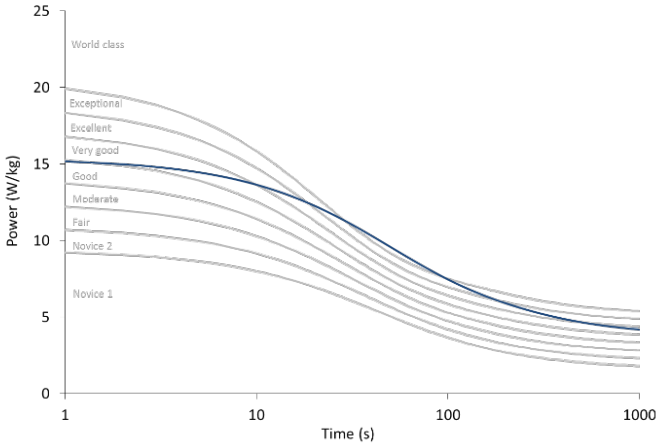
Glossary of new terms used in WKO 4

There are many new charts and graphs that are related to left and right power data. This is a relatively new area of data collection by power meters and continues to advance on a regular basis. This page will be updated as new metrics come out and we learn more! To start out with, there are some new terms that you need to know before you can start to analyze and understand the charts in WKO4.

Power Duration Science

Power Duration Model (curve): The PD model is a mathematical model that takes into account all the data from an athlete and uses that model to ***provide insight*** into the ***unique physiology of that athlete*** allowing a more comprehensive insight into the correct training needed. This is displayed in a curve format at the WORKOUT or ATHLETE level in WKO4.



Pmax: The maximal power that can be generated for a very short period of time. Units are W or W/kg. The maximum power over at least a full pedal revolution with both legs.

Functional Reserve Capacity (FRC): The total amount of *work* that can be done during continuous exercise above FTP before fatigue occurs. Units are kJ or J/kg.

Approximate Standards for FRC

MEN	WOMEN
9.0 to 35.1 kj	6.2 to 24.2 kj
Average is 18.2 kj	Average is 13.2 kj
Standard Deviation of 4.7 kj	Standard Deviation of 4.0 kj
High > 22.9 kj	High > 17.2 kj
Medium 13.5 – 22.9 kj	Medium 9.2 – 17.2 kj
Low <13.5 kj	Low <9.2 kj

Functional Threshold Power (FTP): The highest power a rider can maintain in a quasi-steady-state w/o fatiguing. When power exceeds FTP, fatigue will occur much sooner, whereas power just below FTP can be maintained much longer

sFTP: The user defined and set FTP in WKO4. sFTP is the base calculation for all TSS and PMC metrics.

mFTP: This is the estimated / modeled FTP supplied by the Power Duration Model in WKO4. The mFTP is not directly linked to TSS or PMC metrics and is a guide to help you better establish your sFTP.

Ramp Rate: This is the ramp rate of your Chronic Training Load or CTL. The ramp rate, expressed in tss/day, shows daily rate of change (both positive or negative) that your CTL changes. You can change this by clicking on the actual word to adjust how many days you would like included in the ramp rate. We recommend 7 days to start with.

On-Going Ramp Rate

Training Age	CTL <100 Ramp Rate (14–28 Days)	CTL >100 Ramp Rate (14-28 Days)
5 Years +	7 – 10 tss/day	5-7 tss/day
3-5 Years	5-8 tss/day	3-6 tss/day
1-3 Years	4-7 tss/day	3-5 tss/day
< 1 Year	3-5 tss/day	3-4 tss/day

Short Term Ramp Rate

Training Age	CTL <100 Ramp Rate (7 Days)	CTL >100 Ramp Rate (7 Days)
5 Years +	14 – 20 tss/day	10-14 tss/day
3-5 Years	10-16 tss/day	6-12 tss/day
1-3 Years	8-14 tss/day	6-12 tss/day
< 1 Year	6-10 tss/day	6-8 tss/day

Phenotype

Rider Phenotype: The composite of a riders observable physiological characteristics and power individualities such as peak power, time to exhaustion and functional threshold power, expressed by grouping like individuals of similar traits.

In WKO4, cyclist (soon runners and swimmers?) can be divided into four general "phenotypes";

1. **Sprinter** - Excellent ability to produce force on the pedals for a very short period of time, lasting for less than 30 seconds. Can be "explosive" with incredible peak wattage in the first 5 seconds. Or someone that might be more of a "diesel" sprinter that can maintain a very high wattage for up to 20-30 seconds.

2. **Pursuiter** – Modest maximal power, but high resistance to fatigue during supra-FTP exercise. Typically can produce 120%+ of their FTP wattage for 5 minutes, which is above the upper limit for the Coggan Classic Levels for Level 5(Vo2max).

3. **All-rounder** – A fairly even blend of abilities. They might have a very good sprint (5-15 seconds) and also can time trial well for an hour with a high FTP. These riders perform well in nearly all events, not great in a single one, but always a threat to win. One important thing to remember about all-arounders is that they also have the ability to "change" phenotypes depending on the focus of their training. An all-arounder could spend a year working on their "pursuit" and become a "pursuiter" and then the next year spend it working on their climbing and now become a "time trial/steady stater". This is very common among all-arounders.

4. **TT / Steady State** – Moderate to high FTP, but poor neuromuscular. These riders can sustain their power output for a long time (greater than 30 minutes) and also exhibit excellent endurance for many hours. These riders are excellent in stage races, long rides, time trialing, climbing and in any event that requires a long, hard sustained effort.

Pedaling

Gross Power Released (GPR): This is the power that contributes to moving the bicycle forward. There is both positive and negative power in each pedal stroke by each leg. So for example, GPR left will represent the positive power released by the left leg.

Gross Power Absorbed (GPA): This is the power that does NOT contribute to moving the bicycle forward. This is the power being absorbed for one reason or another in each pedal stroke. So, for example, GPA right represents the negative power absorbed by the right leg.

Average Effective Pedaling Force (AEPF): This is the average pedaling force applied to the pedal that causes the crank to turn around a complete revolution and contributes to effectively moving the bike forward. This is calculated as:
AEPF=(P x 60) / (C x 2 x pi x CL)
P=Power, C=Cadence, CL=Crank Length
While this is not a new metric, there is now the ability to calculate AEPF separately for this the left and right legs if you use a power meter that reports "balance".

Circumferential Pedal Velocity: How fast the pedal moves around the circle it makes while pedaling. This is calculated by:
CPV=(C x CL x 2 x Pi)/60

Maximum Effective Pedaling Force (MEPF): This is the maximum pedaling force applied to the pedal that causes the crank to turn around a complete revolution and contributes to effectively moving the bike forward. This is also can be separated out by left and right legs and is the max force you can produce for a single pedal stroke.

Kurtotic index (KI): The ratio of the maximum effective pedal force to the average effective pedal force during the power-producing phase of the pedal stroke. A typical value for KI is ~4, but can vary depending upon power output, cadence, seated vs. standing, etc.