

# Determining Your Training Zones

Lactate Threshold (LT) or Anaerobic Threshold (AT) is the heart rate at which you begin to accumulate lactic acid in your muscles – where anaerobic energy production surpasses aerobic. It is the rate at which the effort is no longer sustainable for long periods of time. This generally occurs at 85-92% of MHR. Various cycling coaches use different zones. I use six zones and they are listed below, and are based on percentage of your anaerobic or lactate threshold as estimated by the test below.

## Heart Rate Zones:

**Zone 1** = Recovery (<71% of AT) – uses the aerobic system

**Zone 2** = Endurance (72-81% of AT) – uses the aerobic system

**Zone 3** = Tempo Pace (82-91% of AT) – uses mainly aerobic system

**Zone 4** = Threshold Pace ( 92-102% of AT) – uses mainly aerobic system with some anaerobic system

**Zone 5** = Anaerobic Pace (103-110% of AT) – covers zone where aerobic converts to the anaerobic system.

**Zone 6** = Maximum aerobic capacity (Too short to record HR) – anaerobic and CP systems

Your cardiovascular output can also be measured with power if you use a power meter on your bike. Similar to heart rate, there are also power zones. These are based as a percentage of your Threshold Power (TP), as estimated in the test below. My six zones are shown here for power, and are based on those of Hunter Allen and Andrew Coggan.

## Power Zones:

**Zone 1** = Recovery (<55% of TP) – uses the aerobic system

**Zone 2** = Endurance (56-75% of TP) – uses the aerobic system

**Zone 3** = Tempo Pace (76-90% of TP) – uses mainly aerobic system

**Zone 4** = Threshold Pace ( 91-105% of TP) – uses mainly aerobic system with some anaerobic system

**Zone 5** = Anaerobic Pace(106-120% of TP) – covers zone where aerobic converts to the anaerobic system.

**Zone 6** = Maximum capacity (V02 Max) (>120% of TP) – anaerobic and CP systems

## How to estimate your AT or TP:

AT and TP is the maximum sustainable pace you can maintain during a time trial effort that lasts about an hour. However, it's possible to estimate this heart rate or power from a shorter 20 min time trial effort. Find a road that is relatively level and free of traffic and intersections. You may need to find a road that's about 5 miles and do an 'out and back' course to get your 20 min test done. Alternately, you can do this on an indoor trainer. In some ways this gives you a more repeatable result as you don't have the weather and traffic variables. Warm up thoroughly, then begin the 20 minute time trial. Ride as hard as you can at a pace you can maintain for the full 20 minutes. There is a fine line between going out too fast and not pushing yourself hard enough. You may need to do a few of these before you figure out your sustainable pace. Record your heart rate and/or power toward the end of the 20 min. Do not accelerate or sprint at the end. What we are after is your sustainable heart rate or power. If you have a computer that allows you, take the average heart rate or power for the last 5 minutes of the effort.

The pace you can maintain for 20 min is slightly faster than the pace you can maintain for an hour. So take your heart rate or power from this 20 minute test and multiply by 0.95 to arrive at your sustainable pace, which is your estimated Anaerobic Threshold (AT) or Threshold Power (PT). Use this value to estimate your own zones as described above or using the table below.

These power threshold zones and method for determining them are based on those advocated by Allen and Coggan in their book, 'Training and Racing with a Power Meter'.

Use this chart below to identify your zones based on your own AT values obtained from your test:

**Heart Rate Training Zones**

	Recovery	Endurance	Tempo	Threshold	Anaerobic	Max Effort
A.T. Heart Rate (Beat/Min)	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
130	<94	94-107	108-120	121-134	135-143	>143
135	<97	97-111	112-124	125-139	140-149	>149
140	<101	101-115	116-129	130-144	145-154	>154
145	<104	104-119	120-133	134-149	150-160	>160
150	<108	108-123	124-138	139-155	156-165	>165
155	<112	112-127	128-143	144-160	161-171	>171
160	<115	115-131	132-147	148-165	166-176	>176
165	<119	119-135	136-152	153-170	171-182	>182
170	<122	122-139	140-156	157-175	176-187	>187
175	<126	127-144	145-161	162-180	181-193	>193
180	<130	130-148	149-166	167-185	186-198	>198
185	<133	133-152	153-170	171-191	192-204	>204
190	<137	137-156	157-175	176-196	197-209	>209
195	<140	140-160	161-179	180-201	202-215	>215

Use this chart below to identify your zones based on your own TP values obtained from your test:

**Power Training Zones**

	Recovery	Endurance	Tempo	Threshold	Anaerobic	Max Effort
Threshold Power (Watts)	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
200	<110	110-150	151-182	183-212	213-240	>240
210	<116	116-158	159-191	192-223	224-252	>252
220	<121	121-165	166-200	201-233	234-264	>264
230	<127	127-173	174-209	210-244	245-276	>276
240	<132	132-180	181-218	219-254	255-288	>288
250	<138	138-188	189-228	229-265	266-300	>300
260	<143	143-195	196-237	238-276	277-312	>312
270	<149	149-203	204-246	247-286	287-324	>324
280	<154	154-210	211-255	256-297	298-336	>336
290	<160	160-218	219-264	265-307	308-348	>348
300	<165	165-225	226-273	274-318	319-360	>360
310	<171	171-233	234-282	283-329	330-372	>372
320	<176	176-240	241-291	292-339	340-384	>384
330	<182	182-248	249-300	301-350	351-396	>396