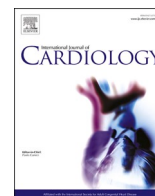




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## Letter to the Editor

## Exercise ventilatory inefficiency may be a relevant CPET-feature in COVID-19 survivors



## ARTICLE INFO

## Keywords

COVID-19  
 Cardiopulmonary exercise testing  
 Exercise ventilatory inefficiency  
 Heart rate recovery  
 Follow-up

## Dear Editor

We read with great interest the article by Clavario et al. [1] concerning the application of the cardiopulmonary exercise testing (CPET) in a large cohort of COVID-19 patients at 3 months follow-up. Reading CPET variables, we note that the authors do not report data about ventilatory limitation, although values of ventilatory equivalent for carbon dioxide ( $V_E/V_{CO_2}$ ), as described in the methods of the supplementary data, have been determined.

In our pilot study, in post-COVID subjects (6-months follow-up) in which we have excluded baseline confounders (age > 65 years, moderate obesity, chronic respiratory failure or need for oxygen-therapy under exertion, concomitant previous respiratory or non-respiratory diseases), we performed the CPET [2]. Although our 28 subjects had a normal lung function and a preserved maximal exercise capacity, we found that 8 subjects (29%) had exercise ventilatory inefficiency (E $V_{in}$ ), using the regression equation of  $V_E/V_{CO_2}$  slope for healthy subjects, according to Sun et al. [3]. Moreover, subjects with E $V_{in}$  showed a reduction of heart rate (HR) recovery and  $V_E/V_{CO_2}$  slope was inversely correlated with HR recovery. Therefore, we concluded that the exercise ventilatory inefficiency related to lower heart rate recovery may be a sign of systemic alterations present in the post-disease phase of these subjects.

We believe it may be interesting to have some data about the exercise ventilatory inefficiency in a different timing and in a larger cohort of post-COVID survivors, with also associated comorbidities.

## Declaration of Competing Interest

The authors report no relationships that could be construed as a

conflict of interest.

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<https://doi.org/10.1016/j.ijcard.2021.09.026>

Received 20 August 2021; Accepted 14 September 2021

Available online 17 September 2021

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