The 4x8

high intensity interval

A brief practical guide

by Martin Bonnevie-Svendsen
B.Sc., M.Sc., Dr.Med.

wattkg.com

With the exception of the referenced literature the following content is to be considered anecdotal. You should never blindly adopt this or any other training strategy without first considering your individual fitness and health. In no way does the content of this document constitute medical advice, nor does it replace such advice. Regarding concerns related to your health you should always consult professional medical personell.

Edition 1.3
Oslo 2019

The 4x8 High-Intensity Interval

The 4x8 minute high-intensity interval session is described in detail in a 2013 paper published in the Scandinavian Journal of Medicine and Science in Sports by Seiler and colleagues (1).

The authors report a 16% lift in threshold power and 10% improvement in VO2 max following seven weeks of two weekly 4x8 sessions in recreational cyclists (including additional low-intensity training).

This pdf provides my pragmatic experiences with the 4x8 interval session.

The workout

The workout in question consists of four bouts of 8 minute intervals, separated by 2 minute recovery periods.

The interval intensity

In the original paper by Seiler et al the cyclists were instructed to perform the 8 minute intervals at «maximal effort».

With this they eventually achieved an intensity of 90% of maximal heart rate during sessions.

Average blood lactate values taken after the 3rd and 4th interval was 10 mmol/L.

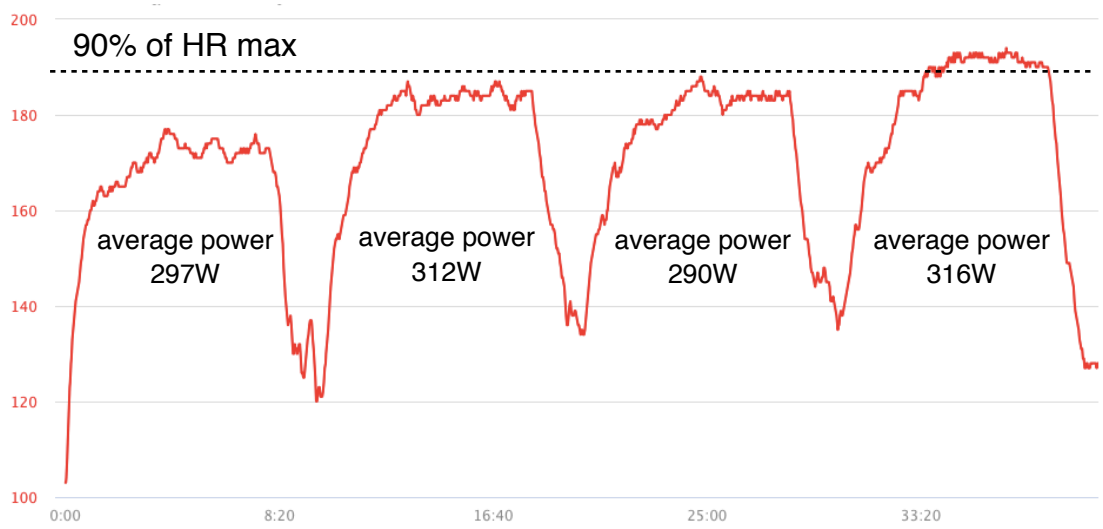
In my experience, this interval session will often be performed at power values correlating to 102-107% of FTP.

The lower end of this range will usually result in a somewhat «gentle» high-intensity session, whereas the upper range is considerably more brutal.

A well executed session will usually bring you close to a heart rate of 90% of your HR max.

The graphic below illustrates the build-up of heart rate throughout a 4x8 min session of mine. This particular session was not aimed at any specific power value, as I let my legs decide the intensity. Despite a somewhat varying power output, in my book this was a fairly well executed workout.

You will notice that I don't approach 90% of maximal heart rate until the final half of the 2nd interval. Only on the 4th interval do I actually cross the 90% mark (I could have perhaps pushed harder during the third interval).



