An Overview of WKO4’s Power-Duration Model

by Tim Cusick
AN OVERVIEW OF WKO4’S
POWER-DURATION MODEL

by Tim Cusick, TrainingPeaks WKO4 Product Leader & Master Coach

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Part 1: Why Do We Need the Power Duration Model?

The Principle of Individualization in Sports Training
The principle of individualization dictates that sports training should be adjusted according to the age, gender, rate of progress, and previous skill development of the individual. The goal of individualization is to capitalize on strengths while minimizing existing skill deficiencies.

It is widely accepted among the endurance sports community that individualization in training stimulus will create optimal performance outcomes. Measuring individual physiological information and applying it properly is the only true way to individualize and differentiate training responses, yet true individualization of training prescription is rarely carried out by coaches or self-coached athletes. If physiological information is unknown about a certain athlete, the coach makes a best guess effort, which may result in impaired performances.

Why You Should Individualize Training
Individualizing training can be a difficult and time-consuming task, but it is critical to achieving optimal physiological adaptations for every athlete. Accounting for physiological differences that can explain athletes’ training adaptation inequalities is often impossible if no physiological information is measured. A similar training philosophy, volume level, intensity level, or frequency level cannot be applied to all athletes to create expected or predicted performance responses, but this is often done because of the lack of physiological data.

Why the Lack of Data?
It is challenging to collect and use such data, mostly because of the complexity of the data and the difficulty in gathering it. The best data that allows us to individualize training often comes from a lab in the form of testing (VO2Max, lactate, muscle fiber, and more) but gathering lab data can be very difficult and expensive for an athlete or coach. This challenge of cost and complexity led to the development of “functional individualization” in endurance sports.

What is Functional Individualization?
Data-gathering devices (power meters, foot pods, swim watches, etc.) and analytical software developed a series of functional measurements that enabled anyone willing to test and analyze the data to determine some base physiological factors that made room for dramatic improvements in the individualization of training without time in the lab. In the early 200s Dr. Andrew Coggan and Hunter Allen introduced Functional Threshold Power, comparative Power Profiles, and power-based training zones that recognized any given athlete’s unique physiology much better than perceived exertion or heart rate training, which led to better identification of an athlete’s unique strengths and limiters, better tracking of fitness metrics, and improved training intensity efforts. This was a step forward, but it still left plenty of room to grow.
Specific Definition of Functional Individualization

Functional individualized training specifically recognizes the unique physiology of the individual athlete and allows for specific, highly focused diagnostic analysis, training prescription, and individualized performance analytics to improve training efficiency and effectiveness.

Functional Individualization Evolved

With the introduction of WKO4 and the new Power Duration Model, athletes and coaches can significantly improve the individualization of training. Let’s break down the three key areas of individualized training:

Diagnostic Analytics

Diagnostic analytics has historically taken the shape of the comparison of abilities. For example, cyclists would compare their sprint ability to their steady-state/time trial ability and make a base determination of strength and weakness. The introduction of the power profile in WKO+ allowed cyclists to evolve that analysis and compare four unique power outputs (5 seconds, 1 minute, 5 minutes, and 60 minutes) to better understand neuromuscular power, anaerobic capacity, VO2Max, and threshold by comparing against norms. This improved the diagnosis of strengths and limiters by allowing for specific determination of physiological zone abilities. After the power profile came the fatigue profile, which expanded the four power durations to twelve in order to better understand fatigue resistance. In many cases the power profile didn’t tell the full story, and therefore considering more time ranges became important. For example, riders who win a lot of bike races in sprints might consider themselves sprinters, but in the power profile they might not be represented as sprinters because they don’t have high wattages for 5 seconds. If these riders have incredibly high wattages for 20 seconds, however, they can be considered “diesel” sprinters, able to win in longer sprints where fatigue resistance is more important.

WKO4 introduces the new Power Duration model with power duration profile standards that allow you to compare your power output across ALL time periods, leading to a highly specific understanding of strengths and limiters. One of the ways this is described in WKO4 is in the new system of phenotypes, or groups of similar athletes. Rider phenotypes are the composite of a rider’s observable physiological characteristics and power individualities (such as peak power, time to exhaustion, and functional threshold power) expressed by grouping with like individuals of similar traits. This gives us the ability to view a summary of strengths and weakness first, then use the Power Duration curve to examine those strengths and limiters under a magnifying glass.

