

# Review of: "Sustained Muscle EMG Activity to Contractile Failure During Incremental Exercise and Intense Constant Load Cycling: No Evidence of a Central Governor"

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Potential competing interests: No potential competing interests to declare.

## Manuscript review; Sustained Muscle EMG Activity to Contractile Failure During

### Incremental Exercise and Intense Constant Load Cycling:

#### No Evidence of a Central Governor

**General comments:** This is an interesting study examining if the central governor model limits motor unit activation during diverse bouts of exhaustive cycling. Surface EMG was obtained from trained adults completing a ramp test and subsequent bouts at POs greater than VT. Results showed continued increases in EMG data during the last 30 s of all bouts, suggesting that no 'governor' exists to limit motor unit recruitment during intense exercise.

**Specific comments:** Please consider my feedback below regarding this work—thank you.

Abstract: There is reference to critical power trials, yet this term is not introduced above, making this text a little confusing. Please reword this and perhaps refer to them as 'constant load' trials.

Introduction: This section is well written—my only feedback is to add brief text at the end, commenting on how this study is novel and what it adds to dogma, as you reported a lot of previous data in this section which seems to suggest that the CGM is not present during exhaustive exercise.

Methods: I appreciate the sample size estimation, yet can you please denote here the outcome(s) for which this calculation was performed?

What is the rationale for including only 2 women? Were they all pre-menopausal? Women may be less prone to fatigue than men and may have a slightly more type I fiber type, which may lead to unique responses to these exercise bouts.

Why is the last 30 s of data used, i.e., what is the rationale for this particular duration? Why not a 45 or 60 s duration, as I assume that the minimum exercise duration of these bouts is ~ 2 min (the 160% bout)?

Electrode placement: Were anatomical landmarks used to place these electrodes on various muscle groups? Was this standardized within and across participants? What Hz was used during this measure?

Was cadence constant during the constant load bouts? Anecdotally, motivated adults can frequently attempt to enhance pedal cadence to continue exercise and prevent premature fatigue. Please comment on this—thank you.

Results, Figure 1: The red data here are confusing to me—are these the raw data? If this is the case, please denote this in the Figure legend—thank you.

Please consider calculating and reporting some effect size measure such as Cohen's  $d$  to present the magnitude of differences in your data; thank you.

The Discussion is well written and does an effective job of evaluating these data.