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What is Your Power IQ?

Angela Hart

Rowing, obviously, is a speed sport. The rowers who complete 2000 meters in the fastest time take home gold medals. When you train on an indoor rowing machine, speed is critical, but power output is equally important. Assessing speed and power combined gives a more complete picture of the athlete than measuring speed alone.

In CrossFit workouts, we often have participants of varying sizes competing against each other for space on the white board. Obviously, having a larger mass is beneficial and enables the athlete to pull faster times, cover more meters, and burn a greater number of calories. (This is one of the reasons that on-the-water rowing competitions divide athletes into lightweight and heavyweight categories.) To make results as comparable as possible—and as meaningful as possible in terms of power output and intensity—we can calculate each participant's power ratio, which is the total wattage he or she generates divided by body weight (in pounds):

Athlete A	Athlete B
male; 6'3"	*female; 5'6"*
body weight = 209 lbs.	*body weight = 128 lbs.*
total watts for 500m = 546	*total watts for 500m = 340*
time for 500m = 1:26.2	*time for 500m = 1:41.0*
power ratio = 2.61	*power ratio = 2.66*

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Based on these results, both participants performed well and were able to pull all of their own body mass (which would yield a power ratio of 1.0) plus at least another 160% of their weight. Looking at the power ratios more closely reveals that, although athlete B had a slower time, she was actually 5% more powerful than athlete A. This example compares participants of different genders and dramatically different sizes. What if you were comparing participants that were more physically similar?

Athlete C	Athlete D
female; 5'6"	*female; 5'8"*
body weight = 129 lbs.	*body weight = 141 lbs.*
total watts for 500m = 303	*total watts for 500m = 329*
time for 500m = 1:44.8	*time for 500m = 1:42.1*
power ratio = 2.35	*power ratio = 2.33*

Athlete D rowed 500 meters in a faster time and would have racked up a few more calories, but athlete C was 2% more powerful. If this were purely a speed competition, the athlete with the fastest time would win, but the one with the higher power ratio is actually stronger and more powerful—the kind of performance CrossFit is most concerned with developing.

In addition to measuring speed, knowing who is stronger pound for pound is an important determining factor for performance success. In all my years as a coach for national championship crews, I observed that gold medals were won by crews in which every athlete was able to pull a power ratio of 1.75 or higher for 2000 meters. Nothing could prove this fact more dramatically than watching a lightweight team (with slower 2k times) substantially outperform a heavyweight team (with much faster 2k times).

What does this mean? For CrossFit workouts that involve rowing, I argue that we should use power ratio as a point value instead of, or in addition to, calories—in workouts such as "Fight Gone Bad," for example. This would measure the parameter that we're most interested in, and it holds all the athletes accountable to an equivalent standard. Likewise, in addition to scoring the time for 1000 meters for "Jackie," it would be beneficial to determine each participant's power ratio for the 1000 meter distance as an additional performance marker. (It is important to note that the total wattage will decrease as the distance or time increases.)

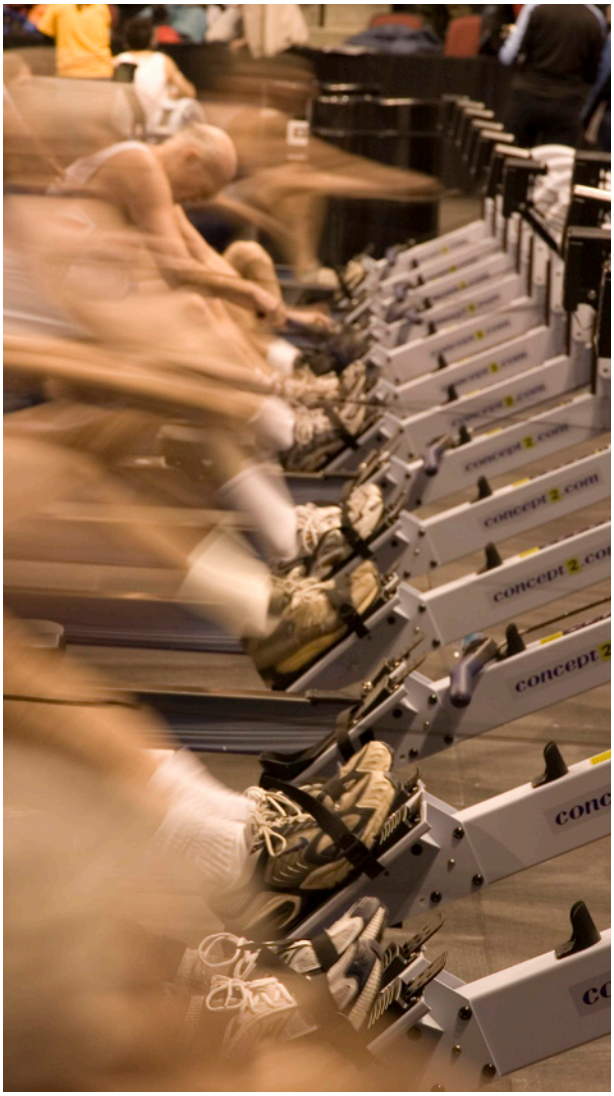
As trainers, it is critical that we train our athletes to pull their own body mass (1.0 power ratio). For the fit and lean, this will not be difficult and will be possible even for rows of thirty minutes or more at aerobic-range heart

