

Newton vs. Stages Power Measurement

Velocomp

April 2013

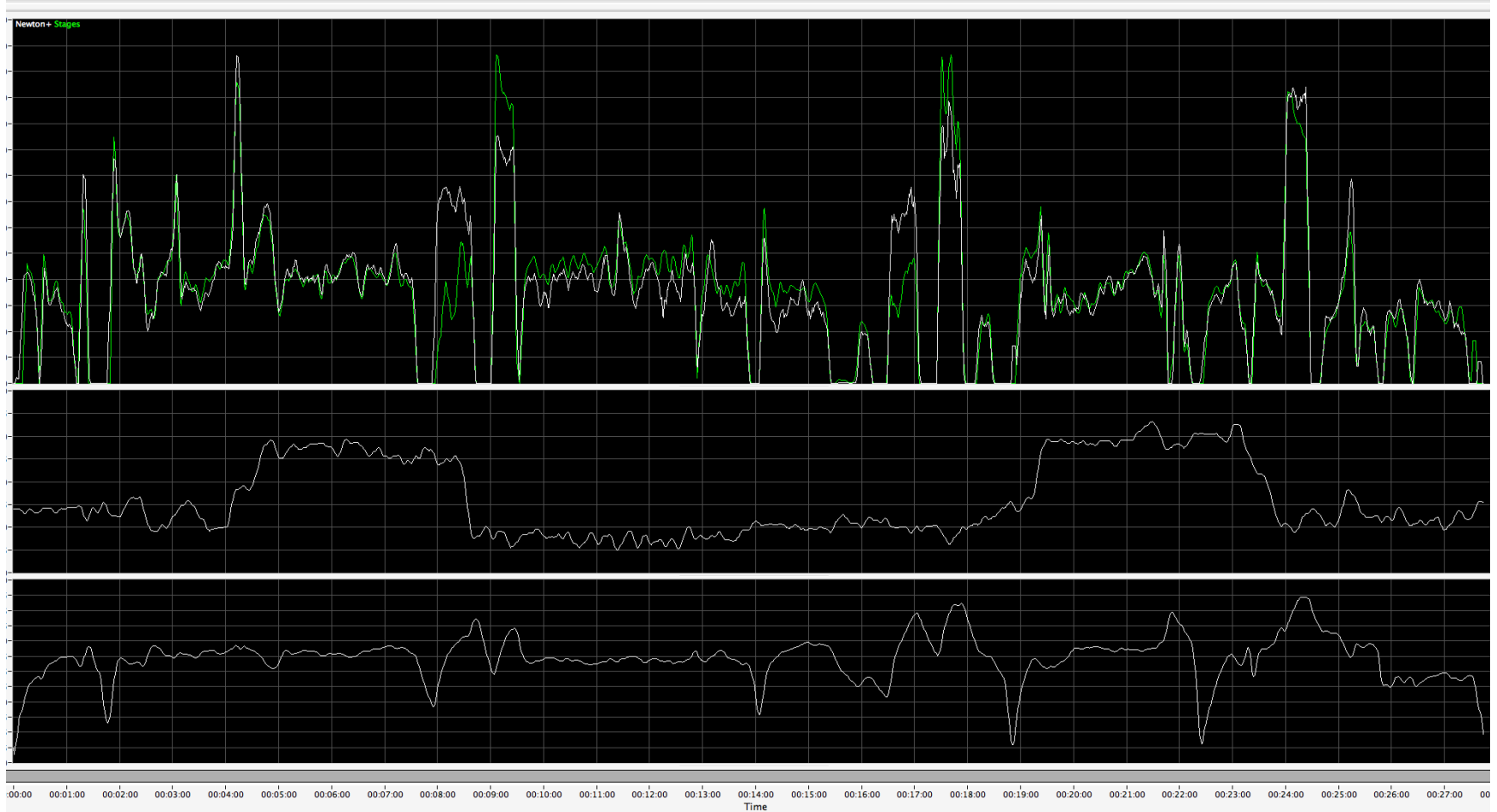
Introduction

- The Newton measures the total power output of a cyclist, irrespective of left/right leg strength, over the complete turn of each crank stroke
- During each crank stroke, the Stages power sensor only measures the left leg power. *Stages does not measure the right leg's power output.*
- Stages assumes the right leg and left leg produce exactly the same amount of power.
- So, Stages multiplies its left leg power by 2.0.
- Stages claims +/- 2% accuracy (**left leg only**).

