

Turn Your Home Gym Into A CycleOps Power Training Center

To achieve success in weight loss, strength, fitness and performance, appropriate training must follow the “law of overload”. This fundamental principle of training is a systematic process, progressively increasing the work (load) one can perform in a training session and then giving the body proper rest and nutrition. The body will adapt (respond) with a new level of fitness in preparation for the next training. If the load is too great or there is not enough recovery, the response is only fatigue. If the load is not enough or there is too much recovery, there is no reason for the body to adapt. Therefore, if the load is just right and changed in a slow manner and given appropriate rest and nutrition, the body’s response is a higher level of fitness than before. The body’s ability to adapt explains how load-response training works. The key is ‘knowing’ the appropriate load and this is why power training utilizing the CycleOps 300PT Indoor Cycle or the PowerTap wheel is the optimal tool preferred by cyclists, scientists, coaches, personal trainers, athletes and fitness enthusiasts alike. No gym should be without!

The arrival of CycleOps Power Technology is available on the tricked out CycleOps 300PT Indoor Cycle or the PowerTap wheel which can be mounted on your bicycle. Now both cyclists and fitness enthusiasts can measure power output and energy, on the only indoor cycle that measures power. Plus, riders can collect their training session data and download it to a PC to log, analyze and send to a coach or trainer. This will ensure the “law of overload” is followed, getting the most out of your precious training time.



The Power Tap works by measuring the amount of force or torque generated using strain gauges embedded in the hub and by measuring the speed of the pedals and/or hub. Simply stated, power on the bike is a product of how hard you push on the pedals and how fast you are pedaling. To produce more power, you can either push harder, pedal faster or a combination of both. This would equate to doing more work and burning more calories. The attached console (computer) receives immediate feedback, displaying power measured in watts and representing the energy expenditure in kilojoules (KJ). As a point of reference, 1KJ=1Kcal, so the accurate power measurement provides an accurate caloric expenditure as well. This dashboard also shows heart rate, cadence, speed, distance, training zones, ride time and more. By use of a USB Stick or Cable, ride data is easily imported into your PC, for use in your free PowerAgent software.

Why train with power? Power is the amount of work or energy you expend in a given time frame and is measured as a watt. Simply stated, training with power is the most comprehensive way to measure performance. Since you can't change what you can't measure, training without measurement is like telling time without a watch or lifting weights blindfolded or weighing yourself without a scale. You would simply have to guess. When you step on that scale, you exert a force. The force you apply to the scale compresses a spring, which moves the needle to the exact load. Your weight has been measured. Not only do you know your weight, but you can now track your progress and monitor how your body is responding to training. When you go to the gym, you measure your strength by knowing exactly how much weight you can lift. You determine your progress by measuring how much more (or less) weight you can lift over time. You measure your energy by knowing how long you can endure the exercise (time). You know you are progressing when you can sustain energy for longer durations. Power is like the strength of a weightlifter or the force applied to the scale and your endurance to sustain the work. Power is the rate at which you do the work. Therefore, training with power is the most comprehensive way to measure performance.

Using a heart rate monitor has been a way to monitor how the intensity of your training is affecting your body. However, heart rate is a response to the work and not a measurement of the work. Since you can't change what you can't measure, CycleOps Power technology is the accurate way to actually implement training principles, to ensure a change in fitness. The CycleOps 300PT Indoor Cycle or the PowerTap wheel provides immediate feedback to the rider's performance, unlike heart rate monitors which only tell you the response to the past effort. Power is the objective measurement of actual work "load", while heart rate is how fast the heart has to beat to respond to the workload's previous demand. Going back to the gym scenario, a weight lifter may perform a set of 10 squats @ 200 lbs. The demand to pump more oxygen rich blood to the muscles is initiated and the heart rate begins to ramp up slowly. However, once the 10 squats are complete, the heart rate is still responding to the first few repetitions and will continue to climb, even though you are no longer doing the work. In comparison, a rider using the CycleOps Power technology can instantly perform the workload by generating 250 watts, instead of waiting for the body's response in heart beats. Since power makes the pedals turn, not heart rate, it only makes sense to focus on the direct measurement of the work when training and tracking your progress.

As stated previously, success in weight loss, strength, fitness and performance must incorporate the principles of training and you can't change what you can't measure. You have already discovered how the CycleOps 300PT Indoor Cycle or the PowerTap wheel is the optimal tool for applying the 'law of overload'. It doesn't stop there. CycleOps Power technology is the most favorable gym equipment in incorporating the remaining principles as well; the principles of variety, individualism, specificity and involvement. Check out how the CycleOps 300PT Indoor Cycle is used for training and tracking progression of these goals.