Add 10% of body weight each interval	Add 20% of body weight each interval
20 seconds at 150 watts	20 seconds at 150 watts
10 seconds rowing lightly for rest	10 seconds rowing lightly for rest
20 seconds at 165 watts	20 seconds at 180 watts
10 seconds rowing lightly for rest	10 seconds rowing lightly for rest
20 seconds at 180 watts	20 seconds at 210 watts
10 seconds rowing lightly for rest	10 seconds rowing lightly for rest
20 seconds at 195 watts	20 seconds at 240 watts
10 seconds rowing lightly for rest	10 seconds rowing lightly for rest
20 seconds at 210 watts	20 seconds at 270 watts
10 seconds rowing lightly for rest	10 seconds rowing lightly for rest
20 seconds at 225 watts	20 seconds at 300 watts
10 seconds rowing lightly for rest	10 seconds rowing lightly for rest
20 seconds at 240 watts	20 seconds at 330 watts
10 seconds rowing lightly for rest	10 seconds rowing lightly for rest
20 seconds at 255 watts	20 seconds at 360 watts
10 seconds rowing lightly for rest	10 seconds rowing lightly for rest

rates. (It is important to note that the total wattage will decrease as the distance or time increases.) For many of our participants, especially the unfit or elderly, being able to pull one's own weight even over thirty seconds will prove to be challenging. A great workout would be to row Tabata intervals (20 seconds on / 10 seconds rest) for eight intervals, with the first 20 seconds of output at bodyweight wattage. Depending on the abilities of your participants, each 20 seconds would add 10%, 20%, or whatever percentage will create the best training response for each participant. For example, a participant weighing 150 pounds could complete one of the workouts shown in Table 1 (or add an even higher percentage of body weight at each interval).

When rowing, even for the fastest time or maximum wattage, always strive for proper technique to maximize performance. Use your body mass to your advantage by learning to suspend or "hang" your mass between feet and handle during the drive, or work, phase of each stroke. This is achieved with a powerful, explosive, and well-connected leg drive at the start of each stroke that blends seamlessly into a powerful opening of the hip that engages the muscles of the trunk and ends with an equally powerful arm pull toward the torso. The handle and seat must move together during the drive.

Determine your power ratio over a variety of distances and times, while making it a priority to improve your power ratio along with increasing your endurance and muscular strength, honing rowing efficiency, maintaining proper technique, and improving body composition or percentage of lean (muscular) tissue to fat. Know your power ratios over various distance and time domains and continually work to increase them.



Angela Hart is the director of the Indoor Rowing Training and Certification Institute and a Master Rowing Trainer for Concept2 Rowing. A competitive rower since 1982, she has coached at the scholastic, collegiate, and master levels. In 1999, she coached a junior national women's team, and she was a rowing sports specialist during the 1996 Olympic Games. She conducts training and certification workshops on the rowing machine and teaches group rowing classes in the Washington DC area. In addition to having completed the basic CrossFit instructor training, she is an ACE-certified personal trainer and rowing educator, an AFAA-certified group fitness instructor, a US Rowing level-3 coach, and a 200-hour registered yoga teacher with the Yoga Alliance. She can be contacted at angela.irtci@verizon.net.

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