



Table 1: Power Based Training Levels (Coggan Power Zones)

Level	Name	Average Power	Average HR	Perceived Exertion	Description
1	Active Recovery	<55%	<68	<2	"Easy spinning" or "light pedal pressure", i.e., very low level exercise, too low in and of itself to induce significant physiological adaptations. ...Typically used for active recovery after strenuous training days (or races), between interval efforts, or for socializing.
2	Endurance	56-75%	69-83%	2-3	"All day" pace, or classic long slow distance (LSD) training. Sensation of leg effort/fatigue generally low, but may rise periodically to higher levels (e.g., when climbing). ...
3	Tempo	76-90%	84-94%	3-4	Typical intensity of fartlek workout, 'spirited' group ride, or briskly moving paceline. ... Breathing deeper and more rhythmic than level 2, such that any conversation must be somewhat halting, ...
4	Lactate Threshold	91-105%	95-105%	4-5	Just below to just above TT effort, ... Continuous conversation difficult at best, due to depth/frequency of breathing. Effort sufficiently high that sustained exercise at this level is mentally very taxing - therefore typically performed in training as multiple 'repeats', 'modules', or 'blocks' of 10-30 min duration. ...
5	VO ₂ Max	106-120%	>106%	6-7	Typical intensity of longer (3-8 min) intervals intended to increase VO ₂ max. ... Conversation not possible due to often 'ragged' breathing. ...
6	Anaerobic Capacity	>121%	N/A	>7	Short (30 s to 3 min), high intensity intervals designed to increase anaerobic capacity. ...
7	Neuromuscular Power	N/A	N/A	* (Maximal)	Very short, very high intensity efforts (e.g., jumps, standing starts, short sprints) that generally place greater stress on musculoskeletal rather than metabolic systems. ...

Coggan, A.C. and Allen, H (2010). *Training and Racing with a Power Meter*. Boulder: VeloPress.



Table 2: Expected physiological/performance adaptations resulting from training at levels 1-7:

	1	2	3	4	5	6	7
Increased plasma volume		✓	✓✓	✓✓✓	✓✓✓✓	✓	
Increased muscle mitochondrial enzymes		✓✓	✓✓✓	✓✓✓✓	✓✓	✓	
Increased lactate threshold		✓✓	✓✓✓	✓✓✓✓	✓✓	✓	
Increased muscle glycogen storage		✓✓	✓✓✓✓	✓✓✓	✓✓	✓	
Hypertrophy of slow twitch muscle fibers		✓	✓✓	✓✓	✓✓✓	✓	
Increased muscle capillarization		✓	✓✓	✓✓	✓✓✓	✓	
Interconversion of fast twitch muscle fibers (type IIb -> type IIa)		✓✓	✓✓✓	✓✓✓	✓✓	✓	
Increased stroke volume/maximal cardiac output		✓	✓✓	✓✓✓	✓✓✓✓	✓	
Increased VO2 Max		✓	✓✓	✓✓✓	✓✓✓✓	✓	
Increased muscle high energy phosphate (ATP/PCr) Stores						✓	✓✓
Increased anaerobic capacity ("lactate tolerance")					✓	✓✓✓	✓
Hypertrophy of fast twitch fibers						✓	✓✓
Increased neuromuscular power						✓	✓✓✓

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