# PERIODIZED TRAINING

**A summary of Periodized Training methodology**

**By: Chandler Rhinehart**

Periodized training is a scheduled, set training regimen that helps an athlete train towards a specific goal or event. He wants to "peak" – be at his strongest and fittest – at the time of the scheduled event. Generally, starting from the date of the event or race, the athlete will calculate backwards the periods in his training plan.

L. McDonald:
*In most aspects of training, beginners don't need much or very intense training to experience gains they would at higher intensities and, in general, a single set will generate as much gains as multiple sets. Even 20-30 minutes of intensive endurance training 3 times per week can generate aerobic adaptation in those individuals although duration or frequency usually needs to increase over the first months of training. Beginners often make the mistake of trying to jump into massive volumes of training.*

S. Seiler:
*There is a minimum threshold for intensity and duration of stress that must be exceeded before additional adaptations are triggered in the body. This is the minimum training threshold. However, the threshold level (in terms of the combination of intensity and duration of exercise) for further adaptation increases as we become more fit. This is where periodized training comes into play. Exercise below the higher training threshold can be important for maintaining existing adaptations while allowing recovery processes to occur.*

L. McDonald:
*Practically speaking, endurance athletes use a variety of training zones (of various intensity and duration combinations) to achieve different adaptations as required by the specifics of their sport and their individual needs (i.e.: to fix weak points that are limiting current performance). Endurance, VO2 max, efficiency, lactate threshold, acid buffering can all be 'targeted' with specific combinations of intensity, duration and frequency.*

## Continual training is only effective at improving performance through the use of Periodization

There are two kinds of continual training. One is defined as an occasional bout of uninterrupted effort, such as a long, unbroken run of 18 miles. This sort of rehearsed "continuity" serves to prepare a marathoner for even longer distances. The other continual training takes place over weeks, months and years. This is where burnout's dangers lurk, and this is where periodization comes to the rescue. Periodization breaks up those weeks and months into smaller cycles that have their own peaks and valleys. Sometimes periodization even means refraining from athletic activity altogether.

"Peaking" for an event is another way of describing the goal of periodization. Hard workouts are balanced by easy workouts, all progressing towards your goal race, event or season.

Read more: http://www.livestrong.com/article/164300-continuous-training-athletic-performance/#ixzz1k33APOzy

“Non-linear periodization" varies the types of workouts done within a week rather than focusing on a single training style for several weeks. In a non-linear periodization plan, strength, hypertrophy and power training workouts might each be designated one day per week. ACSM (American College of Sports Medicine) asserts that non-linear periodization can be as effective as a linear progression through the different components of strength training.

Read more: http://www.livestrong.com/article/108594-workout-schedule-weight-training/#ixzz1k34ETOUz

**Elements of a Periodized Training Plan:**

**Phase 1: Base Training**
Base training develops your cardiovascular endurance to the point that you can easily sustain a long workout without a great deal of fatigue and muscle soreness. Also known as steady-state workouts. For an elite endurance athlete, base training can last as long as 3 or 4 months. You will work in Zones 1 to 3 depending on your fitness level at the start of the training. Base building workouts should be scheduled 3-5 times per week, 20-60 minutes or longer in duration. After 3-4 weeks of steady state rides, ‘intensive steady state’ or ‘tempo training’ rides are added. These will be segments of the ride wherein you work at a higher exertion rate (RPE of 7 to 7 ½) for, say, 10 minutes, followed by 5 minutes of recovery. This is repeated x 3.

**Phase 2: Strength Training**
Resistance training is added to your regimen by adding two strength workouts and maintaining 2-3 steady-state workouts per week. You will work in Zones 2 and 3 for 20-60 minutes per workout. On a run or a bike ride, this can take the form of hill repeats. Your strength effort will bring your heart rate up to Zone 3, while your recovery interval will bring your heart back into Zone 2.

**Phase 3: Speed Training**
Speed training will require working in the upper heart zones. Once per week, while maintaining endurance and strength workouts, you will work in Zones 3 to 5 for 20-60 minutes per workout. These can take the form of intervals, lactate threshold workouts and supra-threshold workouts.

