



Periodize Training Load to Maximize Cycling Success©

Part 3 of 3 in Maximizing Cycling Success

By Sally Edwards

Training for a cycling event? In this third article of a three-part series, learn how to periodize your training load for maximum results!

“How much?” “How hard?” “How long?” You hear these words, and either you’re eavesdropping on a cell phone conversation that’s way too interesting, or you’re in the presence of a cyclist in training. Fortunately for the cyclist, the answers can all be found in a training framework called *periodization*.

Periodization, the application of different amounts and different kinds of training intensity over the course of several months’ time, gives you the tools to create a personalized training plan that maximizes performance and minimizes risk. Periodization gives you improved results independent of your method for measuring training intensity, but the more systematic your training program and the more accurate your assessment of training intensity, the better your results will be.

Periodization is a Plan for Optimum Performance

Periodization is the short-term and long-term distribution and sequencing of training load over time that leads to optimum performance.

Example: Emily has eight months—33 weeks—to prepare for a local 50-mile cycling event that occurs on October 31. Emily is an “event rider,” that is, someone who rides anywhere from six to fifteen hours per week, for a total of 300 to 500 hours per year. Her goals are to be fit, enjoy the experience, and finish the event. That’s enough information to begin constructing her training plan.

Using the 10-25-65 rule explained in the first article of this series, Emily can now put together an outline of her macrocycle:

Prep 1	Prep 2	Event						Trans
Mesocycle	Mesocycle	Mesocycle						Meso
4 weeks	4 weeks	5 weeks	4 weeks	4 weeks	4 weeks	4 weeks	4 weeks	3 wks
March	April	May	June	July	Aug.	Sept.	Oct.	Nov.

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Training Load is a Measure of “Training Work”

Periodization is the manipulation of training load over time. In the Heart Zones™ system developed and used by the authors, training load is the product of two factors: exercise intensity (as measured by heart rate) and exercise time (duration). When you multiply these factors together, you get a measurement of your internal training load. Training load is measured in units called Training Points™.

$$\text{Load (Training Points)} = \text{Intensity (Heart Zone \#)} \times \text{Time (Minutes in Heart Zone)}$$

To determine Training Points, use the **LIT** formula:

Example: Emily rode her bike one afternoon for 60 minutes, and stayed in Heart Zone 3 the entire 60 minutes. (A bit theoretical, but this is an example!) The training load for that single ride would be calculated as follows:

$$3 \times 60 = 180 \text{ Training Points}$$

Distribute Training Load over Time

Begin thinking about building your periodized training plan by looking at the following “principles of periodization:”

Heart Zones™ are ranges of heart beats per minute, and each zone represents a 10% range of your maximum heart rate.

Periodization terminology

Macrocycle: The longest interval of the training plan, ranging from a few months to one year, depending upon the goals of the rider.

Mesocycle: The mid-level time interval in the training plan, usually ranging from two to six months. Several mesocycles comprise the macrocycle.

Microcycle: The shortest time interval in the training plan, usually ranging from two to four weeks. Several microcycles comprise each macrocycle.

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Ten Principles of Periodization

Manipulation:	When putting together a training plan, remember that periodization is the manipulation of load and recovery.
Big Base:	The bigger the base, the higher the peak. The preparation mesocycles are crucial for general conditioning and event-specific preparation.
Specificity:	Design your training plan for the specific event for which you are training.
Variability:	To prevent training monotony and to stimulate the training effect, vary the workouts by type of ride and by type of intensity.
Tapering:	Prior to major competitions, decrease the load.
Peaking:	Periodize in order to reach your goal, which is to perform your best in the month, day and hour of the performance itself. That generally means reducing training volume while maintaining intensity.
Planning:	Build the plan by scheduling workouts that focus on each aspect of riding: tactical, emotional, technical, and physical.
Time:	Determine the amount of time you realistically have for training and use that time efficiently.
Record Keeping:	Accurate logging is critical in gauging the effectiveness of a training program. Record details about the training and about the context (your life) in which that training occurs, e.g., injuries, distractions, nutrition, emotions.
Recovery:	Rest when the schedule calls for rest and work when it calls for work.

Begin to Focus on the Details of Planning

Constructing a detailed periodized training plan involves the determination of how to distribute intensity over the course of each mesocycle, each microcycle, each week, and each ride. Questions to ask yourself at various stages in the planning process include

- What cycling skills do I need to focus on this season?
- Where can I ride this year that I didn't ride last year?
- How am I going to practice individual and team tactics?
- Who can I ride with?
- What performance standards do I need to measure, how am I going to measure them, and when is the best time to measure them?

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Whatever your answers to these questions (and, your answers will change over the course of your training plan), the fundamental issue in both the short-term and the long-term is how to distribute training load over time.

The ten principles give you the “big picture”—the theoretical underpinnings of a periodized training plan. The “mid-range” details come from the combination of the various factors that determine the nature of each mesocycle.

Guide to the Mesocycles

Factor	Preparation 1	Preparation 2	Event Mesocycle	Transition
Overall purpose	Establishing base level of endurance	Improving base, strength, speed, and power while focusing on specific event requirements	Training to reach optimum performance capacity	Reducing training to allow for the regeneration process to occur
Intensity	Heart Zones 2-3	Heart Zones 3-5	Heart Zones 3-5	Heart Zones 1-3
Time & Mileage	Moderate to high	Moderate to high, then back to moderate at the end	Moderate	Low
Load (Intensity x Frequency x Time)	Increases progressively from low to moderate	Moderate to high, then back to moderate	Moderate	Low
Skills	General riding skills and techniques	Event-specific skills and techniques	Racing or event-specific skills, e.g., time trials, attacks, climbing, sprinting, etc.	Ride for enjoyment

Distributing intensity

Using the Guide to the Mesocycles, you can get a general idea about what to focus on during each mesocycle. Next, you need to start filling in the details with workouts designed to provide you with the correct number of Training Points (the measure of Training Load.)

