

Elsevier Editorial System(tm) for JAMDA
Manuscript Draft

Manuscript Number:

Title: Sarcopenia in acute care patients: Protocol for the European
Collaboration of Geriatric Surveys: Sarcopenia EAMA9+ project

Article Type: Letter to the Editor

Keywords: Acute sarcopenia; hospitalized older patients; FRAIL; Global
Leadership Initiative on Malnutrition criteria; European collaboration;
European Academy for Medicine of Ageing

Corresponding Author: Dr. Dolores Sánchez-Rodríguez, MD PhD

Corresponding Author's Institution: Geriatrics. Rehabilitation Research
Group. Hospital del Mar Medical Research Institute (IMIM). Universitat
Autònoma. Universitat Pompeu Fabra. Barcelona, Spain. Dpt. of Public
Health, Epidemiology, and Health Economics, University of Liège. Liège,
Belgium

First Author: Dolores Sánchez-Rodríguez, MD PhD

Order of Authors: Dolores Sánchez-Rodríguez, MD PhD; Suzy Hope, MB ChB
PhD; Karolina Piotrowicz, MD PhD; Florence Benoit, MD; A Czesak, MD PhD;
Dhayana Dallmeier, MD PhD; Genia Decker; Anette Hansen Hojmann, MD PhD;
Dana Hrnčiarikova, MD PhD; Ester Marco, MD PhD; Delky Meza, MD; Murielle
Surquin, MD PhD; Miguel Toscano-Rico, MD PhD; Hana Vankova, MD PhD;
Davide L Vetrano, MD PhD; Jerzy Gasowski, MD PhD; Nele Van Den Noortgate,
MD PhD; Francesco Landi, MD PhD

Letter to the editor

Sarcopenia in acute care patients: Protocol for the European Collaboration of Geriatric Surveys: Sarcopenia 9+ EAMA project

Dolores Sanchez-Rodriguez* MD PhD¹⁻⁵; Suzy Hope* MBChB PhD^{6,7}; Karolina Piotrowicz* MD PhD^{8,9}; Florence Benoit MD¹⁰; A Czesak MD PhD^{8,9}; Dhayana Dallmeier MD PhD^{11,12}; Genia Decker¹¹⁻¹²; Anette Hansen Højmann MD PhD¹³; Dana Hrnčiarikova MD PhD¹⁴; Ester Marco MD PhD^{2,3,15,16}; Delky Meza MD^{2,4}; Murielle Surquin MD PhD¹⁰; Miguel Toscano-Rico MD^{17,18}; Hana Vankova MD PhD¹⁴; Davide L.Vetrano^{19,20}; Jerzy Gąsowski MD, PhD⁸; Nele Van Den Noortgate MD PhD²¹; Francesco Landi MD PhD²⁰

1. Geriatrics Department. Parc Salut Mar, Barcelona, Spain
2. Rehabilitation Research Group, Hospital del Mar Medical Research Institute (IMIM), Barcelona, Spain
3. School of Medicine, Universitat Autònoma de Barcelona, Spain
4. Department of Health Sciences, Universitat Pompeu Fabra, Barcelona, Spain
5. WHO Collaborating Center for Public Health Aspects of Muscle-Skeletal Health and Ageing. Research Unit in Public Health, Epidemiology and Health Economics. Department of Public Health, Epidemiology and Health Economics, University of Liège. CHU - Sart Tilman, Liège, Belgium.
6. University of Exeter Medical School, Exeter, United Kingdom
7. Healthcare for Older People Department, Royal Devon & Exeter NHS Foundation Trust, Exeter, UK
8. Faculty of Medicine. Department of Internal Medicine and Gerontology, Jagiellonian University, Krakow, Poland
9. University Hospital, Krakow, Poland
10. Geriatrics Department. CHU Brugmann, Université Libre de Bruxelles, Brussels, Belgium
11. Geriatric Center Ulm/Alb-Donau, Ulm University, Ulm, Germany
12. Agaplesion Bethesda Clinic Ulm, Ulm, Germany
13. Hospital of Slagelse. Region Sjaelland, Slagelse, Denmark

