# An alternative to CP20 and ramp testing for approximating your FTP and setting training levels.

The best way to find your FTP, defined as the maximum power you can produce in a pseudo steady state ride of 60 minutes duration, is to do a steady state ride for an hour. That’s easier to do on the turbo than it is on the road, however, both will produce quite a bit of fatigue and potentially mess up your training programme.

Historically, if that’s the correct expression for the way it was done 35 years ago, coaches would have used a lab. based ramp test, either linear, like the King Cycle used by British Cycling, or a step ramp test, where the athlete rides at a near steady state power for each ramp interval, and the power is increased in a step at the end of each ramp interval. FTP is approximated by taking a percentage of the average power for the final minute of the test, known as the Maximal Aerobic Power or MAP for short, usually 70 percent of the MAP number. I was never quite sure why it was called maximal aerobic power as in the final minute the athlete is decidedly anaerobic. This style of test, going to the athlete’s absolute limit, can be even more fatiguing than the 60-minute test.

More recently coaches have started using a 20-minute test, known as the CP20, Critical Power 20-minute test. In this test the athlete follows a specific warm up routine and then rides for 20 minutes at their maximum sustainable power. FTP is calculated as 95 percent of the 20-minute average power.

I have found that pacing the 20-minute test can be quite tricky, so I have devised an alternative 20-minute test that is a combination of a step ramp test and the 20-minute test.

Most people have a pretty good idea of what their CP20 power number should be, within a margin of five percent either way, so we use that number to set the power levels in the stepped 20-minute test. I run the first five-minute step at 92.5 percent of the estimated CP20, the next at 97.5 percent, the next at 102.5 percent and the next at 107.5 percent.

So how is this better than a conventional CP20?

If FTP is 95 percent of the CP20 power, then 92.5 percent is slightly lower than FTP. This five-minutes should be easy to accomplish. The heart rate will probably be a little below what would be an “normal” functional threshold heart rate. It can be seen as the final part of the warm-up.

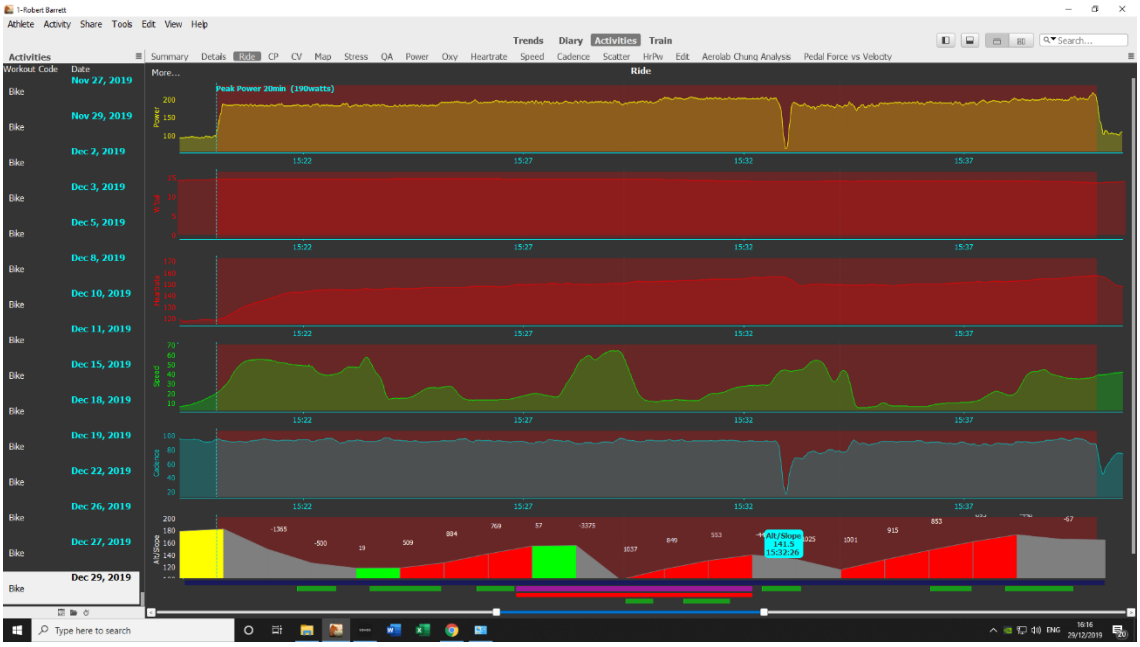
Moving on to the 97.5 percent, this is above nominal FTP but below the CP20 power. The heart rate should go up a little but stabilize after the first two or three minutes.

Now we come to the 102.5 percent section. Again, heart rate should go up a little. If it goes up a little and stabilizes after two or three minutes, then you can say you are doing well. If it continues to climb and you start to feel the lactate build up in your legs, then you can start to think that you are now at a power level above your CP20 power. In some cases, you will actually need to back-off or stop the test at this point if the starting assumption about CP20 power has been too high.