Recall that there are two factors that go into measuring training load: intensity and time. How do you know your intensity level? In the Heart Zones system, a particular level of intensity is attained by working in a pre-determined Heart Zone (a range of heart rates representing a percentage of your maximum heart rate.) Below is a chart showing the recommended distribution of training intensity for each week of the training macrocycle, where the percentage shown is a percentage of your total riding time for the week.

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How to Distribute Training Intensity

	Heart Zones = Training Intensity				
	Aerobic				Non-aerobic
	1	2	3	4	5
Preparation					
Mesocycles Weeks					
Peak Power week	5%	10%	35%	35%	15%
Speed week		10%	20%	50%	20%
Strength week	10%	10%	30%	30%	20%
Endurance Base week	20%	40%	30%	10%	
Event Mesocycle Weeks	10%	10%	25%	30%	25%
Transition Weeks	20%	20%	60%		

Example: Emily determined that during the preparation week in which she wanted to focus on strength, she had a total of 10 hours (600 minutes) available in which to ride. During that week, she rode so that 10% (60 minutes) of her training time was in Heart Zone 1, 10% (60 minutes) was in Heart Zone 2, 30% (180 minutes) was in Heart Zone 3, 30% (180 minutes) was in Heart Zone 4, and 20% (120 minutes) was in Heart Zone 5.

In other words, for one week, Emily distributed her total of 600 riding minutes over the five Heart Zones as follows:

Training Time in Heart Zones for One Week

Heart Zone (Intensity)	1	2	3	4	5
Percentage of the week's training time in each Heart Zone	10%	10%	30%	30%	20%
Time in Heart Zone	60 min	60 min	180 min	180 min	120 min

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Calculating Training Load for a Week

Once you know what percentage of available training time to spend in each Heart Zone during the week, the next step is to calculate the training load (measured in Training Points). A week's total training load is the sum of the training loads for each Heart Zone during that week.

Training Load (Training Points) for One Week

Heart Zone (Intensity)	1	2	3	4	5	Total Training Points
Time in Heart Zone	60 min	60 min	180 min	180 min	120 min	
Training Points = I x T for each Heart Zone	60	120	540	720	600	2040

Take it from a concept to a plan

Using the Guide to the Mesocycles, Emily sketched out the distribution of training load over the course of her 36-week macrocycle:

Distribution of Emily's Training Load over her 36-week macrocycle

Training Load	Prep 1	Prep 2	Event						Trans.
	Meso.	Meso.	Mesocycle						Meso.
High									
Me- dium									
Low									
	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.

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Range of Training Points in the Preparation 1 Mesocycle

Type of rider	Training Points Per Week
Recreational rider	400-700
Fitness rider	500-800
Event rider	600-1,000
Age-group competitor	1,000-2,000
Elite competitor	1,000-3,000

Example: As an “event rider,” Emily plans to accumulate about 750 points per week during the four-week Preparation 1 Mesocycle. For her, 750 Training Points is in the medium range. What about Preparation 2 Mesocycle, when the training load increases? It’s clear from the overview of Emily’s 36-week macrocycle that she wants to train at a level of high intensity during the month of April. Does that mean she wants to train in Heart Zone 5 every minute of every day for the entire month? Absolutely not! It means she wants to touch that high level of intensity periodically and accumulate a relatively high number of Training Points throughout the month. (It is important to note that a “relatively high number” of Training Points means a high number *for Emily*. What is *high* to Emily may be *medium* to a rider training at a more competitive level of the sport.)

In terms of Training Points, Emily’s training in the month of April might look this:

Distribution of Training Load over a Four-Week Training Period

2,000				
1,750				
1,500				
1,250				
1,000				
750				
500				
	Week 1	Week 2	Week 3	Week 4
Training Points:	750	1000	1500	500

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In the language of periodized training, microcycles are one-week or two-week blocks of time with particular training goals. So, Emily will break down her four-week Preparation 2 Mesocycle into two, three, or four microcycles, depending upon her own personal training goals, and how well her body adapts to training. In other words, she'll want to take into account her trainability and her training tolerance.

Take into Account Trainability and Training Tolerance

Distributing appropriate amounts of training load is highly individual. When you first begin to periodize your training, it's going to take a considerable amount of adjusting your training load up or down over the course of your training plan as you become increasingly aware of two factors, your trainability and your training tolerance.

Trainability is reflected in how quickly your body responds or adapts to the training load. The more trainable your body is, the more quickly you will see physiological changes in response to your work on the bike. No two riders have exactly the same degree of trainability. When two different cyclists ride the same number of hours, the same distances, on identical bikes, on the same course, one will get fitter faster than the other. One is more "trainable," physiologically speaking.

Training tolerance, on the other hand, is your body's ability to cope with increasing dosages of riding workload. When two different cyclists undertake the same training plans with identical workouts, very often one will get injured, catch colds, and feel fatigued, while the other will progress beautifully toward his or her training goals. Different training tolerances demand different training plans.

As you progress through your periodized training plan, you must monitor your own trainability and training tolerance, modifying the plan as you go to reach maximize performance while minimizing risk of injury and illness.

Periodizing in a Nutshell

- Work backwards from the date of the event when developing your training plan.
- Train with your specific event in mind.
- Log your training.
- Adjust your training load as conditions warrant.
- Keep variability in your training plan over the course of each week, each microcycle, and each mesocycle.
 - Don't "micro-plan." Stick to the basic outlines of your macrocycle and mesocycles, but be flexible with your day-to-day planning.
- Consider working with a coach to help you plan and monitor your training.

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