Training Prescription Periodization

Periodization in endurance training is a long-accepted principle. There has of course been debate and variation, but the core principle has been proven successful. The periodized training plan is typically based on diagnosis of strengths and limiters, along with historical data analysis. This often results in development of a periodized plan that focuses on improving the limiters while maximizing the strengths.
WKO4 is an analytical engine that will analyze data in any format over any time range, allowing the development and utilization of historical tracking data formats that haven’t been possible before. When combined with its improved diagnostic analytics, you have a highly specific diagnosis of strength, limiters, and performance history that can be used to develop a focused periodized training plan targeted at any athlete’s specific physiological needs.

**Training Prescription Workouts**

Training intensities have historically been prescribed against Functional Threshold Power (pace) or critical power targets. These have come to be named “training zones” and have been widely adopted in training. The downside of the training zones system is that it is typically based on a single (or few) metrics. With Functional Threshold Power (FTP) based training zones, the zones are set uniquely to each athlete’s FTP, but the training levels themselves are a standard percentage of that FTP. This works well for many athletes, but a significant number of people fall outside this norm, and certain training levels become for these athletes either too hard or too easy. Critical power zones can help individualize training, but maintaining and targeting such zones is difficult and complex, and the critical power model can often overestimate abilities.

To improve the individualization of training intensities, WKO4 features new Individualized Training Levels (iLevels), which we’ll discuss in greater detail below. Since they are based on the Power Duration curve, iLevels are fluid and will automatically update with changes in fitness, based on data; this eliminates the need to guess or estimate improvements between testing periods.

**Individualized Performance Analytics**

Tracking and analyzing performance data to ensure training success or to determine areas of improvement has been limited. To date most of what we call analytics is really just descriptive analytics; in other words, it simply tells us what happened. The biggest limiter here has been the inability to truly understand why it happened, often resulting in a qualitative decision as to why performance achieved a goal or failed to do so.

Principles of adaptation will help to optimize overall training responses. To maximize that adaption, the principles need to be viewed through an individualized lens. Training to perform at optimal levels requires thorough knowledge of the individual, the individual’s unique responses to training, and the type of training required for that individual to perform the specific event.

One of the key focuses of WKO4 is the evolution of analytical capabilities from descriptive to diagnostic, creating a powerful tool to understand why things happen. There’s power in knowing why; it allows for continual improvement in training diagnosis and prescription to maximize training time and efficiency.
Part 2: Power-Duration Metrics

Much of coaching and training comes down to measuring changes to find the answers to important questions. Does one training strategy work better than another? Do workouts with one version of intensity create better results than another version? Does focusing on longer intervals instead of shorter ones help achieve the goal of training?

WKO4’s Power Duration Model have supplied coaches and athletes with some exciting new metrics to expand and deepen data analysis allowing a coach or athlete greater insight into these questions through the ability to view training results more specifically and view micro changes in these specific types of fitness.

Pmax and Functional Reserve Capacity are related but separate measurements of capabilities and fitness that can give us insights into performance.

Pmax

Pmax is the maximum amount of power that can be generated for a very short period of time (at least a full pedal revolution with both legs). Units are watts (W) or watts per kilogram (W/kg).

Pmax Standards

Pmax typically ranges between 676 and 1299 watts for women, and 939 and 1483 watts for men, with an average of 988 and 1211, respectively.
Pmax over Max Power
Pmax is more stable and a bit less prone to measurement error than Max Power since the model utilizes all data. This provides a “cleaner” metric when compared to Max Power, while giving us better insight into a true maximal effort than MeanMax five-second power.

- **Pmax vs. Max Power.** Pmax is derived from at least one full pedal stroke, measuring the contribution of both legs (both released and absorbed). This gives us a cleaner look at maximal power as we effectively apply it to the bike, as it is less subject to erroneous data.

- **Pmax vs. MeanMax Five Seconds.** Because Pmax is model derived, it is a truer determination of maximal power when compared to five-second max, as it reduces the effect of fatigue.