Test ride with Newton and Stages

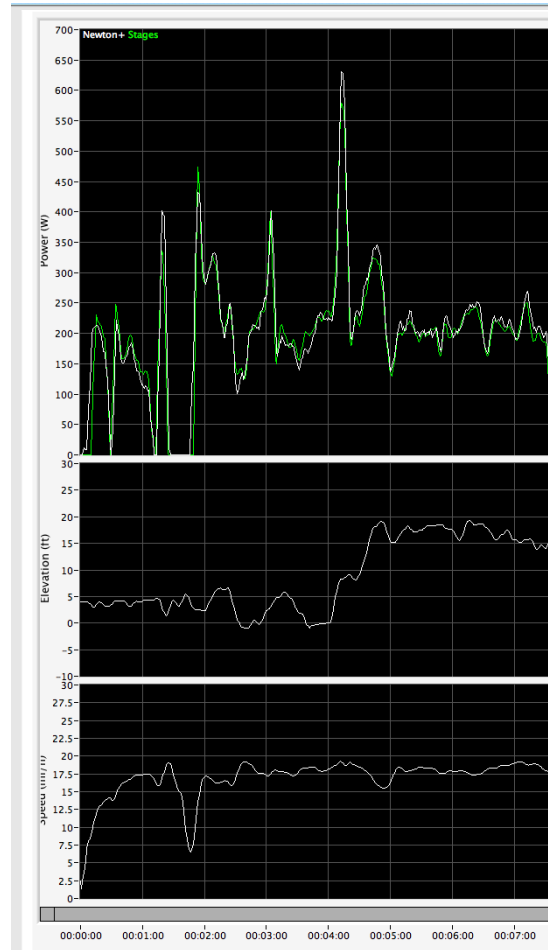
- To assess the overall accuracy of the Stages, a ride was done where the rider varied levels of left/right leg emphasis
- Some portions of the ride were “natural”, and some portions emphasized more left, or right, leg power
- Second-by-second data for both power meters was recorded simultaneously by the iBike Newton
- This ride was 28 minutes long

