

Foundation Training

Oh ya! Winter, time to hang up the bike, and take a break. Maybe try a few other sports like X-country skiing, snow shoeing, spinning, swimming, mud wrestling, you know “cross training”. Then when spring comes you can polish the bike (after all you do need to clean it at least once a year!), put new handle bar tape on (a ritual that I look forward to) and hit the road for some endurance training! A time to shed those unwanted holiday extra pounds that somehow got attached to your??? (it’s different for everyone). Well that may be popular thinking, it is absolutely erroneous, and will set you back for the entire season. During the winter, serious cyclists put in what is commonly referred to as base mileage. Look at it this way. When spring rolls around, you will be building your performance “house”. If you did not build a foundation during the winter, you will put up your house without a foundation. I suppose that if you were to go out to buy a house and the owner said something like “oh yea, this is a great house, but it does not have a foundation, but that’s OK, because you can still live here and have a good time!” You would probably just grab your checkbook and write out a check? NOT! So let’s look at how to put together a solid foundation that will lay the groundwork for everything you do next year.

What’s happening? The first step is understanding why your doing what your doing. I believe that if you understand the WHY, you will automatically understand the importance of the concept, and therefore compliance to your training plan will be no problem. First, lets take a quick review of some physiology. One of the best indicators of your endurance performance is the power at which you reach your Lactate Threshold (LT). LT is the intensity that you can ride at before you die! (Well not quite, but you feel like it!) The best description of LT is found in Edmund Burk PhD, book titled “Serious Cycling” (a must have for every “Serious” cyclist!)

Lactic acid is the by-product of anaerobic energy production (energy produced without oxygen). Because it is an acid, it begins to shut down the muscles’ contractile mechanisms and may even cause a burning sensation in the muscles. During exercise, a cyclist can perform up to certain intensity without building up very much lactic acid in the blood. When this intensity is exceeded, lactic acid levels in the muscles rise, and the muscles fatigue rapidly. The critical exercise intensity at which the contractile mechanisms begin to shut down has been referred to as “Lactate threshold”¹

Ok so what has all this scientific mumbo jumbo got to do with me training this winter? Well you can probably understand that the higher level you can work at prior to the dreaded little lactic acid demons high jacking your muscles, the better you are? So how do we train for that? We train the aerobic engine. By training the aerobic engine, we are causing adaptations of the muscle cells and cardiovascular system that allow each muscle fiber work at lower intensity with less fatigability. In other words, you become more efficient. Another adaptation that occurs at the muscle level is we train our muscles to better utilize stored carbohydrate (glycogen). They will also “learn” to burn other fuel sources along with glycogen, helping to stretch your reserves from 90 min. to 2 hours or more. This will only occur when riding at an aerobic level.

Another benefit that occurs with all this new muscle training is your tendons and ligaments are being strengthened and this will allow you to endure the increased intensity of training later on, when the season approaches and you add on intervals or higher tempo type training.

Endurance Training Guidelines: There are as many opinions on this topic as there are bicycle brand names. I will use the guidelines that are used at the US Olympic Training Center, at Colorado Springs. They suggest that your longest ride would be no more than 20% of the distance you intend to compete at. Another words, if your going to do a century, then your longest ride would be 120 miles. If your going to do a Road Race that is 65 miles, then

endurance rides of 75 to 80 miles would be sufficient. Your intensity level should be Zone 2 (see below). If you have a training partner, you should be able to carry on a conversation. Now here is where it is a little subjective. If your buddy is talking at the rate of 300 words per min. and your yawning, then it probably is a little slow. On the other hand, if your gasping for breath between words, i.e.

“Is...gasp...fast...gasp...enough...gasp...or...gasp...should...gasp...we...gasp...pick...gasp...i t...gasp...up...gasp...a...gasp...little...gasp? You’re probably going a little to hard. This is why a HR monitor is important if your really trying to make improvements, and the time you spend on the bike is critical, you can adjust your intensity every few min. and be fairly accurate. I find that the difficulty with these types of rides, is not trying to go hard enough, it is trying to go easy enough! All of a sudden you realize that you’re breathing fairly hard and your HR has crept up. If you’re at all competitive, you will find this to be a consideration as well.

Zone	% of Max Heart Rate	Description of Training
1*	< 65%	Easy riding, recovery
2*	65 – 72%	Basic endurance, aerobic capacity
3*	73 - 80%	Tempo, aerobic capacity
4*	84 - 90%	Anaerobic threshold
5*	91 – 100%	V02, sprint training, max efforts

Zone 1. The lower end of Zone 1 is for recovery and easy riding. This training intensity allows for active recovery, which permits increased blood flow to the working muscles. Workouts in the lower end of Zone 1 are recommended for recovery after intense and prolonged efforts, such as racing. These workouts are best accomplished for a duration of 20 – 40 min. and can be performed on the road, rollers or stationary trainer. The upper end of Zone 1 is for workouts long in duration and low in intensity. (i.e. early season rides). Extended periods of time in the upper end of Zone 1 also helps develop capillaries within the muscle (training the metabolic engine!)

Zone 2 efforts are for the development of the aerobic energy system. Characteristics of these workouts are long duration (>1-2 hours) and low intensity (i.e. early season rides). Extended periods of time in Zone 2 allow for better use of fats as the primary source of energy, especially at this intensity level. Benefits of Zone 2 training include contributing to increased endurance and stamina.

Zone 3 training intensity, also known as “tempo” training, is similar to training at Zone 3 intensity, in that the aerobic system is still the predominant source of energy production. Although fat is still the major fuel source, carbohydrates begin to contribute more to the production of energy at this intensity level. The duration of efforts in Zone 3 are less than Zone 2 because the higher intensity causes depletion in the working muscle’s limited stores of carbohydrates. Efforts at Zone 3 intensity are usually included in a Zone 2 workout.

Zone 4 efforts are for improving the Lactic Acid system. The intensity is at the point where lactic acid is being produced at relatively the same rate at which it is being removed. These efforts must be below time trial pace, so that the quantity of work can be significantly greater to allow for appropriate overload and subsequent adaptation. The usual duration of efforts at this intensity are 10 minutes initially, with progression to as long as 30 min. or more. Again, the

perceived effort for the athlete should be significantly less than time-trial pace. Usually, the athlete's lactate (anaerobic) threshold falls within Zone 4.

Zone 5 efforts are at maximum intensity. There are two types of Zone 5 efforts. The first type involves sustained intervals with a duration up to 4-5 minutes. These are maximum intensity efforts, based both on attaining target heart rates and reaching a maximum perceived effort. These efforts are for developing an athlete's VO₂ max, the maximal amount of oxygen that can be used during exercise. The second type of Zone 5 intervals are short-duration, usually between 5-30 seconds, and involve maximum perceived efforts. The short-duration efforts are for sprint-type workouts. Understand that maximum sprint efforts (Zone 5) are usually too short in duration for the heart rate to increase above the Zone 4 percentage during the effort. This is O.K. as long as the athlete understands that the effort needs to be maximum. The table and Zone information is taken from information provided by USA Cycling Coaching Staff.