How we use Pmax
- To measure the increase or decrease in maximal power outputs over the course of training (or de-training)
- To determine the maximum rate of FRC consumption (more below)
- To develop and implement race strategies

Functional Reserve Capacity (FRC)
FRC is the total amount of work that can be done during continuous exercise above Functional Threshold Power (FTP) before fatigue occurs. Units are kilojoules (kJ) or kilojoules per kilogram (kJ/kg). This effort is related to your ATP-PC energy system, but other energy contributions need to be considered.

The simplest explanation is to think of it as your anaerobic battery. If you have a low FRC, you have a smaller battery, and if you have a high FRC, you have a big battery. However, we also have to think about FRC in relationship to Pmax, maybe like this:

- **High Pmax / High FRC:** Great long sprinter or lead-out rider
- **High Pmax / Lower FRC:** Great short sprinter but needs support to the line
- **Lower Pmax / Higher FRC:** Long attacker, punchy short climbs, good pursuer
- **Lower Pmax / Lower FRC:** Good stage racer
**FRC Standards**
FRC typically ranges between 6 and 24 kilojoules for women and 9 and 35 kilojoules for men, with an average of 13.2 and 18.2 kJ, respectively.

<table>
<thead>
<tr>
<th>FRC Standards</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>9.0-35.1 kj</td>
<td>6.2-24.2 kj</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>18.2 kj</td>
<td>13.2 kj</td>
</tr>
<tr>
<td><strong>Standard Deviation</strong></td>
<td>4.7 kj</td>
<td>4.0 kj</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td>&gt;22.9 kj</td>
<td>17.2 kj</td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td>13.5-22.9 kj</td>
<td>9.2-17.2 kj</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td>&lt;13.5 kj</td>
<td>&lt;9.2 kj</td>
</tr>
</tbody>
</table>

**FRC Converted to Watts**
A kilojoule is simply a thousand joules, and a joule is equal to watts multiplied by seconds ($J = W \times s$). So when you do 400 watts for 5 seconds, you’ve used 2,000 joules, or roughly 2 kJ.

**An Example of FRC**
Let’s say you have a Pmax of 1,000 watts (just to keep the math simple) and an FRC of 11kJ. If you sprint at Pmax, you’ll burn 1,000 joules per second ($J = W \times s$) for 11 seconds before you run out of fuel.

**How we use FRC**
- To measure the increase or decrease in the amount of continuous work an athlete can do over modeled Functional Threshold Power (mFTP, defined below)
- To improve understanding of an athlete’s abilities
- To understand an athlete’s burn rate

It’s easy to figure out burn rate at Pmax; we just do the math. Below that it gets tricky, since other systems do contribute, but we can use the Power Duration Curve to help make that determination.
Tracking micro changes in Pmax and FRC gives us faster insight into training effectiveness and helps adjust training and performance strategies.

Modeled Functional Threshold Power (mFTP)
mFTP is the model-derived highest power a rider can maintain in a quasi-steady-state without fatiguing. When power exceeds FTP, fatigue will occur much sooner; if power is just below FTP, it can be maintained much longer. FTP is the single most important physiological determinant of performance in events ranging from as short as a 3-kilometer pursuit to as long as a 3-week stage race.

You can read more on Functional Threshold Power [here](https://www.velociouscyclingadventures.com).

**How we use mFTP**

- To measure the increase or decrease in FTP as based on modeled estimates, giving better insight into training effectiveness or ineffectiveness
- mFTP can support the accuracy of your FTP management system (testing, predicting...) and allow you to set zones based on percentages of FTP.
- mFTP can be used as the basis for numerous analytics in WKO4 to better help diagnose and prescribe workouts.

**Stamina**

Stamina is the measurement of a rider’s resistance to fatigue during prolonged-duration, moderate-intensity (i.e., sub-FTP) exercise. Units are percent of maximum (0-100%), and most individuals will fall in the 85-95% range.
How we use Stamina

- To measure the increase or decrease in our resistance to fatigue in steady-state efforts longer than an hour
- To gain insight into pacing and power targets for long-duration events
- To track the dose-response relationship of specific endurance training formats

Time To Exhaustion (TTE)

A rider’s TTE is the maximum duration for which he/she can maintain power equal to FTP. This is not to be confused with the maximum duration a rider can maintain FTP, as there are other variables to be considered, but TTE gives excellent insight into the athlete’s ability to resist power decline and exhaustion.