**Phase 4A: Peak Training**
Paying attention to avoid overtraining, you spend a short period – perhaps even just one week – rotating through all types of workouts. For instance, you may do two endurance, one

interval (speed), two strength, and one recovery workout in the week. Workout duration can vary from 30 minutes to 120 minutes, working through all 5 zones depending on the type of workout. This peak training will not exceed two weeks per season, and leads directly into your pre-event taper.

**Phase 4B: Racing Season Training**

A season of racing is a very challenging juggling act. It requires as much psychological effort as physical, and requires constant recovery. On a week that includes a race, you should do four workouts in the week. If not racing that week, 6 workouts are suggested. Workouts should range from 30 minutes to 120 minutes, working in all zones for up to twelve weeks. This phase is specific to an athlete racing through a series over weeks or even months.

**Phase 5: Taper**

The week leading up to your event is for tapering your efforts to assure a "full tank of gas" for the event day. Many athletes take the day before the race/event completely off, while others prefer a short, Zone 3 –type effort of 20-30 minutes. Working backwards from your event:

| | |
|---|---|
| One day before: | Full recovery or short, easy effort. |
| Two days out : | Full recovery or a Zone 3, 20-30 minute effort. |
| Three days out: | Easy, longer steady-state workout. |
| Four days out: | Strength workout on the short side. |
| Five days out: | Longer, slightly harder steady-state ride. |
| Six days out: | Rest day or easy recovery workout. |
| Seven days out: | Your final Zone 4 or Zone 5 short interval/speed workout. |

| **Day** | **Zone** | **Duration** | **Type of Workout** |
|---|---|---|---|
| 7 days out | Zone 7-8 | 20-30 minutes | Interval/Speed |
| 6 days out | Zone 2 or N/A | Recovery work or Rest | Active recovery or Day Off |
| 5 days out | Zone 6-7 | 30-45 | Intense Steady-state workout |
| 4 days out | Zone 5-6 | 30-45 min | Hill repeats |
| 3 days out | Zone 4 to 5 | 1-3 hours | Long steady-state ride |
| 2 days out | Recovery –or– | Very short, easy ride (20-30 min at RPE* of 5) | |
| 1 day out | Recovery –or– | Very short, easy ride (20-30 min at RPE* of 5) | |
| The Big Ride! | | | |

*RPE: Rate of Perceived Exertion

**Phase 6: Recovery**

Recovery is one of the least understood and most important phases of training. Instead of "junk" workouts simply done in a low zone, it is intended that you maintain fitness while giving the body and the mind much needed real recovery. A long period – 4 to 8 weeks –

should be dedicated to full recovery. Recovery workouts range from 15 to 60 minutes, 4 to 6 times per week, and will take place in Zones 1 to the floor of Zone 3, but not above.

**CREATING YOUR OWN TRAINING PLAN**

M. Mitchell: *Create your own plan based on your goals. Start at whatever fitness level you are on and consider your personal goals, whether simply gaining and maintaining basic fitness or training for an event. How much time can you train each week? Be realistic here because any overzealousness can and probably will have a negative impact on achieving goals.*

*One must schedule and adhere to rest as an essential part of the training program. Rest is the most important part of training. Rest means different things to different people. For most it is either no riding or very little activity. For others it may consist of 60-90 minutes of exercise at very low heart rate.*

Once you have set your goals, you can begin to individualize your training. Mitchell builds a periodized training program with three season periods in the training year (Pre-Season, In-Season and Post-Season). These seasons are broken down into 4 week blocks (3 weeks of training and 1 week of rest) oriented to specific goals. Weeks 1-3 increase progressively in intensity which means longer intervals, more mileage, and more anaerobic threshold work.

M. Mitchell: *Personalizing an optimal training program for cycling (or any specific activity) requires that it be tailored to (1) the duration as well as (2) the intensity (power, sprint, endurance) of the event, while keeping a focus on (3) training the specific muscle groups being used.*

In addition, a successful training program focuses on developing the energy system specific for your particular event.

