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Charles Coaching and Nutrition
Services:
Base Mileage

Base Training

Base training takes place during the off-season or periods of time when preparing for a higher intensity training later on in the season. This is considered your first “period” of training. Other periods will follow, like building, specialization, race prep, and maintenance. This is where most athletes make their largest gains. This separates many riders from surviving a race to winning one. If done right, base training can be the very difference you’ve been seeking.

Base training’s main goal is cardiovascular development, with emphasis on muscular power and supple leg speed. This is a perfect time for

bike position changes and paying attention to your form on the bike as well. Endurance is also developed while riding base mileage. These training goals can all be met through a relatively small array of workouts.

Most of your riding will be very low intensity riding in a range that is around 60-70% of your threshold heart rate. Some people may feel that the heart rates that I assign are too low. They do not understand the implications of higher heart rates at the volume of training that we will be doing. Your body only has so many hours of intensity that it can do in a racing season before you become injured, overtrained, or burnt out. There isn't any given heart rate that you hit that designates whether you are riding with intensity or not, but as your intensity increases at all above a pure base training mode heart rate, then you are progressively using more and more intensity and wasting it during a period that you don't need to. You don't need to be riding with intensity during this time of the year. Riding with intensity now prevents you from going harder later on because your body will eventually reach its limit that it can reach with the given amount of aerobic capacity and power you have. You will become what is referred to as "flat" or "stale." Your legs and body will plateau at a given intensity level and while you may become very efficient, you won't be able to maintain intensities above or below that for extended periods of time and remain efficient. The number of hours of intensity your body can handle is determined by the intensity and volume of base training you do. If your heart rate is too high during the base training period, then you will be using up a little bit of that intensity that you should be saving up for your season. During the base mileage phase, you are

establishing a base that allows you to build higher using intensity. The more base you build, the more intensity hours you have to help build your race form higher and higher, much like a pyramid.

If you ever watch some tapes of pro races, it seems as though the top pros float on the pedals. Even when they are going all out they look so smooth... it almost looks effortless. This is called having a “supple” pedal stroke, and a big goal of base training is to develop this quality in a rider. This is accomplished through high amounts of spinning related efforts. Short low intensity efforts of very high cadence demand a high pedaling efficiency and a circular pedal stroke. If a person doesn't have a supple pedal stroke, then they won't be able to perform the efforts without exerting a high amount of effort or bouncing all over the place. The only way to develop a better pedal stroke is to start short and easy, and then gradually increase cadence and interval time until the cadence becomes second nature and easy to perform.

Another main goal of base training is to develop power. This is accomplished through medium-low intensity intervals at very low cadences and weight training. The goal here isn't to practice sprinting or mashing the 11 at 30 mph. The development of basic power with the low cadence intervals and weight program, combined with the ability to apply the raw power to a supple pedal stroke, is where true speed comes from.

What actually happens to your body during this phase? Your body goes through many changes when you are training in the base period. The

cardiovascular development that occurs is the main thing upon which base mileage focuses.

- During your base mileage, you are training your arteries to be able to dilate wider and more responsively.
- You actually form new capillary beds in your muscles. This is where your gas exchange actually takes place. The more extensive your capillary beds, the more efficient your gas exchange and greater blood exposure to the muscles, which means better lactic acid and carbon dioxide clearing, and muscle function.
- There is a development of mitochondria density. Your legs have some of the most responsive muscles pertaining to this phenomenon. Mitochondria are the parts of the cells that produce aerobic energy. As you train at lower intensity aerobic conditions, your muscle cells develop new mitochondria in each cell to increase your aerobic capacity. This is what gives your body the ability to meet higher energy demands without going anaerobic, and the ability to oxidize fatty acids instead of glycogen in the cells, making you more efficient and economical. What is also interesting, is after just one week of not riding, you're mitochondria density can decrease by 50% and complete loss in 5 weeks of not training.
- Blood plasma volume increases. Many cyclists confuse this with hematocrit. Your hematocrit is the percentage of your blood in relation to complete blood volume. A person who has 50% hematocrit levels

has blood that contains 50% red blood cells by volume. If you put your blood in a centrifuge and spin your blood, the heavier elements, like red blood cells, will sink to the bottom and constitute the lower portion of the sample. The plasma, which is what the red blood cells float around in, will float on top because it is less dense. The proportion of the tube that contains red blood cells is then compared to the total blood volume, thus indicating the hematocrit level.

With endurance exercise, your blood plasma volume actually increases. This is known as blood volume expansion. Your plasma volume increases in order to keep blood from getting thick due to dehydration and to assist in thermoregulation. Plasma reduction also has been linked with a decrease in VO₂ max. During endurance exercise your hematocrit actually decreases. Since there is a higher volume of plasma in your blood, the proportion of red blood cells is smaller in relation to complete blood volume.

- Your body becomes trained to run off of fats rather than glucose or glycogen. Endurance training at lower intensity trains your body to burn fats (fatty acids) instead of glycogen. The use of fatty acids is much more efficient and worth while. The body uses fatty acids as energy at lower intensities of activity, as the intensity of activity increases, your progressively use more and more glycogen. Glycogen produces higher amounts of energy quicker, but it is less efficient and you have a limited supply. If your body can burn fat more often and at

higher intensities, then your body can save the glycogen for higher intensity efforts later on.

- Your muscles adapt to the cycling position. Your muscles have a memory. As they repetitively complete a motion, they become more and more acclimated to that specific motion. This is why it is important to have good form while training. If you constantly try to complete a round pedal stroke, your body will eventually be able to perform the pedal stroke without thinking about it as much.
- Muscular power is a large focus during the base mileage and building periods. When any muscle in your body has demands put on it and power is created the muscle cells are recruited and contract in order to develop this force. During power training, you actually tear muscle cells due to the stress that they are under. When they heal, they heal slightly larger and stronger than they were before. This is known as super compensation. This is why your body becomes stronger and larger from weight exercises. However, if you tear your muscle cells too often, then your cells don't have a chance to heal and become stronger, and you injure yourself or actually become weaker. This is one of the reasons why rest is important.

When you are out riding, continually think to yourself... “How can I help develop my aerobic system, power, and supple leg speed?” Use this to constantly remind yourself to have good form and remained focused. The training you do now will pay off more than you think later next season.

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