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Understanding Health & Fitness Education Series 2e

Like METS, Heart Rate, Talking Test, and RPEs, Watts is used to judge exercise intensity. Using Watts is also great way to understand and develop HIIT programs.

Watts is one of several numbers found on an exercise bike or elliptical or other cardio machine display. It changes all the time, and you might not realize what you are doing or not doing to make it change. Some see it change when you increase the intensity through speed or level. But what does that number even mean, and is it important to your workout? Anyone that owns a Peloton know how important it is. Most of the Peloton rides are based on this number.

Observing your watts gives you immediate and quantifiable feedback regarding the intensity of your workout. Some feel it is better to use than heart rate when determining exercise intensity. Because heart rates can be affected by outside factors such as fatigue, sleep, hydration, and illness. Watts is a real-time value, not influenced by outside factors. You can even use it to set up workouts like interval training. You can also use it to determine calories used. Energy (kCal or calories) = Av Power (Watts) x Duration (hours) x 3.6.

Watts is a measurement of the power you are producing. It is how much energy is needed to overcome inertia and make things go, like pedaling your bike, climbing stairs, powering the elliptical or even running on a treadmill. Simply speaking, the more power you are producing, the harder you are working.

Watts can also help exercisers stay motivated by having them maintain a target workload. This can help build endurance, speed, strength, and improve overall performance. Watts are widely used among cyclists because they allow them to train smarter by pacing their efforts. Instead of starting out too fast and fatiguing early, cyclists can monitor their watts input to stay within a target zone during their workout.

In simpler terms, watts measure how hard you work. One horse, for example, can produce 746 watts. One super human, like six-time Tour de France stage winner Andre Greipel, can create a charge of 1,900 watts in a single sprint. Most pro cyclists produce about 200 to 300 watts on average during a four-hour tour stage. The recreational rider, on the other hand, might be only able to sustain 100 to 150 watts.

The challenging part about watts is understanding what watts means to you. Because one's individual number is very subjective—meaning it derives from a combination of bodyweight, leg strength and overall fitness—there's no clear-cut answer. Example 2 people both can sustain 150 watts on an indoor bike for a hour. You would think they would be the same outdoors. Except person 1 is 30 lbs. lighter therefore when riding outside and elevation changes weight becomes impactful so person 1, the lighter of the two, should be able to go faster. That is why some coaches compare watts to body weight to describe someone's fitness relative to others.

Another way to compare yourself overtime and to develop training programs, like HIIT, is to find your functional threshold power (FTP). Functional Threshold Power (FTP) represents your ability to sustain the highest possible power output over 20 minutes, depending on whether you're a trained athlete or not. Why measure FTP? Regular assessments of your FTP give you an indication of whether you are improving. Plus, FTP provides information that you can use to develop training programs. See below. *It is suggested that you *use 95% of the 20 minute average power to determine FTP when developing programs.*

Moderate workout with intervals using FTP ie max WATTS over 20 minutes

Duration: 60 min

- Warm-up: 10 min (Start with easy pace sprinkled with a few 30secs to 1-minute sprints to get the heart rate up and body prepped)
- Main Set: 40:00
 - Do this set twice:
 - 4 min at 100% of your FTP
 - 1 min recover
 - 3 min at 110% of your FTP
 - 2 min recover
 - 2 min at 120% of your FTP
 - 3 min recover
 - 1 min at 130-140% of your FTP
 - 4 min recover
- Cool down: 10 min (Easy 80-100% FTP followed by stretching)

Intense workout with intervals using FTP ie WATTS

- Duration: 30 min
- Warm-up: 10 min (Start with easy pace sprinkled with a few 30secs to 1-minute sprints to get the heart rate up and body prepped)
- Main Set: 20:00
 - 4 min at 110% of your FTP
 - 1 min recover
 - 3 min at 120% of your FTP
 - 2 min recover
 - 2 min at 130-140% of your FTP
 - 3 min recover
 - 1 min at 150% of your FTP
 - 4 min recover
- Cool down: 10 min (Easy 80-100% FTP followed by stretching)

MORE DETAILS

According to Cycling Magazine another way to determine how you stack up is to find your maximum power output. Maximum power output is the amount of power that can be produced in relation to bodyweight — power-to-weight ratio — usually expressed in watts per kilogram. To work out your power-to-weight ratio figure, simply divide your maximum power output (in watts) by your body mass in kilograms (kg). For example, an 80kg rider with a maximum sustainable power output of 280 watts has a power-to-weight ratio of 3.5 watts per kilo (commonly abbreviated as 3.5W/kg or 3.5W.kg-1). Power-to-weight ratio matters because it's a great predictor of performance. Take two cyclists: Cyclist A can sustain a maximum power output of 250W while Cyclist B can only manage 225W. On a perfectly flat, smooth indoor track (where gravity is not an issue) we can confidently predict that A will be faster than B. On an undulating road, however, power-to-weight begins to matter more. If both cyclists weigh 80kg, A will still be faster. But if A weighs 80kg and B weighs 68kg, cyclist A's power-to-weight ratio is 3.13W/kg, while B's is 3.31W/kg. On a flat road, there might not be much in it, but head into the hills and it is cyclist B who will be pulling away. According to cycle magazine a good power to weight ratio are found in the table below determine that value for 5, 20, or 60 minutes rides.

How good is a good power-to-weight ratio?

Table: Typical power-to-weight ratios for different level cyclists

| Rider type | 5 mins | 20 mins | 1 hour |
|--------------|--------|---------|--------|
| Professional | 7.0 | 6.1 | 6.0 |
| Amateur | 3.7 | 3.3 | 3.0 |
| Recreational | 2.5 | 2.1 | 1.8 |

