



pISSN: 2037-7452 eISSN: 2037-7460
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Eur J Transl Myol 2024 [Online ahead of print]

To cite this Article:

Quadrelli M, Baccaglioni T, Morra A. **Quadrelli et al.'s comments on Cohort studies using 3D-CT are needed to assess whether "home Gym-Bed" exercises are beneficial against sarcopenia.** *Eur J Transl Myol* doi: 10.4081/ejtm.2024.13135

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Quadrelli et al.'s comments on Cohort studies using 3D-CT are needed to assess whether "home Gym-Bed" exercises are beneficial against sarcopenia

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Key words: Quantitative 3D-CT Imaging, sarcopenia mitigation in elderly, full-body in-bed gym.

We appreciate the thorough and insightful comments provided by Josef Finsterer regarding our study on the prevention of sarcopenia using the "Gym Bed" exercise regimen. We welcome the opportunity to address the points raised and to elaborate on the implications and limitations of our research.

Response to specific points

Influence of diet, sympathetic tone, genetics, and hormones on muscle mass

We acknowledge the multifactorial nature of muscle mass maintenance, encompassing diet composition, hormonal balance, genetic predisposition, and sympathetic tone. While our study primarily focused on the impact of a structured exercise regimen, we concur that future research should integrate these additional variables to provide a more comprehensive understanding. Our findings, though promising, are part of a broader strategy to address sarcopenia, and we recognize the importance of considering these factors in subsequent studies.

Consideration of comorbidities and medications

The absence of significant comorbidities and medications in our patient was a deliberate choice to isolate the effects of the exercise regimen. We agree that chronic conditions and concurrent medications can complicate muscle mass dynamics and should be accounted for in future research to validate and extend our findings across more diverse populations.

Standardization of imaging techniques

We appreciate the emphasis on methodological rigor in imaging procedures. Our study utilized consistent imaging parameters with the same 256-slice CT scanner and dose reduction technology across the study period. This standardization was critical for ensuring the reliability and comparability of our measurements, and we fully endorse this practice for future longitudinal studies.

Previous study on in-bed exercise

We are aware of the study involving 22 patients that reported no significant impact of in-bed exercises on sarcopenia.⁵ Our study contributes an in-depth, long-term perspective that complements existing literature. We agree that larger, randomized controlled trials are necessary to robustly assess the efficacy of the "Gym Bed" regimen. Our results, while encouraging, are preliminary and should be interpreted as a step towards a more comprehensive understanding of exercise-based interventions for sarcopenia.

Genetic predisposition and neuromuscular disorders

We concur that genetic factors and neuromuscular disorders can influence muscle wasting and may confound the diagnosis of sarcopenia. Our exclusion criteria were designed to minimize these confounding factors, yet we acknowledge the need for future studies to include genetic screening and a broader range of participants to better understand these influences.

Conclusions

We appreciate the opportunity to address these important points. Our study, while limited by its single-case design, provides valuable insights into the potential of non-pharmacological interventions like the "Gym Bed" regimen. We strongly support the call for larger, randomized, double-blind, placebo-controlled trials to conclusively determine the effectiveness of such interventions in preventing sarcopenia. Our work adds to the growing evidence that regular physical exercise is essential for maintaining muscle health in the elderly and serves as a preliminary results for future research.

Thank you for the opportunity to engage in this important discussion. We look forward to contributing further to the understanding and prevention of sarcopenia through continued research.

Acknowledgments

A&C M-C Foundation for Translational Myology, Padova, Italy and PAGEpress, Scientific Publications, Pavia, Italy sponsored publication of this reply.

Funding

The authors received no specific funding for this work.

Conflict of Interest

The authors declare no financial, personal, or other conflicts of interest.

Ethical Publication Statement

Not applicable.

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