

Gearing up for winter training

Equipment can make all the difference in the off-season

BY CHARLES HOWE

A year ago at this time, the need to maintain a ‘consistent core’ of aerobic fitness during the off-season was discussed here, while last month’s issue gave some guidelines for cold-weather apparel. No matter how complete your cold-weather cycling wardrobe is, however, Northeast Ohio winters inevitably limit outdoor riding opportunities, making some type of indoor trainer a necessity.

A range of choices

Stationary resistance devices may be divided into two categories: 1) stands on which your present bicycle is mounted that apply a load to the rear tire, or to the chain after the rear wheel has been removed; and 2) “stand alone” units (such as a Spinning bike) that do not require a bicycle.

Compact training stands are lightweight, portable, easily stored, less expensive as a general rule, and offer only basic features. Adequately realistic resistance can be generated by several different load generators as described shortly, but whichever type of unit you choose, the most important feature is a flywheel massive enough to simulate the inertial load of road cycling. Without this to smooth out each stroke, pedaling becomes choppy, and – often to the surprise of those who train with powermeters – it is difficult or impossible to maintain the same levels of power output as outdoors.

1. air: sometimes derisively referred to as “squirrel cages,” wind turbines were used by the first indoor bike stand (TurboTrainer by Racermate) in the early 1980s, and they are not-so-fondly recalled for also generating a high level of noise. One of the few air-resistance units remaining on the market today is the Kinetic Cyclone (\$225); it has the advantage of being very simple (the bearings of the roller shaft that meets the tire are the only moving parts) and reliable.
2. magnetic eddy current: smooth, reliable, and quieter than air resistance units, mag trainers began to come out in the mid-1980s. Among the first was the Blackburn TrakStand, and it’s still being made, with fairly minor changes, at an affordable price (\$140).
3. friction: centrifugal clutch units appeared on the scene next, with even quieter performance than mag trainers. Leading models are the 1up USA CPR A-2000 (\$329) and Blackburn TrakStand Ultra (\$300).
4. fluid: early models generated extreme heat and suffered from leaks as well as a choppy feel, but the design seems to have matured, especially in the form of the Kinetic Road Machine (\$370, with 6 lb. flywheel), and Pro (\$500, 18 lb. flywheel). Other models of the same type are the Blackburn TrakStand Fluid and the CycleOps JetFluid Pro.

Heavyweight training stands boast added stability and more sophisticated control of the resistance applied, as well as other features, such as ergometer mode, or “erg” setting, which maintains a constant workload. That is, when cadence drops, resistive torque increases, and vice-versa, such that the product of the two – power output – remains constant. This feature allows you to “set and forget” a specific power level, and ensures that an unvarying intensity is maintained. What can make the erg more difficult for some is that the load is relentless. You either ride at the set load or you stop; you can’t ease off for more than a moment or so.

1. Velodyne (\$2,895) – more than 20 years since being introduced, this unit remains the *non pariel* of training stands; it is consistent and precise enough for lab use, while realistically replicating the actual demands of road cycling with a 22 lb. flywheel and an electrically-controlled brake. It can be programmed with distance/elevation data from actual courses, and will simulate drafting (though not headwinds or tailwinds).
2. Computrainer Pro 3D (\$1,650) – a fairly standard mag training stand, but with electronic braking, computer/video interface, Nintendo-like graphics, programmable courses, and analysis software options. Reliable and long in production, the power calibration in early models was suspect, but is now +/-2.5%, according to manufacturer claims.

3. Velotron (\$6,300 - \$8,000) – also uses electronically-controlled magnetic-eddy resistance and interactive Windows PC software, but with a massive (55 lb.), large diameter flywheel. Since it has a fixed-ratio chain drive (i.e., single speed), shifting is electronic with “virtual” gearing. The manufacturer claims lab-grade accuracy, the widest load range of any commercially available electronic ergometer, high durability/low maintenance, and an authentic road feel. Its low starting power of only 5 Watts also makes it suitable for cardiac and orthopedic rehab applications. The Elite model includes a standard bike frame for specific individual usage.
4. Cateye CS-1000 – discontinued in 2004 after being in production for more than 10 years, this model was very reliable, smooth, realistic, and surprisingly quiet, given that it uniquely combined both magnetic and air resistance. The power calibration was poor (it typically read at least 25% high), there was no erg mode, and the computer display features were unexceptional, but the mag unit had nine settings (meant to simulate road gradient) that allowed resistance to be fine-tuned. Keep an eye on the second-hand market and you just might pick one up for a song; spare parts are still available from the manufacturer.

Stand-alone trainers are heavy, stationary devices, but have massive flywheels and therefore plenty of inertial resistance. They are usually accurately calibrated and may have an ergometer mode. Look for models like the CycleOps Pro 300PT (\$2000), LeMond Revmaster (\$1,200-\$1,600).

Keep your cool ...

Due to the lack of a headwind in the neighborhood of 20-30 mph during indoor training, every attempt possible should be made to minimize thermal stress during indoor training sessions. This means using a powerful fan, keeping the room cool (at least under 70° F, and ideally below 65°), and staying hydrated. Look for high-velocity “air circulator” models that move at least 2000 cubic feet per minute, such as from Holmes, Honeywell, Lakewood, Patton, Air King, and Vornado. Direct the air flow at your head and upper body, but position the fan to the side, so it does not blow directly in to your eyes.

... and don't forget ...

...one last piece of equipment: a special tire designed for trainer use, such as the Continental Ultra Sport (trainer model). According to manufacturer claims, its special cold-running tread compound attenuates heat buildup, which in turn prevents the casing separation that occurs in a normal road tire during trainer use, and it is claimed to be much quieter as well (not suitable for on-road use).

Or just use an old tire with too much wear for road use.

Product links

1 Up USA and Continental Trainer Tire – <http://1upusa.com>
Blackburn – <http://blackburndesign.com/trainers.html> and <http://trakstandultra.com>
Cateye CS-1000 and spare parts – http://cateye.com/en/product_detail/278
http://cateye.com/store/parts.php?cid=4_36
Computrainer and Velotron – <http://racermateinc.com>
CycleOps – <http://cycleops.com>
Kinetic – <http://kurtkinetic.com>
LeMond Revmaster – <http://lemondfitness.com>
Velodyne – <http://velodynesports.com>
Fans – <http://dmartstores.com/fans.html> and <http://vornado.com>

Special thanks to Andrew Coggan, Ph.D. for his contribution to the article.