



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Contents lists available at ScienceDirect

## Heart &amp; Lung

journal homepage: [www.heartandlung.com](http://www.heartandlung.com)

## Authors response to: Comment on “Grip strength as a predictor of disease severity in hospitalized COVID-19 patients”

Letter to the editor,—We thank the author for the suggestions,<sup>1</sup> and our response would be as follows. Although this study was conducted only in Turkey,<sup>2</sup> grip strength measurement is associated with pulmonary/cognitive functions and is already accepted as a vital sign of the neuromusculoskeletal system (also a biomarker) all over the world.<sup>3,4</sup> In addition, COVID-19 infection is a pandemic that has affected the whole world. Therefore, we believe that our results may be applicable/extrapolated to other countries as well.

Although muscle mass was not measured, grip strength assessment is an important parameter in terms of “probable sarcopenia”, dynapenia and frailty.<sup>5</sup> Further, longitudinal studies have shown that grip strength (rather than muscle mass assessment) is related with adverse outcomes including falls, fractures and mortality.<sup>6,7</sup>

On the other hand, although grip strength is affected by acute infection and body structure, muscle mass measurements can also be affected by similar conditions. Nevertheless, measuring the most commonly affected muscle in sarcopenia (i.e. anterior thigh) may be valuable.<sup>5</sup> Herewith, since we did not have the opportunity to measure muscle mass with a portable ultrasound device under pandemic conditions, only grip strength - which is an easy/cheap measure with proven high clinical importance - was measured.

Although this study is not a follow-up study, we think that the baseline grip strength measurement (at hospital admission) can be important in predicting the patient’s initial health status and evaluating the relationship between hospital stay and disease activity. Additionally, Sajid S<sup>1</sup> also reported that there are other factors affecting grip strength. Indeed, but obesity was included in the analyzes instead of height, weight and body mass index due to collinearity. Of note, obesity is a well-known risk factor for COVID-19 infection as well.<sup>2</sup> Nevertheless, parameters such as hand size, upper arm circumference and occupation, social status and lifestyle could have also been included in the analyses. Finally, as stated by the author, the fact that grip strength was not measured in each patient at the same time of the day (although this was not technically possible in our study) can - for sure - be counted as another shortcoming.

### Conflict of interest

The authors declare no conflicts of interest.

### Acknowledgment

None.

### References

- 1 Sajid S. Comment on “Grip strength as a predictor of disease severity in hospitalized COVID-19 patients. *Heart Lung*. 2022;S0147-9563(22). <https://doi.org/10.1016/j.hrtlng.2022.08.020>. 00194-7(In Press).
- 2 Kara O, Kara M, Akin ME, Özçakar L. Grip strength as a predictor of disease severity in hospitalized COVID-19 patients. *Heart Lung*. 2021;50:743–747. <https://doi.org/10.1016/j.hrtlng.2021.06.005.3>.
- 3 Bohannon RW. Grip strength: an indispensable biomarker for older adults. *Clin Interv Aging*. 2019;14:1681–1691. <https://doi.org/10.2147/CIA.S194543>.
- 4 Ekiz T, Kara M, Özçakar L. Measuring grip strength in COVID-19: a simple way to predict overall frailty/impairment. *Heart Lung*. 2020;49:853–854. <https://doi.org/10.1016/j.hrtlng.2020.05.011>.
- 5 Kara M, Kaymak B, Frontera W, Ata AM, Ricci V, Ekiz T, et al. Diagnosing sarcopenia: functional perspectives and a new algorithm from the ISarcoPRM. *J Rehabil Med*. 2021;53. <https://doi.org/10.2340/16501977-2851>. jrm00209.
- 6 Lam FMH, Su Y, Lu ZH, Yu R, Leung JCS, Kwok TCY. Cumulative and incremental value of sarcopenia components on predicting adverse outcomes. *J Am Med Dir Assoc*. 2020;21:1481–1489. <https://doi.org/10.1016/j.jamda.2020.05.056.7>. e3.
- 7 Cawthon PM, Manini T, Patel SM, Newman A, Trivison T, Kiel DP, et al. Putative cut-points in sarcopenia components and incident adverse health outcomes: an SDOC analysis. *J Am Geriatr Soc*. 2020;68:1429–1437. <https://doi.org/10.1111/jgs.16517>.

Özgür Kara, MD<sup>a</sup>

Murat Kara, MD<sup>b,\*</sup>

Mustafa Emre Akin, MD<sup>c</sup>

Levent Özçakar, MD<sup>b</sup>

<sup>a</sup> Department of Internal Medicine, Dr. Abdurrahman Yurtaslan Oncology Training and Research Hospital, Yenimahalle, Ankara, Turkey

<sup>b</sup> Department of Physical and Rehabilitation Medicine, Hacettepe University Medical School, Ankara, Turkey

<sup>c</sup> Radiology Unit, Yenimahalle Training and Research Hospital, Yıldırım Beyazıt University, Ankara, Turkey

\*Corresponding author.

E-mail address: [karamurat@gmail.com](mailto:karamurat@gmail.com) (M. Kara).

Received 9 September 2022

Accepted 9 September 2022