14. Charles University, Czech Republic
15. Physical Medicine and Rehabilitation Department, Parc de Salut, Barcelona, Spain
16. Universitat Internacional de Catalunya, Barcelona, Spain.
17. Nova Medical School, Lisbon, Portugal
18. Centro Hospitalar Lisboa Central, Hospital de Santa Marta, Portugal
19. Aging Research Center. Karolinska Institutet, Stockholm, Sweden
20. Department of Geriatrics, Neurosciences and Orthopedics, Catholic University of the Sacred Heart, Rome, Italy
21. Department of Geriatrics, Ghent University Hospital, Ghent, Belgium

***DSR, SH, and KP contributed equally to this work.**

Corresponding author: Dolores Sanchez-Rodriguez, MD PhD.

Geriatrics Department, Centro Fòrum – Hospital Del Mar, Parc Salut Mar
C/ Llull 410, 08019. Barcelona, Spain.
Tel: +34 93 248 8532 / +34 609 778 331
Email: dolores.sanchez@uliege.be

Funding source: This research did not receive any funding from agencies in the public, commercial, or not-for-profit sectors.

Word count of the main document: 598 words

Summary: Our study will determine the prevalence, incidence, risk factors, and clinical outcomes of acute sarcopenia according to the revised European consensus on definition and diagnosis (EWGSOP2).

1 **Research letter**

2 **Sarcopenia in acute care patients: Protocol for the European Collaboration of Geriatric**
3 **Surveys: Sarcopenia EAMA9+ project**

4 *To the Editor:*

5 Sarcopenia is a disease characterized by a progressive loss of skeletal muscle mass and
6 strength, and related to physical impairment, disability, worse clinical outcomes and mortality
7 in all healthcare settings (1). Importantly it is also reversible, with tailored exercise and
8 nutritional support (1)(2). Sarcopenia prevalence varies widely depending on the criteria,
9 measurement methods, and cut-off points used for its assessment (1)(2); to date few studies
10 addressed the issue of sarcopenia in hospitalized older patients, rendering it an under-
11 recognized clinical entity (3)(4). In 2015 the European Geriatric Medicine Society (EuGMS)
12 founded the Special Interest Group on Sarcopenia, which aims to bridge the gaps between
13 clinical practice and research (“Action-Research Philosophy”) by promoting collaborations
14 between international scientific societies and institutions, and launching, in 2018, the revised
15 European consensus on the definition and diagnosis on sarcopenia (EWGSOP2) (1).

16 We **aim** to prospectively evaluate the prevalence and incidence of sarcopenia (as defined by
17 the EWGSOP2 criteria) in hospitalized patients across Europe (Belgium, Denmark, Germany,
18 Italy, the Czech Republic, Poland, Portugal, Spain, and the United Kingdom), to assess risk
19 factors associated with its presence or incidence, and to assess sarcopenia-related adverse
20 clinical outcomes.

21 **Study participants** are patients aged ≥ 70 years admitted to acute medical units. Exclusion
22 criteria are anticipated length of hospital stay < 24 hours, and inability to perform the hand-
23 grip test. Each study partner will collect data for first 100 consecutive patients meeting the
24 entry criteria. By including 900 participants we will be able to detect 10% incidence of

25 sarcopenia with an error of approximately 2% (the exact 95% confidence interval ranging
26 from 8.04 to 11.96%).

27 **Primary outcomes** include: 1) Prevalence of sarcopenia on admission (± 48 h) and 2)
28 Incidence of sarcopenia between admission (± 48 h) and discharge (± 24 h). **Secondary**
29 **outcomes** are: 1) Risk factors for the development of sarcopenia 2) In-hospital sarcopenia
30 associated adverse outcomes (incidence of hospital-acquired infections, falls, delirium,
31 length-of-stay, and mortality), and 3) Post-discharge adverse outcomes (institutionalization,
32 hospital readmissions, falls, disability, and mortality) at 3- and 12-month follow-up.

