

A general training model for the road cyclist

BY CHARLES HOWE

The training model I will discuss throughout the coming year, as intended for competitive and performance road cyclists, is based on the [concepts and methods](#) developed by New Zealand Olympic running coach Arthur Lydiard (1917-2004), which can be summarized as follows:

1. The available rate of aerobic energy production is the overwhelming determinant of performance in any endurance activity (i.e., longer than 3 minutes), and this common basis allowed Lydiard to successfully use the same training program for all his runners, from 800 meters through the marathon, until their period of specialization. Aerobic development is essentially unlimited; the only constraints are training opportunities (available time, environmental conditions), training capacity, motivation, and resistance to injury/illness. “The wider and deeper the base, the higher and more sustained the peak.”
2. Aerobic capacity is developed through at least 10-12 weeks of mainly [steady-state tempo/threshold runs](#) up to 2 hours long, totaling ~8-12 hours per week. The goal of this is [increased energy production at lactate threshold](#) (endurance) by inducing the peripheral adaptations of increased capillary and mitochondrial density, which allow increased oxygen delivery to and respiration within the working muscles, respectively. In the final 5 weeks of this period, aerobic power may be ‘peaked’ through once-a-week, intermediate-intensity interval workouts (e.g., 5 × 5 minutes).
3. The distribution of energy expended during aerobic training should be governed by the [interaction of intensity and perceived exertion](#), such that there is a greater second-half output in each workout, leaving the athlete exhausted only at the very end, feeling “pleasantly tired” afterward, and thus able to sustain a gradually progressive training load almost indefinitely; workouts may be challenging to complete, but not a struggle. “You must exhaust the body systematically and sensibly. Not go ahead and kill yourself,” Lydiard summed up in a 1964 interview, and his frequent refrain of “**Train, don’t strain**,” is now justifiably famous. Recently, a client captured this perfectly another way: “Work, don’t suffer.”
4. Since the metabolic strain of sprint training is limited, speed can and should be developed throughout the year with short, intense efforts of no more than 15 seconds, with emphasis on technique.
5. When aerobic development has proceeded as far as possible, ~7 weeks are devoted to anaerobic capacity training, during which aerobic fitness is maintained or losses are minimized. The reason for this ordering is **not** that aerobic training is needed to prepare for anaerobic training, rather, the latter interferes with and limits the former, and so must be forestalled until aerobic fitness is as complete as possible.
6. This is followed by a 4-week ‘coordination period’ that consists of training races and/or other specific workouts meant to simulate the neuromuscular demands and variable pace of competition.
7. Finally, a 7-10 day period of ‘sharpening and freshening’ leaves the athlete rested and in peak form for a period of competition and recovery.

This approach can be applied to cycling in a quantitative manner using [power-based training levels](#) and the analytical tools incorporated in [Cycling Peaks Software](#).

All training should be individualized, but the question is, individualized from what? Preparation for any given endurance event arises from known demands and is governed by established underlying principles, so a logically-constructed model can provide, at the very least, a useful starting point for most any distance runner or road cyclist. It is certainly true that different athletes may respond in significantly varying degrees to a particular workout, or have varying training load capacities as well as recovery needs, yet this is akin to the exception that proves the rule: most responses fall within a predictable range.

Thus, no model program should be applied rigidly, but must be adapted to the athlete for whom it is intended. In addition to physical constitution, other factors that shape the training prescription include competitive priorities/preferences (which races you want to do well in, which you use for training, and which you enjoy the most, since motivation determines how diligently you will train), role within a team, age, training status/history, individual characteristics (strengths and weaknesses), weather, training opportunities (e.g., local availability of roads/trails, terrain, traffic), work schedule and other responsibilities, etc. A coach can provide valuable aid in customizing and adjusting the training plan.

TRAINING PHASES OVERVIEW AND A STARTING POINT

To begin translating this model into an annual plan, you must decide when you want to be ready to and work backward from that date, allotting the required time:

A periodized annual training plan	
Phase I: Pre-season preparation (14-16 weeks)	
	a. aerobic endurance and lactate threshold (4-5 weeks) b. aerobic endurance maximal aerobic power (5 weeks) c. anaerobic capacity/aerobic maintenance (2-3 weeks) d. race specificity/taper (3 weeks)
Phase II: Competition (21 weeks)	
	a. racing/recovery (10 weeks) b. recovery/rebuild (3-4 weeks) c. racing/recovery (7 weeks)
Phase III: Post-season (8 weeks)	
	a. complete rest, as needed (1 week) b. recover/rebuild (3-4 weeks) c. weekly race (cyclocross), non-competitive tour, or club ride (4 weeks)
Phase IV: Off-season (7 weeks)	
	a. complete rest (1-2 weeks) b. recover/rebuild (5 weeks), with supplemental training (running, skating, X-C skiing, etc.) as desired

Due to the timing of this article, our starting point here is actually the post-season, which is assumed to run from September 10 – November 4. The purpose of this phase is to rest and recover from the competitive season, then to stabilize, rebuild, and maintain fitness levels. After a week off the bike, aerobic fitness should be rebuilt in just the same way as during the mid-summer break from racing described in the August issue: with relatively steady-state, aerobic rides of 1½-4 hours, at light to moderate intensities. Weekly training load is reduced by 30-45% from seasonal peak values, while intensity is similarly cut back by ~10%.

So for instance, if you were consistently logging 12-14 hours per week, you might start back up the first week with a total of 6-9 hours in 4-5 rides, increasing by 60-75 minutes each week; because of the underlying base that still remains, training load can be increased more aggressively than in the Spring. For those who use CyclingPeaks Performance Manager™ to evaluate their training load, simply substitute Training Stress Score (TSS) for hours, e.g., if you were averaging 650-900 TSS points per week, this would be reduced to 360-630 upon resuming after a week's rest, increasing ~40-75 points each week for the next 4 weeks. With respect to intensity, and again, for those who train with a power-measuring system, you might average 215 Watts instead of 240 for each of several 1½-2 hour evening tempo rides during the week.

Once this restoration period is complete, it's time to add some training specific to the event you are preparing for, while maintaining or still increasing aerobic capacity. If you are planning an October century ride, for instance, simply increase the duration of your long weekend ride steadily until you reach 5-6 hours the Sunday prior, and choose terrain that is similar to the targeted event. At the other extreme, cyclocross races (such as the nearby Bike Authority Cyclocross Series) last less than 60 minutes, with several run-ups, or dismounts, each lap. Substituting a cyclocross workout for a weeknight tempo ride will both hone your technique as well as provide specific conditioning for the anaerobic energy systems that are taxed more heavily in this type of competition. See the accompanying article by Paul Martin for more.

Next issue: the off-season.

FURTHER INFORMATION

CyclingPeaks Software: <http://www.cyclingpeakssoftware.com>

Bike Authority Cyclocross Series: <http://teamlakeeffect.com>

Ohio Bicycle Events Calendar (non-competitive tours): <http://ohiocycling.info/OBEC.html>