Since the 'law of overload' includes work and recovery, weekly and monthly training should include the principle of variety, by incorporating planned periods of hard, moderate and easy work with periods of rest. Given that different physiological responses (changes in fitness) take place at different intensities, training must include this principle of variety. Some work loads develop the aerobic system & slow twitch muscle fiber, while others boost threshold, power, VO₂, fast twitch muscle fiber and develop the anaerobic system. To achieve the highest level of fitness, it is necessary to develop all systems. Therefore, it is critical to categorize and train these workloads, commonly referred to as training zones, relative to measurable markers. By working these zones, the body responds to the specific demands, strengthening the cardiovascular system, pulmonary system, neurological response and skeletal muscles.

Because everyone is an individual, these training zones need to reflect the individual's personal physiology, known as the principle of individualism. Many use heart rate monitors as a measurement of these training zones, since there is a linear correlation to an increased/decreased heart rate with an increase/decrease in effort. However, since heart rate is a response to the effort and not a measurement of the effort, heart rate zones can only offer ballpark ranges and a guess of the actual measurement. You can now accurately determine and train these zones using CycleOps Power technology. The CycleOps Power Test accurately determines one's unique capabilities, capacities, characteristics of muscle fiber and Power training zones.

The CycleOps Power Test determines your threshold power, which is a starting point for getting fitter, a frame of reference for getting faster and a measuring tool for going further. Participants perform several gradual 2:00-3:00 ramps of intensity while sustaining cadence, until they have achieved an honest perception of "hard" and can no longer sustain the pace. This correlates to what is known as lactate threshold. This threshold power marker provides a baseline power output corresponding to the highest intensity at which blood lactate concentration remains stable, reflecting a balance between lactate production and removal. Once you have determined this threshold power, PowerAgent software will create training zones. Simply go to www.cycleops.com to learn more about your Threshold Power and discovering your training zones.

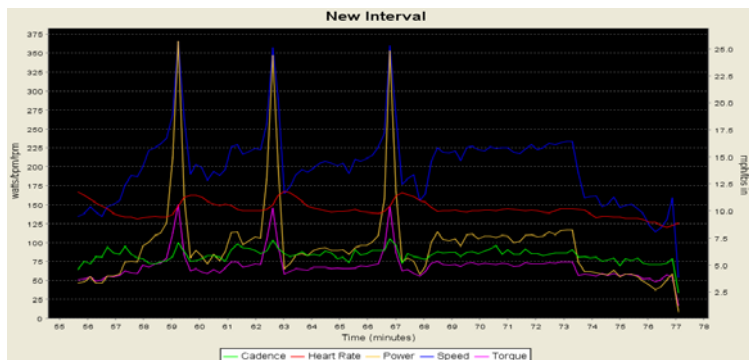
Using the CycleOps Power Training System, riders will accurately utilize the principles of training, by either progressively increasing the duration of time they can sustain their power zones or by progressively increasing the power sustained. The example below demonstrates a 10-week plan, gradually building strength and endurance of Zone 3, based on accurate power zone measurements. In this example, the rider's Zone 3 correlated to 200-225 watts. Each week, they would progressively overload with 3% more work (increase watts) than the previous week, incorporating 2 recovery weeks. To build endurance in Zone 3, the rider will progressively increase the duration of time they can sustain the workload by 10% weekly, incorporating 2 recovery weeks.

3% boost strength by increasing power 3% weekly		
test value	200	225
week	ZONE 3 Low	ZONE 3 High
1	200	225
2	206	232
3	212	239
4	219	246
5	194	218
6	212	239
7	219	246
8	225	253
9	232	261
10	206	232

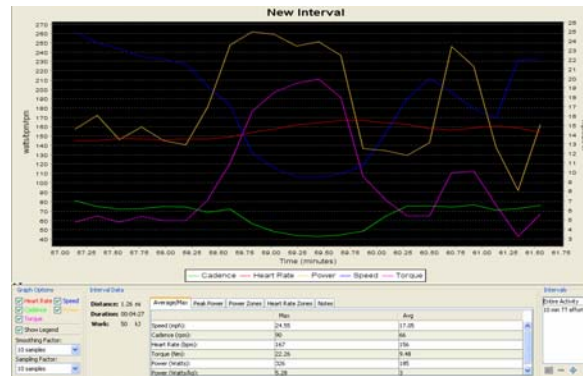
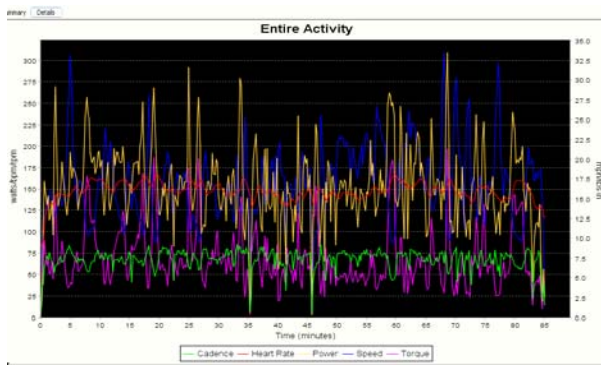
10%		10%	
Duration	14.00	Duration	3.00
week	week	week	week
1	14	1	3.0
2	15	2	3.3
3	17	3	3.6
4	19	4	4.0
5	-13	5	-2.7
6	17	6	3.6
7	19	7	4.0
8	20	8	4.4
9	23	9	4.8
10	15	10	3.3