How we use TTE

- To measure the increase or decrease of the time we can maintain power equal to FTP
- To track the dose-response relationship of specific training formats
- To plan race and pace strategies with a better understanding of capabilities
- To understand the power-duration relationship of performance
Part 3: Tools

iLevels
Until now, endurance athletes have generally either used training levels or zones based on an anchor point (typically some form of threshold) or utilized performance models (like the critical power model) to target specific time and power-based training targets. WKO4 introduced a new approach focused on blending the best of both of these to optimize training zones by individualizing them to each athlete’s unique physiology (see the next section for more discussion on this).

The Challenge of the Current Systems
While threshold-based zones are solid, they are a generalization developed through the review of data from thousands of endurance athletes. Statistically speaking, this bell curve process creates a solid basis for a good portion of athletes, but it does not take into account any athlete uniqueness. For example, here are the power duration curves of two different athletes, with lines added to demonstrate where the Coggan classic training levels intersect the curve. Both of these athletes have similar Functional Threshold Power (FTP) and similar fitness.

Athlete 1: From the slow progression of the curve through the training levels, we see the classic curve of a pure steady-state/TTer phenotype. This indicates this phenotype’s ability to extend “time in zone” at levels with little power degradation, without the ability to punch the high watts output per level.

Athlete 2: For the classic sprinter/pursuer phenotype, we see a much steeper progression of the curve through the Coggan classic levels and the ability to punch through high numbers. Should these two
athletes be training by the same threshold-based system if the goal is to maximize their training results and performance? Are they getting the same results?

**iLevels**

With the introduction of the new iLevels in WKO4, athletes are able to optimize their training levels to their own unique physiology and daily fitness. These new training levels work by blending modeled functional threshold power (mFTP) and modeled power duration data to track with your actual capabilities and ensure that training targets (power and time) are optimized to produce maximal results.

**Power Versus Duration**

One of the challenges of the Coggan classic levels is that interval time frames were fixed, based on the desired physiological response. This idea is carried over into the new iLevels while recognizing and recommending a range of interval times that represents an interval time in zone target (see below for more on this subject).

**Power Versus Fitness**

Since the new iLevels system is driven by the power duration curve and modeled FTP, the training levels will automatically update with any changes (even micro changes) in performance fitness to ensure accurate interval targets as athletes train and de-train. Let’s take a look at our two athletes again and see how their iLevels compare.
We can easily see the differences in both targeted power and duration for work above FTP. These are driven by each athlete’s power duration curve, optimizing the training levels.

Click here for a more detailed discussion of iLevels.

Optimized Intervals
The introduction of readable, available power meters in the late 1990s was a game changer for interval design and completion, as it supplied highly accurate data for both prescription and precise measurement of the effort. Numerous coaches and athletes began using power to try different ways of targeting intervals with the goal of improving the efficacy of the dose-response relationship. This led to the introduction of some new systems that have since evolved over the years.

Coggan Classic Levels
One of the first power-based training targeting systems to emerge was Dr. Andrew Coggan’s Functional Threshold Power (FTP) and its associated training levels (now known as the Coggan Classic Levels). Dr. Coggan designed these to be descriptive of workouts, but coaches quickly saw the benefits of using them to target and prescribe workouts. They were based on the establishment of a tested FTP with training levels assigned as a percentage of that FTP. This use of percentages created a watts-based range for intensity of efforts in desired training levels while also supplying a recommendation for time/length of intervals in those levels.
The Coggan Classic Levels gave excellent guidance to the general design of intervals and interval workouts, helping coaches and athletes target a desired physiological/energy system response. This system provided insight into the key challenges of intervals: intensity and time.

