

What do all the Z's mean? Training 'Zones' explained

Training plans should always be tailored to the individual goals, strengths, and weaknesses of each athlete.

This article provides an overview of the almost-universal "zone" terminology used by many coaches and training-related articles. It's designed to give you a "feel" for each of these zones, not the associated power (Watts) or heart rate (HR) or "perceived rate of exertion" (RPE or PE) for each level of training.

There are numerous additional terms that are used to describe these basic concepts, and I won't even begin to attempt to write them all down. Suffice it to say, most everyone is conversant with the following terms even if they know or use a few more.

Active recovery (Z1)

Easy, easy, easy. This is the region where you want to put in some quality conversational time with that significant other(s). This level provides little (but not *no*) training affect. Most coaches won't usually prescribe any specific amount of time to spend in this zone. They may schedule it after or before races to recover physically or prepare mentally. You can do all you want, but don't do it instead of a prescribed Z2/3/4/5 schedule.

Endurance (Z2)

This is the basic endurance-building zone, and should be at a conversational pace and still feel pretty easy. This is what's usually described as LSD ("long slow distance"). A significant amount of your training schedule (more than 50%) will be in this zone, even during your racing season, and it provides the physiological foundation for more intense training.

You should normally do at least an hour of Z2 training -- and don't do a half-hour in the morning and the other half-hour in the evening. This does not provide the stress and adaptation we're looking for.

It is an excellent way to improve basic fitness, but will not help you get stronger or perform better. The benefits from Z2 don't really kick in until 45 minutes, and increase exponentially through 1 hour and 15 minutes, before starting to level off. Drink plenty of fluids before and during the workouts, thirsty or not.

With the foundation that you build here, the more intense efforts will provide significant benefits. Without it, the Z4/5 stuff will break you down swiftly.

Typically, athletes will sacrifice Z2 workouts/time before Z4/5 whenever time runs short. If you do, you're guaranteed to burn out or overtrain. Don't worry; even the pros spend most of their time here. Of course, a pro cyclist (for example) goes 25 mph in Z2 where the rest of us do closer to 16-20 at the same HR; it's a function of genetics and training.

The direct benefits of Z2 training include fat-burning as the primary energy source, increased endurance, and stamina. Most people could do these types of workouts every day of the week.

Tempo (Z3)

This is where the work starts; usually referred to as Tempo rides or runs. You can still carry on a conversation, but the sentences get shorter and the level of conversation of a group decreases noticeably.

It's totally aerobic, and it should be a pace that you can handle for several hours. Use the entire zone, depending on the terrain. If you're scheduled for Z3 time, you'll probably have to work hard going downhill and not so hard going up those hills. This is the zone that you'll typically be at during races.

Get comfortable with recognizing this zone. If you're a cyclist, don't become a slave to your heart-rate monitor any more than your power meter (if you use one -- they're a great training tool). You'll spend about 25-30% of your training time in this zone.

In cycling, a typical Z3 ride will last around 1 to 1 1/2 hours in duration. Fast group rides or fast moving pacelines usually fall into Zone 3, but many times they exceed Z3 yet don't provide sufficient workload to stress your **lactate threshold (LT)**.

The primary energy source in Zone 3 remains fats, but those limited glycogen stores are now being tapped to provide adequate energy. Many coaches prescribe back-to-back days of Z3 training depending on the athlete's ability to recover for this type of workout intensity.

Threshold (Z4)

Commonly referred to a *lactate threshold (LT)* or *anaerobic threshold (AT)*. Although there's a range, when you do Z4 workouts you want to be very close to your actual threshold. As you get stronger, faster, and fitter, you'll raise your threshold.

This zone is hard; conversation is in one- or two-word sentences. You'll be breathing hard and be on the edge of suffering. This is still an aerobic activity but, as the name implies, you're on the edge.

Expect to do 20-25% of your training in this zone. Typically you'll do these efforts individually. You can go out with other guys, but these are normally precisely prescribed efforts (i.e. for a cyclist, 15 min x 3 reps, 2 sets, 3 minutes' rest between reps, 6 minutes' rest between sets). Even if the others do the same efforts, you'll all cover different distances.

Don't expect to see any of these workouts during base-building periods. This doesn't mean you can't do them, but the structured Z4 training isn't usually prescribed during base building.

Typically you'll see either flat or hill intervals prescribed. Flat intervals should be on generally flat to slightly rising terrain or into a slight headwind. Hill intervals can also be called "hill repeats." For

cyclists, find a hill that has 3-4% grade that you can climb for 8-10 minutes. You should be able to start and finish the interval prior to the top of the climb while producing the same power or perceived power throughout.

A typical session would be 10- to 20-minute intervals followed by 2-5 minutes' rest. Do two of these, and then take a 5- to 10-minute rest followed by another set of two intervals.

Recovery from each interval is only partial, not complete. Rest periods for intervals vary widely and are usually dependent on the type of racing and goals you've established. If you aren't feeling well, don't do any Z4/Z5 work and drop to Z2 or Z1, or check out the latest video and get a good night's sleep.

Remember that Z4 intervals are an aerobic event. If you can't complete the interval, you either started out too fast and put yourself into lactate acid debt -- or you're assumed LT/AT is too high, or you're dehydrated, or you didn't get enough sleep, or any number of factors.

You'll have to make an educated guess and make appropriate adjustments. If you have a 10-minute interval scheduled, then it should take about 1 - 1 1/2 minutes to get into the zone, hold it for the remaining time and it's done.

Recovery starts immediately when you complete the intensity. Usually you can just shift from the 53 chainring to the 39 and spin.

By increasing your power at threshold, you'll be able to stay aerobic in situations where previously you would have been forced into a full sprint.

Note: There is a "No-Man's Land" between Z3 and Z4. Training in this area has been found to not be beneficial for either the aerobic requirements of Z3 or the LT/AT training in Z4. You'll probably also find this to be the area you train in most. Avoid this area like the plague.

Max efforts (Z5)

These are sprint or max-effort-type workouts. Suffice it to know that these will hurt -- a lot. The good news is that you will only be doing about 1-2% of your training here. Z5 workouts are typically divided into two areas: sprints and VO2 Max efforts. Some coaches have divided Z5 into additional areas, but I'm not going to address those.

Sprints: Short duration (15-30 seconds), all-out efforts, generally on slightly downhill terrain or with a tailwind. There will probably be some of these on uphill terrain since many road races end with an uphill sprint. Rest period after a sprint is around five minutes. You'll probably feel ready for the next sprint in less than 5 minutes, but physiologically you need the recovery time.

Only do as many sprints in a workout as you can maintain form or as prescribed.

Sprint technique: Be at or near Z4 when starting the sprint. A measured-distance course is best so you don't have to look at your watch.

VO2Max: Longer duration (2-5 minutes), all-out efforts. After 4 or 5 of these, even with 5-10 minutes' rest, you may not be ready for the next one, so take some extra time to recover. You want your entire energy system recharged so you can give a 100% effort on every attack.

These efforts increase your anaerobic power and develop the athlete's VO2 max, the maximal amount of oxygen that can be used during exercise for the development of sustained power.

Rest

The most important component of any training program. You only get stronger on rest days. Remember this. The best riders go hard when they have to and easy as much as possible. It is not a sin to take a day off. If you have a complete off-the-bike-day, don't do anything more strenuous than walking at a leisurely pace.

Rest, recovery, and recuperation are three of the most important and usually most overlooked parts of a training program.

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