33 The new EWGSOP2 sarcopenia diagnostic criteria will be followed (1)(6)(7). These include,
34 assessment of muscle strength with isometric hand-grip test (cut-off points < 27 kg, men;
35 < 16 kg, women) (1); gait speed (4-m walk, < 0.8 m/s) (1), and calf-circumference (< 31 cm) (1).

36 The SARC-F questionnaire (8) will be used on admission, 3- and 12-month telephone follow-
37 up. We will assess malnutrition (Global Leadership Initiative on Malnutrition (GLIM)
38 criteria) (9)(10), physical frailty (FRAIL scale, Fried phenotype), functional status (Barthel's,
39 basic (ADL), and instrumental (IADL) activities of daily living), and cognition (Mini-Mental
40 State Examination, Confusion Assessment Method, Geriatric Depression Scale).

41 The study was registered in ClinicalTrials.gov (2018/8355/I) and is being approved by local
42 ethics committees. Data will be treated in accordance with the General Data Protection
43 Regulation of the European Parliament and Council (GDPR 2016/679).

44 **Conclusions and implications:** The overall goal is to establish an epidemiological base for
45 future geriatric research in Europe, in the previously largely overlooked area of sarcopenia in
46 older hospitalized patients. Sarcopenia increases with age, especially after the age of 80 years,
47 due to accumulation of both age-dependent and independent risk factors. Inflammaging,
48 inactivity, and malnutrition may play particularly significant roles (1). Sarcopenia can be

49 prevented, and when developed can be a target for therapeutic actions. However, at present,
50 there is limited knowledge of its prevalence and incidence in a real-world hospital population.
51 The new EWGSOP2 guidelines offer a pragmatic approach which is more applicable to
52 patients in an acute medical setting, and we intend to establish prevalence and incidence data,
53 as well as important insights into risk factors for sarcopenia. We foresee that our results will
54 have crucial implications for future research, clinical practice, and policies for optimal aging.

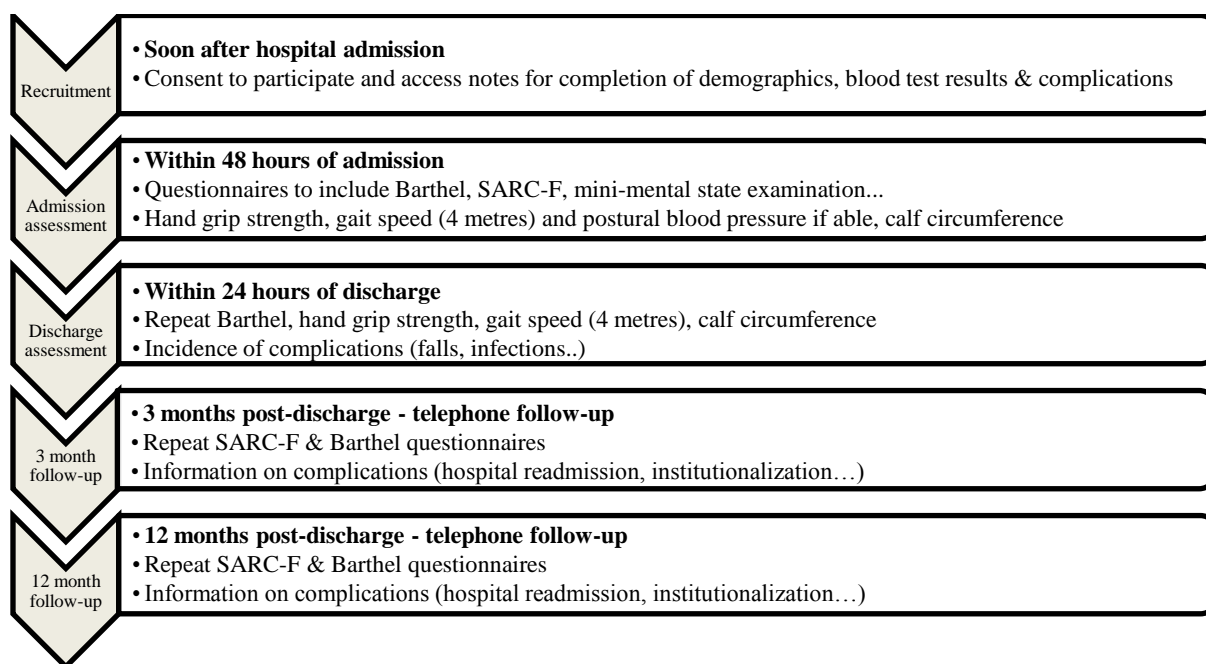
55 **Funding source:** This research is not receiving any commercial sponsorship.