The above graphic illustrates a point often overlooked by inexperienced athletes. Heart rate displays a delayed respons to your actual work intensity (power and perceived effort).

Not seldom, this results in inexperienced riders overshooting the intensity for the initial interval bouts in an attempt to hit the recommended heart rate zone immediately.

This will only kill the session, as you tend to explode half-way throughout your intervals, not being able to maintain your power output or heart rate for the final half of the session.

A note on pacing

Personally, I prefer controlling my interval intensity with a combination of *feeling* and power data. I also look quickly at my heart rate values during the session, but I nearly always let feeling and power take precedence (usually in that order).

Much can be said on the topic of interval pacing. However, for the majority of amateurs I would suggest it's pointless to complicate this matter unnecessarily.

Most riders should, with some trial and error, be able to quite successfully pace their intervals by feeling alone. Although heart rate monitors and power meters are indeed useful, you shouldn't necessarily need them in order to perform a great interval session.

How to perform the workout

Below is a general description of how I prefer to perform the 4x8 session. This approach can easily be modified and/or adopted to alternative workouts.

Warm up

Warm up for 15-20 minutes, including 2-3 minutes at close to your intended interval pace. Allow an additional few minutes at low intensity before you begin your first interval.

Interval 1

The only mistake you can do off the line is starting out too hard. Allow yourself 3-4 minutes with a slight «safety margin» to find the correct intensity. It's always easier to increase the power after a slow start than slowing down after opening too optimistic. You should be steadily in control of your intensity at the 4 minute mark, and know that you could have pushed harder had you needed to. You should be able to complete the first 8 minute interval without too much discomfort.

Interval 2

If you hit the correct intensity, you will now feel that keeping the same power output and cadence requires a bit more effort. Sometimes, you might even feel that you are keeping the same intensity, when you in fact end up achieving higher power outputs during interval 2 (legs now properly warmed up). You should start to feel your heart rate and respiratory rate increasing, and your efforts gradually taking it's toll on your legs towards the final four minutes. Ideally, you are still in control with a slight margin to spare when you finish this one.

Interval 3

This is the interval when you need to start talking sternly to yourself. 2-3 minutes into this one you will be cursing your watch for not running faster. Talk of any safety margin to sustain your average power is now gone. You are able to maintain your average power, but it's costing you. Heart rate is climbing further in the second half of this interval.

Interval 4

“Where did my recovery period go?”

You are still able to keep your average power, and hold back ever so slightly during the initial 4 minutes. At the 4 minute mark, you put the hammer down. Counting down the next 60 seconds simply to survive and just being able to maintain your average power, or possibly even increase it slightly (depending on *how* hard you planned the session to be). Heart rate peaks during the final half of this interval, and you are barely hanging on until you finally hit the 8 minute mark.

Additional comments

A really brutal and well-timed execution to the point of complete fatigue could include your heart rate and power to start declining with 1-2 minutes left of the final interval. However, I would suggest this is in no way necessary for the workout to have great effect.