**Principles of Training:** All training programs adhere to similar common principles. These include:

1. **Exercise overload:** Training must increase in intensity and/or duration to promote physiologic improvement and achieve a training response.

2. **Specificity of training:** Adaptations in metabolic pathways and anatomic structures are specific to the types of metabolic or physical stress being trained.

3. **Specificity of VO2 Max:** The cardiovascular system needs to be stressed by the specific activity to achieve optimum performance. The heart and vascular system benefit from all aerobic exercise but the specific activity will provide the most adaptation and benefit.

4. **Specificity of Local Muscle Changes:** There are specific changes to the musculature based on the specific activity; in other words, training on a treadmill will improve overall muscle fitness but will not improve cycling fitness.

5. **Individual differences:** Not all individuals will respond to an equivalent training stimulus to the same degree or at the same rate.

6. **Reversibility of training:** De-conditioning occurs rapidly when training ceases. Reconditioning should be the first segment of every athlete's periodized training.

Plan to start your season easy, with Long Slow Distance (LSD) rides. Increase your mileage at 10-15% per week. For instance, if you start with a total of 100 miles per week, you will add approx. 10 miles per week until you reach your goal distance per week. During this period should you feel the need to "get your heart pumping" with increased effort, do some strength training in the gym or other cross training such as running, snowshoeing, Nordic skiing or swimming. In the gym, your goal isn't to become a power lifter, but rather to improve muscular endurance. This is best accomplished with lighter weights and higher reps.

Avoid excessive time on the bike to avoid excessive psychological burnout. It's as important for the recreational rider to build enthusiasm for the next season as it is for the racer.

*In as little as an hour a day, you can maintain fitness and develop strength.* (M. Mitchell)

Developing your own program does require some trial and effort along with a good dose of patience.

Once you have your base built (4-8 weeks of base building), your plan will start to vary. Limit training to 5 days on the bike, and at least one day off. Depending on your level of training (or overtraining) the seventh day can be an additional intermediate mileage day or an additional rest day.

Example basic training plan:

~ one high mileage day
~ one long slow recovery day
~ three intermediate mileage days
~ one or two rest days (activity off the bike or short recovery rides)

Plan a short mileage day or rest day to follow a high mileage day. Intermediate mileage days should be ridden at a training pace rather than a recovery pace. You may also use one of the intermediate mileage days for intervals.

Pacing: Your long ride should match your planned "event" speed; the short "recovery" ride should be at a leisurely pace (Zone 1-2 in heart rate parlance); one of the intermediate rides should be at a fast pace, while the other two are at your planned "event" speed.

Be flexible and adjust your program to your lifestyle . . and know wrenches will be thrown in the plan.

Keep a training log, however basic, to mark your progress. For more on training logs, see SpinDoc's *Physiology, Training and More* document.

For you tech junkies out there, you can use a computer-based program to log your training. See http://www.cyclistats.com. This site offers a free-30 day trial after which you can opt to purchase their program.

Sally Edwards:
*Working in multiple zones brings multiple benefits. One of the wonders of the human body is its uncanny ability to adapt to whatever stresses we throw at it. This is, of course, a two-edged sword. If we expose the muscular system to resistance training, it adapts into this stronger model. This is why we believe strongly in cross-training, including cycling within different zones, to "mix it up" for the body. Within each training zone, different physiological activities – different stimuli to the body – occur. These physiological and psycho-biological benefits including the metabolizing of different fuels (i.e. burning fat and carbohydrates), strengthening sport specific muscles, cardiovascularly conditioning different oxygen delivery systems, and training kinesthetic pacing skills.*

Intermittent high intensity training (interval training) results in enhanced maximal cardiac performance; it is also a powerful stimulus for increasing blood volume, which is a critical adaptation that contributes significantly to improved maximal cardiac output and VO2 max. However, your training plan should not be predominantly interval workouts. While intervals are effective at producing the adaptations that improve VO2 max, these adaptations will plateau.