However, as mentioned above, there were some limitations. Coggan Classic Levels was an excellent solution for training at or below FTP, but when training above FTP, the intensity-time relationship varies more between individuals, which was not accounted for. Here’s what Dr. Coggan wrote about this problem:

*Although it is logical to define power-based training levels relative to FTP for predominantly aerobic intensities, this does not make sense at higher intensities and shorter durations of exercise, where factors other than metabolic fitness are the primary determinants of performance. Because of this, in the original system I created, level 6*
(Anaerobic Capacity) is defined as simply being higher than level 5, whereas level 7 (Neuromuscular Power) is not linked to FTP at all. While appropriate and correct, these definitions are of somewhat limited use for prescribing the power outputs and durations of intervals intended to increase, such as sprinting ability or resistance to fatigue during very high intensity, unsustainable exercise. ([Read the full article here.](www.velociouscyclingadventures.com))

The desire to improve upon this system was one of the driving factors behind the development of the Power Duration Curve and the resulting iLevels.

**Coggan iLevels**
The challenge of the Coggan Classic Levels was one of individualization and dealing with the variation between individuals at higher-intensity training levels (above FTP). This led to the development of iLevels, training levels based on each athlete’s unique physiology and power duration capability and designed to provide better guidance for targeting intensity and time. This new system was an evolution of the classic seven training levels into nine more specific training levels. These levels were related but allowed not only more individualization but also more specificity in targeting energy systems.

![Coggan iLevels compared to Coggan Classic Levels](image)

iLevels are a perfect blend of the strengths of the classic system and the power of individualization via the WKO4 power duration model. This system supplies individual target intensity and time ranges for training above FTP based on the performing athlete’s actual unique physiology.
This new system, as you can see in the example above, supplies not only a more individualized intensity target for efforts over FTP, but also specific time ranges for best results. This evolution gave coaches and athletes actionable intelligence for continuing to improve their design of effective interval workouts. It was a significant advancement that opened the door for even further improvement.

**Optimized Interval Targeting**
Using the power duration curve, we can further break down iLevels into specific time and intensity targets to give the coach or athlete even greater actionable intelligence to identify the optimal interval point and achieve the desired response. Take a look at the chart below to understand the output.
This system targets a specific point in your unique power-duration relationship that has the greatest “weight” or “exertion” on the targeted energy system. It then uses an intersection system to determine both target time and intensity. Sets, reps, and recovery are simply suggested at this time, but we are researching ways to further use information from the power duration curve to optimize such information. This is not the perfect interval target, but an optimal one. The time and intensity targets are the optimal target within the iLevel; they help identify the intersection of time and intensity that elicits the highest response based on the power duration curve, which is based on each athlete’s mean max power. Therefore the iLevels system uses actual performance history, the model, and advanced algorithms to supply the estimated point or intersection for the optimal response to training stimuli.

### Optimized Interval Examples

<table>
<thead>
<tr>
<th>Level</th>
<th>Energy System</th>
<th>Target Duration</th>
<th>Target Power</th>
<th>Prescription Range</th>
<th>Reps Estimate</th>
<th>Total TIZ Estimate</th>
<th>Recovery Time Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PiMax</td>
<td>Max</td>
<td>000:11</td>
<td>575</td>
<td>+/- 15</td>
<td>&lt; 1 min</td>
<td>7 12 Min (Full)</td>
<td></td>
</tr>
<tr>
<td>PiMax/FRC</td>
<td>Intensive Aerobic</td>
<td>179</td>
<td>+/- 15</td>
<td>4-10</td>
<td>&lt; 2 min</td>
<td>7 12 Min (Full)</td>
<td></td>
</tr>
<tr>
<td>FRC</td>
<td>Max Aerobic</td>
<td>322</td>
<td>+/- 10</td>
<td>3-8</td>
<td>15 + mins</td>
<td>11:1 (Ratio Range)</td>
<td></td>
</tr>
<tr>
<td>FRC/FIT</td>
<td>Max Aerobic</td>
<td>328</td>
<td>+/- 10</td>
<td>1-4</td>
<td>30-90 mins</td>
<td>&gt; 5 Min</td>
<td></td>
</tr>
<tr>
<td>FIT</td>
<td>Max Aerobic</td>
<td>277</td>
<td>+/- 10</td>
<td>1</td>
<td>TTE</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

## Building Interval Workouts with Optimized Interval Targets

### Caveats

First, this is an evolving approach and has a level of specificity that most coaches and athletes are not used to. It is important that we remember these are optimized targets to be utilized as guidance rather than absolutes. Coaches and athletes should explore and test to build confidence. That being said, the time and intensity recommendations are the key points of exertion in the power duration model, and this insight is invaluable and should not be ignored when designing interval workouts.