56 **Conflicts of interests:** All authors declare no conflicts of interest.

57 REFERENCES

- 58 1. Cruz-Jentoft AJ, Bahat G, Bauer J, Boirie Y, Bruyère O, Cederholm T, et al. Sarcopenia:
59 revised European consensus on definition and diagnosis. *Age Ageing*. 2019;48(1):16–31.
- 60 2. Dent E, Morley JE, Cruz-Jentoft AJ, Arai H, Kritchevsky SB, Guralnik J, et al. International
61 Clinical Practice Guidelines for Sarcopenia (ICFSR): Screening, Diagnosis and Management. *J*
62 *Nutr Heal Aging*. 2018;22(10):1148–61.
- 63 3. Bianchi L, Abete P, Bellelli G, Bo M, Cherubini A, Corica F, et al. Prevalence and Clinical
64 Correlates of Sarcopenia, Identified According to the EWGSOP Definition and Diagnostic
65 Algorithm, in Hospitalized Older People: The GLISTEN Study. *J Gerontol A Biol Sci Med*
66 *Sci*. 2017 Oct 12;72(11):1575–81.
- 67 4. Martone AM, Bianchi L, Abete P, Bellelli G, Bo M, Cherubini A, et al. The incidence of
68 sarcopenia among hospitalized older patients: results from the Glisten study. *J Cachexia*
69 *Sarcopenia Muscle*. 2017;8(6):907–14.
- 70 5. Ethgen O, Beaudart C, Buckinx F, Bruyère O, Reginster JY. The Future Prevalence of
71 Sarcopenia in Europe: A Claim for Public Health Action. *Calcif Tissue Int*. 2017 Mar
72 24;100(3):229–34.
- 73 6. Phu S, Vogrin S, Zanker J, Bani Hassan E, Al Saedi A, Duque G. Agreement Between Initial
74 and Revised European Working Group on Sarcopenia in Older People Definitions. *J Am Med*
75 *Dir Assoc*. 2019 Jan 17;
- 76 7. Locquet M, Beaudart C, Petermans J, Reginster J-Y, Bruyère O. EWGSOP2 Versus
77 EWGSOP1: Impact on the Prevalence of Sarcopenia and Its Major Health Consequences. *J Am*
78 *Med Dir Assoc*. 2019 Jan 17;

- 79 8. Malmstrom TK, Morley JE. SARC-F: A Simple Questionnaire to Rapidly Diagnose
80 Sarcopenia. *J Am Med Dir Assoc.* 2013 Aug;14(8):531–2.
- 81 9. Cederholm T, Jensen GL, Correia MITD, Gonzalez MC, Fukushima R, Higashiguchi T, et al.
82 GLIM criteria for the diagnosis of malnutrition - A consensus report from the global clinical
83 nutrition community. *Clin Nutr.* 2019 Feb 3;38(1):1–9.
- 84 10. Sánchez-Rodríguez D, Annweiler C, Cederholm T. A translational approach for the clinical
85 application of recently updated definitions of malnutrition (GLIM) and sarcopenia
86 (EWGSOP2). *Maturitas.* 2019 Apr 22;122:89–90.
87



Supplementary Material

[Click here to download Supplementary Material: Methods appendix_European Collaboration EAMA Sarcopenia 9+ _jg_svh.docx](#)