Whether this individual is a competitive cyclist, fitness enthusiast or a weight loss client, their body will respond to the training by being able to perform the work for longer durations of time and being able to perform higher workloads. This equals speed for the competitive cyclist, higher caloric expenditure for the weight loss client and strength/endurance for the fitness enthusiast. In all cases, they are fitter, faster and can go further with a revved up metabolism.

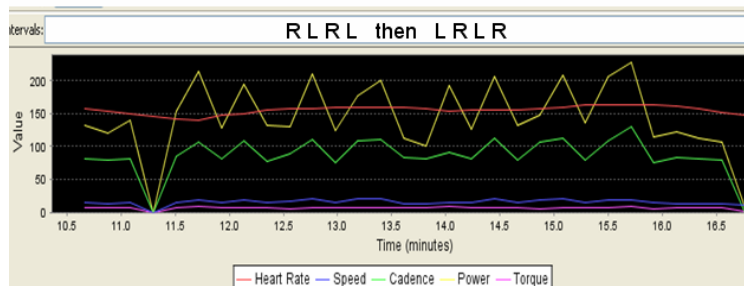
Not only is each person an individual, but there are specific demands on the body with regard to achieving very specific patterns of joint and muscle coordination. Some goals or events may require long distance, some may require short and explosive bursts of energy and some may require the ability to climb like a mountain goat. Using CycleOps Power technology, an individual can easily incorporate these specific training loads to ensure specific responses and adaptations. This is known as the principles of specificity. Some examples in the fitness world could include a power lifter, needing to train the muscle fiber coordination and recruitment to achieve that immediate quick snap from their lower body. A cyclist needing to launch a sprint would need to achieve similar goals. In these two cases, each individual would perform a power test measuring their all out maximum power. Their training would incorporate progressively increasing that power output, over time. Without the power measurement, the individual would not know if that quick snap power is in fact increasing. Performing their training on the CycleOps 300PT Indoor Cycle or the PowerTap wheel immediately gives feedback during their training session and tracks their progress. It is like having a personal trainer that constantly sits on your handlebars, motivating you to do the work.



Another example of specificity would include riding an event course using a PowerTap wheel and training the demands of that course in a variety of workouts. After riding the actual course, you can download the ride file, reflecting the individual demands of the course. The rider will then focus on specific weaknesses on the course, and train them based on the demands. The graphs below show the entire activity and then the highlighted spanker climb data of the demands made on a rider. By highlighting these demands, the rider can now recreate the load progressively increase their strength and endurance over time. This will assist them in conquering that climb on event day.



Specificity can include measuring the imbalance in left/right leg performance. By performing sessions of interchanging right leg pedaling and left leg pedaling, a pattern of each leg's performance can demonstrate strengths and weaknesses. This would give the individual the opportunity to perform specific training, to ensure a balance on both legs. Note in the graph below, the individual's right leg shows a consistent pattern of measuring higher power output than the left leg. It is clear that there is an imbalance and a specific training goal to correct the weakness needs to be incorporated.



Variety in training also prevents boredom, offering creativity and fun for the rider. Which brings us to perhaps the most important principle of training.....involvement. There is no such thing as a magic wand and a quick fix to overall fitness. It requires the individual or athlete to enjoy the activity and want to participate for a lifetime, not just for a few weeks. Overall fitness requires a long-term commitment and investment in you. By becoming actively involved in the process, the individual is more likely to stay motivated. Research supports that continually achieving short term goals is the surest way to inspire lifetime achievements. The CycleOps 300PT Indoor Cycle or the PowerTap wheel provides the opportunity to keep a coach or trainer involved in the process. Also, by measuring and seeing your progression daily, you become accountable for your success.

Now.....you can apply all of the training principles on equipment that offers a full range of body geometry and biometric workout feedback, in the comfort of your own home, office or local gym, with the CycleOps Pro 300PT Indoor Cycle or by using a PowerTap and a CycleOps Trainer. Training on the Indoor Cycle or Trainer allows you to train before or after work, before the kids wake up or when they go to bed, during your favorite TV show, during a torrential rain storm or even as a group at the local training center. No need to worry about traffic or road hazards and no need to wear layers of clothing. You can focus totally on your training goals. Simply plan your work and work your plan by measuring your power.