S. Seiler:
*Therefore, the site of adaptation needs to move from the cardiovascular system to the skeletal muscles. The most powerful stimulus for change in skeletal muscle aerobic capacity is different from the most powerful stimulus for cardiac functions changes. Instead, you must put in the hours of continuous constant intensity exercise to maximize these adaptations. This will range from steady state efforts at 65-75% of VO2 max lasting 45 to 120 minutes to repeated "anaerobic threshold work" at 80-90& of VO2 max for 15 to 30 minutes.*

**Training for a Century Bike Ride** by Elizabeth Quinn

*A milestone in the life of any cyclist is riding a century, or 100 miles, in one day. While riding 100 miles in a day may sound extreme to a non-cyclist, it is not unthinkable. Almost any casual cyclist can complete a century if they follow a comprehensive training routine.*

*There are several things to consider in order to have a trouble-free century.*
*They include:*

- *The right equipment*

- *The right training*
- *The right food*
- *The right attitude*

***Equipment:***

*The right equipment means comfort. Your bike should fit you well and should be familiar. If you aren't sure, have your local bike professional provide a fit-assessment. Don't plan to ride a new or a borrowed bike on your first century. Consider having a tune-up before the ride, and carry a spare tire and patch kit, tools, a pump and knowledge of how to use them. Other essential equipment includes:*

- *A properly fit helmet*
- *Water bottles in cages*
- *Cycling clothing, including shoes, shorts, gloves and rain gear*
- *Sunglasses*

*(From Chandler: SUNSCREEN!!!!!)*

***Training:***

*The core of your training should be endurance training. If you start your training at least 12 weeks before the ride, you will have ample time to prepare for the century. If you already ride more than 7 hours a week, you will need far less time to prepare. While most of your rides will be at about 65% of your maximum heart rate (MHR), add two days of interval training, where you push hard for several minutes - up to 85% MHR. Hills are a great way to add interval training to your ride. And don't forget to allow one day per week for recovery. A sample training schedule may look like this:*

- *Saturday:* *1-2 hour ride with 30 minutes of hard effort*
- *Sunday:* *1-2 hour ride at steady pace (65% MHR)*
- *Monday:* *Rest*
- *Tuesday:* *1-1.5 hour ride with hills*
- *Wednesday:* *Rest or 1-hour easy recovery ride*
- *Thursday:* *1-1.5 hours with interval training*
- *Friday:* *Rest or 30-minute easy recovery ride*

*More Training Tips:*

- *Maintain a cadence of 90 revolutions per minute.*
- *Gradually increase your mileage as you get closer to the century, increasing no more than 10% per week at a time.*
- *Plan a 50- or 60-mile ride at least two weeks before the century.*
- *Taper your mileage the week before the century. During that week you may even*

*reduce your riding to one or two days of an easy five to ten-mile spin. Also, try to get plenty of sleep.*

***Nutrition:***

*As the ride day approaches, food becomes the critical component for a successful century. A few days prior to the ride you should start hydrating. Drink water frequently, cut back or eliminate caffeine and alcohol, and add carbohydrates to your diet.*

*On ride day, eat a light breakfast of high-carbohydrate foods and drink lots of water. On the ride drink before you're thirsty. Water or a sports drink should be your first choice. Eat easily digestible, carbohydrate rich-food such as energy bars, bagels, fruit or granola. Don't try something new on the ride. You should eat things you know agree with you.*

***Attitude:***

*Ease into the ride pace. This isn't a race, and if it's your first century, the goal is to finish as comfortably as possible. Here are some more tips for an enjoyable ride:*

- *Change your position often. Move your hand position, get up off the saddle, stretch your arms, shoulders and neck, arch your back and stretch out. Avoid staying in one position too long.*
- *Take short rest breaks off the bike. An organized century ride will offer regular water and food stops. Take advantage of this time to get off the bike and refill your water bottles, stretch, and use the restroom. Keep these stops to 10 minutes or less or you may risk getting stiff. No napping!*
- *Find a companion or two. The ride will go faster and feel easier with a friend or two. Also, skilled riders can take advantage of drafting and save some energy in the wind.*

*Attitude is everything. If you have prepared yourself well, there isn't much more to be done on ride day than sit back and enjoy the scenery (and maybe plan your next century).*

http://sportsmedicine.about.com/cs/conditioning/a/aa052703.htm