Second, optimized interval targets depend on an accurate power duration model. To ensure accuracy, an athlete must have clean data and a group of maximal efforts that occurred in the last 30-90 days. If an athlete has been just riding along for the last 90 days with no harder efforts, his/her iLevels will likely not be accurate prescription tools.

### The Role of Specificity

Specificity plays a dual role when building interval workouts. To explain this, let’s create a simple example of Jane Rider. Jane loves to ride the local Wednesday Night Worlds throwdown and can keep up until the group hits one particular hill. This hill is where everyone attacks at max power and separations occur. It isn’t long, and it typically takes her about 90-100 seconds to get over it, but that isn’t enough; she gets left behind by the break. This tells us something about Jane’s training needs: she needs to improve her 90-100-second power to make the break. The principle of specificity would suggest that Jane do some 90- to 100-second intervals to improve, but let’s think a little deeper.

The short hill is generally a near maximal effort for the duration, and we need to assume that Jane’s anaerobic system is fueling the effort. In WKO4, the power duration metric that gives insight into an
athlete’s anaerobic capacity (AC) or anaerobic work capacity (AWC) is Functional Reserve Capacity (FRC). FRC measures the total amount of work that can be done during continuous exercise above FTP before fatigue occurs. We could assume that increasing Jane’s FRC would lead to better success on the Wednesday Night Worlds challenge climb. This introduces a second specific need: improving the physiology behind her ability to climb this hill.

This results in two ways of viewing specificity. First, there is the specific time/hill (90-100 seconds of power climbing) required to achieve success, and second, there is the needed improvement in FRC to drive the energy system to help her achieve success. You might think at first that they are the same, but let’s look at Jane’s optimized targets:

<table>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pmax</td>
<td>Max</td>
<td>0:00:11</td>
<td>575</td>
<td>+/- 15</td>
<td>5-10</td>
<td>&lt;1 min</td>
</tr>
<tr>
<td>Pmax/FRC</td>
<td>Intensive Aerobic (FRC)0:00:32</td>
<td>479</td>
<td>+/- 15</td>
<td>4-10</td>
<td>&lt;2 min</td>
<td>7.12 Min (Full)</td>
</tr>
<tr>
<td>FRC</td>
<td>Extensive Aerobic (FRC)0:00:54</td>
<td>480</td>
<td>+/- 15</td>
<td>4-8</td>
<td>10+ min</td>
<td>7.12 Min (Full)</td>
</tr>
<tr>
<td>FRC/FTP</td>
<td>Max Aerobic (FTP) 0:00:39</td>
<td>132</td>
<td>+/- 10</td>
<td>1-8</td>
<td>11 x min</td>
<td>11 (Ratio Range)</td>
</tr>
<tr>
<td>FRC/FTP</td>
<td>Intensive Aerobic (FTP) 0:05:04</td>
<td>282</td>
<td>+/- 10</td>
<td>1-4</td>
<td>10-90 min</td>
<td>&lt;5 min</td>
</tr>
<tr>
<td>FTP</td>
<td>Extensive Aerobic (FTP) 0:33:33</td>
<td>277</td>
<td>+/- 10</td>
<td>1</td>
<td>TTE</td>
<td>NA</td>
</tr>
</tbody>
</table>

The optimal time target to increase Jane’s FRC is 54 seconds at 430 watts for extensive FRC building and 32 seconds at 479 watts for intensive FRC building. This is a significantly different demand (or interval) then an interval of 90-100 seconds. She is thus faced with an interval choice: should she focus on the FRC interval (which is shorter and more intense) or should she focus on the specific time demand of the course hill?

*The Art of Coaching*

The answer to Jane’s question is something that a lot of coaches and athletes would have an opinion on, and it is part of the art of coaching. The dilemma is a chicken-or-the-egg situation, but I would suggest targeting the underlying energy system, building FRC to a point of diminishing returns, and then applying that higher FRC to the course-specific hill. This can be thought of as a periodized approach toward an intervals strategy as part of an annual plan.

[Click here for our more detailed eBook on optimized intervals.](#)
Acknowledgments and Resources

Special thanks to Dr. Andy Coggan for discussion and contribution to the content of this eBook.

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