If we get to the 107.5 percent section and heart rate stabilizes after two or three minutes, then you can start to think that the initial assumption about CP20 power was too low. More often that not you will find that this a tough five minutes and struggle to finish it. You can always stop this test short as you have enough data to get a good estimate of your CP20 power and calculate FTP as 95 percent of that number.

I did one of these on the 29th December, in my TT position, as my end of year test ….




You can see that at the start of the test it took around two minutes for my heart rate to get to around 95 percent of my functional threshold heart rate (which is around 155 +/- 2).

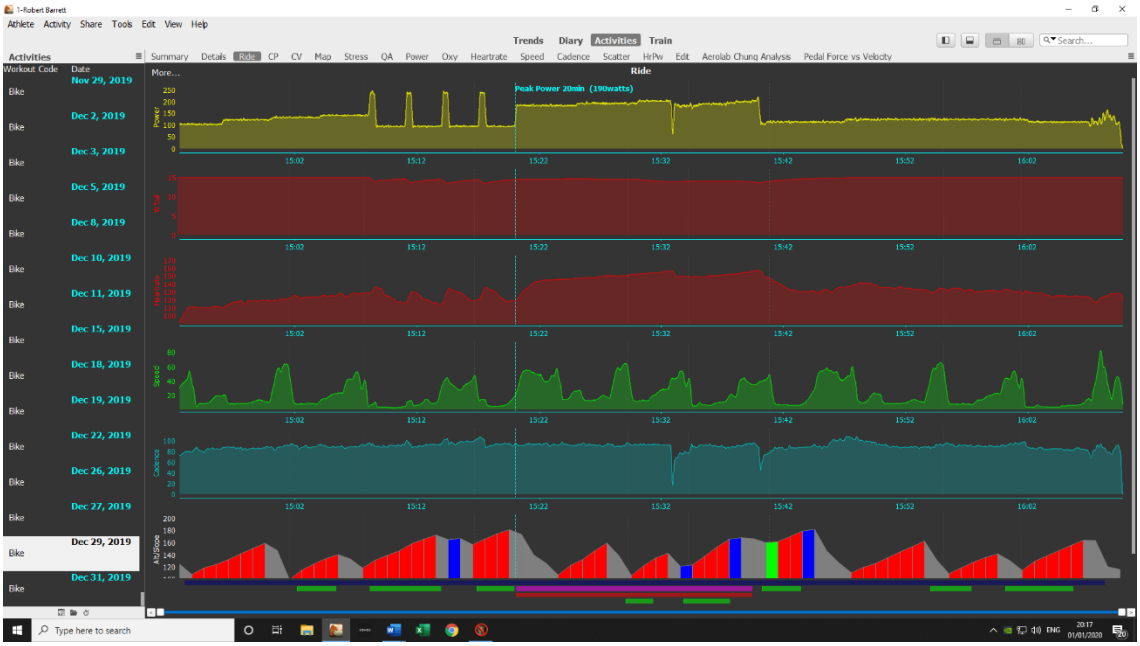
You can also see, from the power curve, that I got to just short of 3 minutes into the 205-watt interval of the test before I blew up (!)

I was able to continue the workout after around 15/20 seconds of recovery, and after backing off the power demand by 10 percent. I was using a Neo turbo with an ERG workout in Zwift.

Once you have a better estimate of your CP20 you can reduce the size of the steps to 95/97.5/102.5/105 or start higher using 97.5/100/102.5/105.

This is the full session profile with the warm-up and cool down.




Although I went to the max in this test it was for a very short time and didn’t built up any significant fatigue. I was able to do an hour of sweat spot after one rest day.

Obviously, my power numbers and functional threshold heart rate look a bit low compared to most, however, my FTHR is the same as it was 20 years ago, and my power is 30 percent greater than it was 10 years ago, so I can’t complain.

Next page: Zwift workout file

```
<workout_file>
        <author>Robert Barrett (via TrainingPeaks)</author>
        <name>Warm up with stepped CP20</name>
        <description>Stepped CP2- test</description>
        <sportType>bike</sportType>
        <tags/>
        <workout>
                <SteadyState Duration="240" Power="0.55">
                </SteadyState>
                <SteadyState Duration="240" Power="0.65">
                </SteadyState>
                <SteadyState Duration="240" Power="0.7">
                </SteadyState>
                <SteadyState Duration="240" Power="0.75">
                </SteadyState>
                <IntervalsT Repeat="4" OnDuration="30" OnPower="1.25" OffDuration="150" OffPower="0.5">
                </IntervalsT>
                <SteadyState Duration="300" Power="0.925">
                </SteadyState>
                <SteadyState Duration="300" Power="0.975">
                </SteadyState>
                <SteadyState Duration="300" Power="1.025">
                </SteadyState>
                <SteadyState Duration="300" Power="1.075">
                </SteadyState>
                <SteadyState Duration="420" Power="0.55">
                </SteadyState>
                <SteadyState Duration="1200" Power="0.6">
                </SteadyState>
        </workout>
</workout_file>
```