.0	2.5	2.0	2.0	1.5	1.5	1.0
15.0	4.0	2.5	2.5	2.0	1.5	1.5	1.0
15.5	4.0	2.5	2.5	2.0	2.0	1.5	1.0
16.0	4.0	3.0	2.5	2.0	2.0	1.5	1.0
16.5	4.0	3.0	2.5	2.5	2.0	1.5	1.0
17.0	4.0	3.0	2.5	2.5	2.0	2.0	1.0
17.5	4.5	3.0	3.0	2.5	2.0	2.0	1.0
18.0	4.5	3.0	3.0	2.5	2.5	2.0	1.0
18.5	4.5	3.0	3.0	2.5	2.5	2.0	1.0
19.0	4.5	3.5	3.0	2.5	2.5	2.0	1.0
19.5	4.5	3.5	3.0	3.0	2.5	2.0	1.0
20.0	4.5	3.5	3.0	3.0	2.5	2.5	1.0
20.5	5.0	3.5	3.0	3.0	2.5	2.5	1.0
21.0	5.0	3.5	3.5	3.0	2.5	2.5	1.0
21.5	5.0	3.5	3.5	3.0	3.0	2.5	1.0
22.0	5.0	4.0	3.5	3.0	3.0	2.5	1.0
22.5	5.0	4.0	3.5	3.5	3.0	2.5	1.0
23.0	5.0	4.0	3.5	3.5	3.0	2.5	1.5
23.5	5.5	4.0	3.5	3.5	3.0	2.5	1.5
24.0	5.5	4.0	4.0	3.5	3.0	2.5	1.5
24.5	5.5	4.0	4.0	3.5	3.5	2.5	1.5
25.0	5.5	4.5	4.0	3.5	3.5	2.5	1.5
25.5	5.5	4.5	4.0	4.0	3.5	2.5	1.5
26.0	6.0	4.5	4.0	4.0	3.5	2.5	1.5
26.5	6.0	4.5	4.0	4.0	3.5	3.0	1.5
27.0	6.0	4.5	4.5	4.0	3.5	3.0	1.5
27.5	6.0	4.5	4.5	4.0	4.0	3.0	1.5
28.0	6.0	5.0	4.5	4.0	4.0	3.0	1.5
28.5	6.0	5.0	4.5	4.5	4.0	3.0	1.5
29.0	6.0	5.0	4.5	4.5	4.0	3.5	1.5
29.5	6.0	5.0	4.5	4.5	4.0	3.5	2.0
30.0	6.0	5.0	5.0	4.5	4.0	3.5	2.0
30.5	6.0	5.0	5.0	4.5	4.5	3.5	2.0
31.0	6.0	5.5	5.0	4.5	4.5	3.5	2.0

Once all of this is done your training is a breeze. All you need to do each week is glance ahead to the coming week to see what's planned.

I mentioned earlier in this chapter that you should expect your ATP to change due to illness, race date changes and other unforeseen occurrences. That's why the ATP should either be done in pencil or in an electronic format. When these inevitable changes happen, simply return to this chapter and make the needed adjustments. Such changes usually mean losing some training time and fitness.

Whatever you do, don't try to make up for such losses by doubling up on the workouts. This will only lead to greater problems down the road.

The Heart of the Matter

This chapter took you through the twelve-step planning process that I use in coaching athletes. By building a plan using this process you have designed your entire season based precisely on your unique needs. All that remains is to do the workouts. Having and following a detailed plan increases your confidence which in turn improves performance. With this plan you're well on your way to achieving your goals.

If you'd prefer not to go through all of the detail suggested here you can find generic, twelve-week mesocycles at www.TargetHRT.com for running, cycling, triathlon, duathlon and mountain biking categorized by experience level. Click on "Training Plans." Or you can become a member at www.TrainingBible.com and have the "VirtualCoach" there fill out all of the worksheets and make all of these decisions for you based on information you provide. There are small fees for both TargetHRT.com training plans and TrainingBIble.com membership. Whichever you do it is imperative that you follow the plan and use your heart rate to guide the intensity of all workouts.