

Training with Power Essentials

The point of training with power is that it gives a measurable quantity to effort and duration of training efforts. It can be used to establish a baseline of fitness, plan for training progression and allow for adequate adaptation and recovery. Monitoring just heart rate does not reflect just your fitness as it will be affected by factors such as hydration, temperature, stress etc.. Heart rate is still a useful metric though as it is still a piece of the overall puzzle.

Speed and power can also be used to give an estimation of aerodynamic drag, which is so important for maximising bike performance in time trial/triathlon situations.

There are numerous metrics that can be quantified for training purposes. Some of these, such as blood lactate, are harder to measure than others.

For the purposes of multi-sport training for the athlete who doesn't have a team of sports scientists behind them, we've simplified power training to cover the following key metrics.

FTP-Functional Threshold Power

The highest power an athlete can maintain without fatiguing for around an hour. This is a key figure which every athlete should know. This can be used for planning training intensity, tracking progression and pacing during races. This will change depending on the training load and should be re-tested each month. A standard method for determining FTP is to do a 20 minute maximum effort. This needs to be done in conditions that are easily replicable i.e turbo is easier than trying to do it on the road.

NP-Normalised power

A smoothed out 30 second average power taking into account that real world cycling can be highly variable, e.g freewheeling downhill, cornering etc.. For running, Normalised Graded Pace takes into account hills.

Variability index

Some rides are more variable than others. A flat time trial may have a very steady average power which would be similar to the Normalised Power. A more sporadic effort in a mountain bike race would mean a greater difference of Normalised Power to Average Power hence a greater Variability Index. NP divided by Average Power.

IF-Intensity Factor

A numerical representation of how hard your workout is relative to your threshold. NP divided by FTP. E.g 182 watts NP/ 220 watts FTP= 0.83 IF. A workout longer than 1 hour should have an IF of less than 1.

TSS-Training Stress Score

A score assigned to a workout denoting how stressful it was. Calculated from IF and duration.

ATL-Acute Training Load

Cumulative Stress over the last 7 days. Estimation of fatigue.

CTL-Chronic Training Load

Exponentially weighted average over the last 42 days of training.

TSB-Training Stress Balance

Subtract ATL from CTL to give TSB or form. Fitness-Fatigue=Form.

EF-Efficiency Factor

NP/Heart Rate= efficiency factor. Useful as a measure of greater efficiency over time, not a single workout. Tracks output compared to input.