

the **CrossFit** JOURNAL ARTICLES

What is an Erg?

Judy Geer



You may have noticed that the Concept2 indoor rower is often referred to as an “erg,” and if you’ve listened to any on-water rowers talk about it, they probably call our machine “the erg” all the time. CrossFitters have been rowing long and hard, and last month, for the first time ever; “Row 2k” was the [Workout of the Day](#). So, it’s time to bring you into the inner circle. You’ve earned it. Call it the erg.

The literal definition of ergometer is “a device that measures work,” and this offers some insight into the intentions of Peter and Dick Dreissigacker, the founders of Concept2, as they developed their first commercial rowing machine. They wanted to offer an effective, realistic training tool for on-water rowers, especially for use during the winter months. It was important to them that the device be able to accurately measure work output and

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performance, so that rowers could measure their speed and distance as if they were on the water and track their progress—and so they could compare their own times across different machines and also compete with other rowers.

When the Dreissigacker brothers were developing their ergometer, the only other option available to rowing programs was a large, unwieldy, and prohibitively expensive machine used primarily for testing rowers. It was considered more of a torture device than a training tool. The Concept2 ergometer was a welcome improvement. It was priced right and easy to use, so rowing programs could purchase enough of them for training purposes, not just testing. It also quickly gained popularity for home use among both rowers and general fitness enthusiasts. (For a brief history of Concept2's development, see the company's [Timeline](#) web page.)

In 1981, when Concept2's Model A was released, it was the first wind-resistance rowing machine to use a bicycle wheel for the flywheel, with extra weight welded on to provide the right amount of momentum to simulate the feel of on-water rowing. It was simple, but it worked. Bicycle technology was also used for our first Performance Monitor, which was in fact a bicycle speedometer. The Performance Monitor has come a long way since then, but even this early version allowed athletes to get a time or score for their workouts. Indeed, the first [C.R.A.S.H.-B.](#) indoor rowing race was held the next winter (1982), inspired by the new ergometer. Participants raced a distance of 6 miles on the speedometer.

The original Performance Monitor had several weaknesses regarding accurate work measurement. It did not take ambient conditions such as altitude and barometric pressure into account, and it did not have the ability to calculate and display actual work output. It showed only the speed and distance covered, which didn't correlate well with on-water performance. In 1986, Concept2 developed its first electronic Performance Monitor (the PMI), which was introduced along with the second generation of the erg (the Model B).

The Performance Monitor brought several key improvements in the erg's ability to measure work. The monitor calculates the actual power dissipated by the flywheel, which it then uses to calculate pace, power output, calories, etc. To ensure that this calculation is accurate, the factory calibrates the moment of inertia of every flywheel to within .01 percent before it becomes



part of an erg. On every run-down of the flywheel the monitor measures the speed of rotation and uses it to re-calibrate itself. This corrects for changes and differences in pressure, temperature, damper settings and other conditions; essentially self-calibrating so that scores can be compared worldwide!

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These may seem like small changes, but they are critical. They make it possible to get an accurate score from the rowing machine, which can be compared to someone else's score or to your own score from a previous attempt. They are what make our indoor rower truly an ergometer. These features are important to competitive on-water rowers, and they are important to CrossFitters, who thrive on measurable efforts and results and want to leave no weakness untested.

Each successive generation of erg has become smoother and more comfortable, just as each generation of Performance Monitor has offered additional features and capabilities. (For more information on the various models offered over the years, see the [Concept2.com](#) page [Which Model Do You Have?](#)) The new Concept2 indoor rowers on the market are our fourth- and fifth-generation ergs (Model D and Model E) with our third- and fourth-generation Performance Monitors (PM3 and PM4). Rowers now can choose among various units for data presentation (time, meters, watts, calories, etc.), interface with heart-rate monitors, set up interval workouts, store favorite workouts, link rowers together for racing, and connect with computers.

It's rare to find an exercise machine that accurately measures your output. Most are simple revolution counters. Many that do actually measure output in some way are not self-calibrating, and thus scores cannot truly be compared from one machine to another. The Concept2 erg stands apart, and with it the sport of indoor rowing that it makes possible. Just as the CrossFit WODs need to be measurable and comparable, so the online rowing community thrives on maintaining personal log books and log cards and having access to online ranking databases and community challenges. This is all made possible by the ability to accurately and consistently measure work capacity and output.

The next time you use the indoor rower, you can call it the erg. Or, if halfway through a 2000-meter effort, there are other, less savory things you want to call it, that's OK too.



Damper Settings

The Performance Monitor's measurements and calculations take damper setting into account, so it doesn't matter what setting you choose. Your score will still be comparable to any other score. So, you should use whichever damper setting feels best to you and gets you the best score. The harder part is determining what that setting is for you, because it means doing a series of 2000-meter tests to find your best performance. Most experienced rowers achieve their personal bests at damper settings in the range of 3 to 5, so this is a good place to start. Lower damper settings require more quickness and rapid turnover. If you've been rowing at a higher setting, you'll want to practice at the lower setting for a few workouts before attempting a 2k test.

For more information, see Peter Dreissigacker's *CrossFit Journal* article "[Indoor Rowing: Damper Settings and Intensity.](#)"

Judy Geer was a member of three U.S. Olympic rowing teams (1976, 1980, 1984). She placed sixth in both 1976 and 1984; 1980 was the boycott year.) Since then, she and her husband Dick Dreissigacker (also an Olympic rower and co-founder, with Peter Dreissigacker, of [Concept2 Rowing](#)) have raised three children who are national-level competitive athletes in their own right. Judy continues to train and race in sculling, running, Nordic skiing, and biathlon.