Complete, 28 minute ride



Newton is white; Stages is green

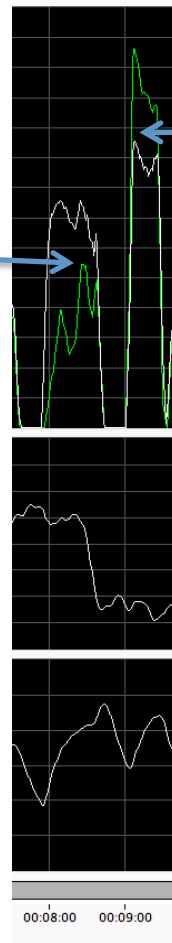
“Normal” pedaling, first 7 minutes



Stages and Newton are acceptably close

Right, then left leg emphasis

Right leg emphasis.
Newton: 306W
Stages: 147W
Stages reads 52% low

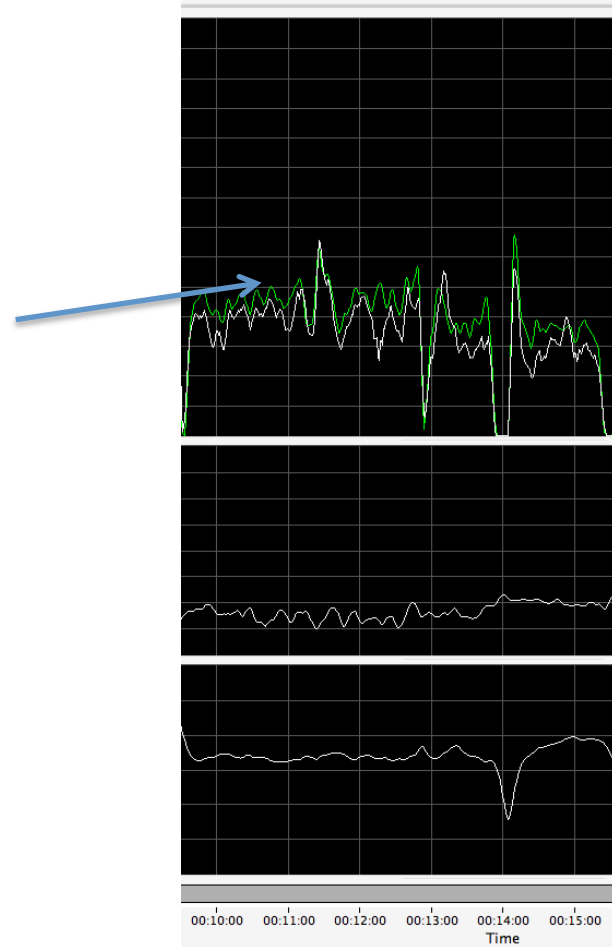


Left Leg emphasis.
Newton: 376W
Stages: 459W
Stages reads 22% high

Newton, white. Stages, green

Return to “normal” pedaling after left/ right interval drills

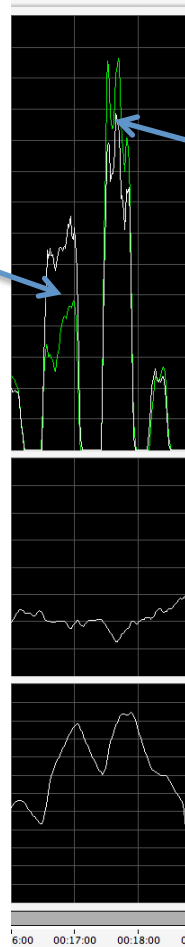
Stages: 192W
Newton: 166W
Stages is 16% high



The cyclist's legs did not return to the assumed 50/50 power balance

Another set of right/left intervals

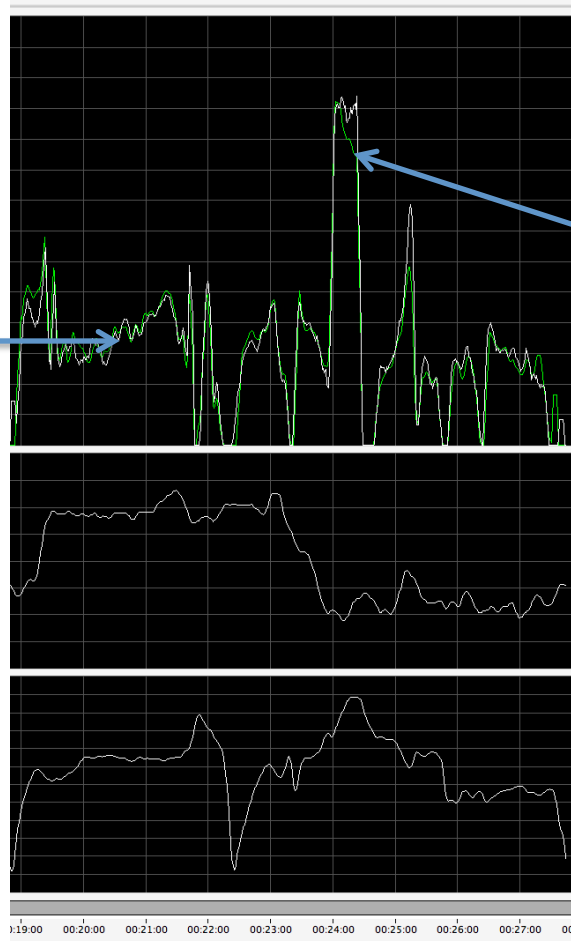
Right leg emphasis.
Newton: 234W
Stages: 137W
Stages reads 29% low



Left Leg emphasis.
Newton: 339W
Stages: 406W
Stages reads 21% high

Return again to normal riding

Stages and Newton close.



Stages doesn't report the constant power output of the rider in this interval.

Findings

- In this ride, Stages read as much as 52% low and 22% high
- Stages actual accuracy varied throughout the ride, *in an unknowable manner*
- Stages actual accuracy can never be determined, because the rider's left/right balance shifts within a ride and between rides
- Riders can't compare their Stages measurements, due to left/right problems