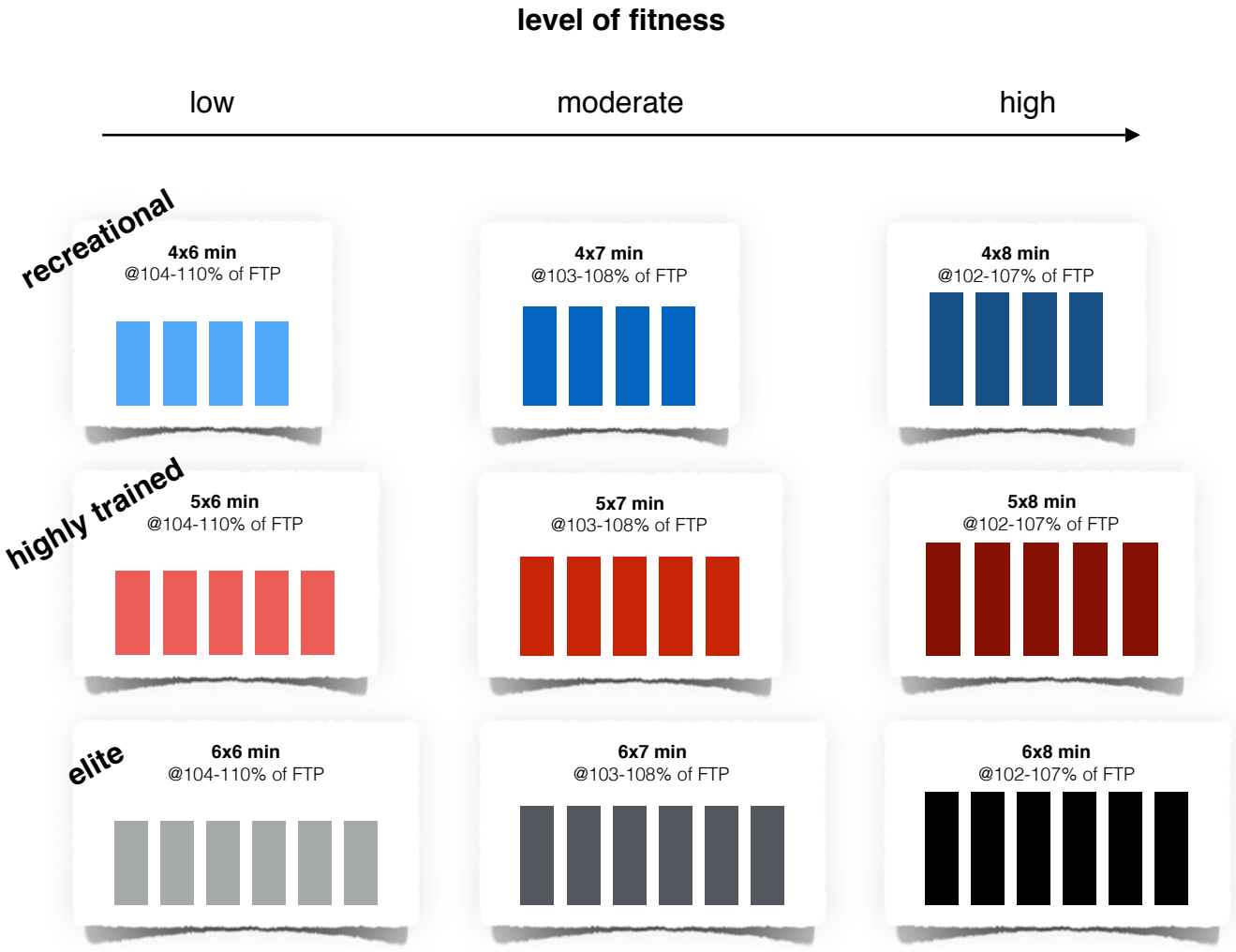
Should you notice that your heart rate and average power drops *before* the final 2 min of this interval, despite your best efforts, you probably started out too hard.

Alternative long-interval variations

The 4x8 min interval in the study of Seiler et al was performed by recreational riders (mean VO2 max 52 ml/kg/min).

For optimal training adaptation to occur, I would suggest this interval format should be modified to suit the performance level of the cyclist.

Below are a few suggested formats with experience based approximate FTP-values. Please keep in mind, these are suggested workouts only. You would do wise in considering you usual duration-of-effort when planning your intervals. And ALWAYS adjust duration and intensity according to how you respond.



Best of luck with your long intervals!

- Martin

References:

1. Seiler S et al. Adaptations to aerobic interval training: Interactive effects of exercise intensity and total work duration. Scandinavian Journal of Medicine and Science in Sports, 2013;23:74-83

https://www.ncbi.nlm.nih.gov/pubmed/21812820