Manuscript Clarification for "Methodological Flaws in Hingrand, C, Olivier, N, Combes, A, Bensaid, S, and Daussin, FN. Power Is More Relevant Than Ascensional Speed to Determine Me…

Article *in* The Journal of Strength and Conditioning Research · June 2024

DOI: 10.1519/JSC.0000000000004777

CITATIONS
0

READS
109

2 authors:

Arcadi Margarit Boscà
University of Valencia
12 PUBLICATIONS **0** CITATIONS
SEE PROFILE

Diego Jaén Carrillo
University of Innsbruck
65 PUBLICATIONS **418** CITATIONS
SEE PROFILE

the Journal of Strength and Conditioning Research™

Manuscript Clarification for "Methodological Flaws in Hingrand, C, Olivier, N, Combes, A, Bensaid, S, and Daussin, FN. Power Is More Relevant Than Ascensional Speed to Determine Metabolic Demand at Different Gradient Slopes During Running. J Strength Cond Res 37: 2298–2301, 2023"

Arcadi Margarit-Boscá,[1] and Diego Jaén-Carrillo[2]

[1]Universidad a Distancia de Madrid, Madrid, Spain [2]Department of Sport Science, University of Innsbruck, Innsbruck, Austria

Request for Clarification:

Hingrand et al. (4) conducted a study comparing data from 3 incremental treadmill tests: 1 at +1% gradient (IT01), 1 at +10% gradient (IT10), and 1 at +25% gradient (IT25). The main goal was to determine whether ascent speed or power better reflects the metabolic cost of running on different inclines. However, the protocol and results raise questions that could lead to misinterpretations:

Data Recording: The power meter (Stryd power meter; Stryd Inc., Boulder, CO) allows 2 recording methods: the mobile application provided by the brand or a sports watch connected to the power meter (2). For indoor treadmill running, the mobile application is needed to correct the incline and obtain consistent power data. Unfortunately, the published research lacks a description of the procedure for obtaining such data. Will the authors please clarify the exact methods used to record power with the Stryd power meter?

Protocols for $\dot{V}O_2$max and Maximum Ascent Speed: The maximum ascent speed in an incremental protocol may be influenced by the incline percentage, potentially underestimating speeds with inclines below 25% (1). Tests for trail runners with fixed 25% inclines have been proposed (3). Comparing ascent speeds or physiological data at the same speeds on 10 and 25% inclines might lead to misinterpretations. Additionally, the durations of IT01, IT10, and IT25 varied, potentially affecting the interpretation of cardiometabolic values (5). Could the authors clarify how the range of inclines affects metabolic data?

Running Power Data: Although the study suggests a correlation between oxygen consumption and power regardless of incline, focusing on uphill inclines reveals potential practical differences. Despite no significant $\dot{V}O_2$max differences between IT10 and IT25 and a strong correlation between $\dot{V}O_2$max and maximum power, there might be a practical difference. For instance, a 30-W difference for the same metabolic intensity could be too high a margin for accurately prescribing intensity based on power and oxygen consumption. Could the authors share their perspective on whether these differences could have practical implications?

Data Comparison: The study claims "greater metabolic and power values on a 25% slope vs. a 10% slope at the same absolute ascent speed." However, the data suggests the opposite, with "the same absolute ascent speed (i.e., 1000 $m \cdot h^{-1}$)" resulting in higher oxygen consumption and power values in IT10. This discrepancy could be attributed to the inadequacy of comparing different intensity markers with ascent speed between +10% and +25% slope gradients. Could this statement be clarified?

The authors of the study chose not to respond to Mr. Margarit-Boscá and Dr. Jaén-Carrillo at this time.

References

1. Cassirame J, Godin A, Chamoux M, Doucende G, Mourot L. Physiological implication of slope gradient during incremental running test. *Int J Environ Res Publ Health* 19: 12210, 2022.
2. Cerezuela-Espejo V, Hernández-Belmonte A, Courel-Ibáñez J, Conesa-Ros E, Mora-Rodríguez R, Pallarés JG. Are we ready to measure running power? Repeatability and concurrent validity of five commercial technologies. *Eur J Sport Sci* 21: 341–350, 2021.
3. Doucende G, Chamoux M, Defer T, Rissetto C, Mourot L, Cassirame J. Specific incremental test for aerobic fitness in trail running: IncremenTrail. *Sports* 10: 174, 2022.
4. Hingrand C, Olivier N, Combes A, Bensaid S, Daussin FN. Power is More relevant than ascensional speed to determine metabolic Demand at different gradient slopes during running. *J Strength Cond Res* 37: 2298–2301, 2023.
5. Yoon BK, Kravitz L, Robergs R. VO2max, protocol duration, and the VO2 plateau. *Med Sci Sports Exerc* 39: 1186–1192, 2007.