The new EWGSOP2 consensus on sarcopenia

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Madrid, Spagna

CONFLICT OF INTEREST DISCLOSURE

I have the following potential conflicts of interest to report:

- Speaker fees from Abbott Nutrition, Fresenius, Nestlé, Nutricia, Sanofi-Aventis.

- Member of advisory boards: Abbott Nutrition, Boehringer Ingelheim Pharma, Nestlé, Pfizer, Regeneron, Rejuvenate.

- Research projects with Novartis, Nutricia, Regeneron.

First steps

1st Workshop on Sarcopenia – NIA
September 19-21, 1994

"Sarcopenia" is a generic term for the loss of skeletal muscle mass, quality, and strength that can lead to frailty in the elderly.

Holloszy JO. Workshop on sarcopenia: muscle atrophy in old age. J Gerontol 1995 50A:(special issue) 1-161.

There is no universally agreed definition of sarcopenia

- EWGSOP (2010): 5287 citations
- IWGS (2011): 1488 citations
- AWGS (2014): 935 citations
- FNIH (2014): 535 citations

Source: Google Scholar, accessed November 6th, 2018

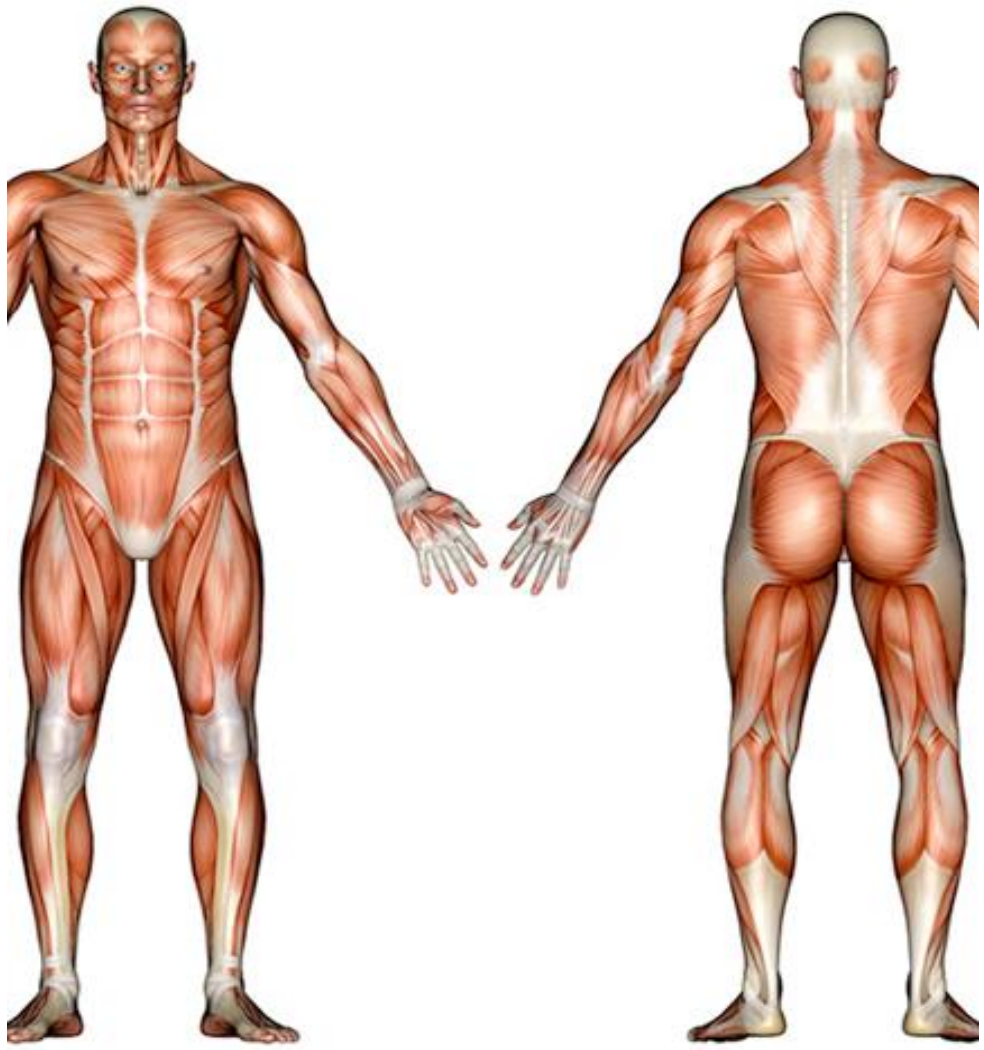
Human muscles

600 muscles in human body

Skeletal muscles: 40-45% of total body mass

55% of skeletal muscle mass in lower limbs

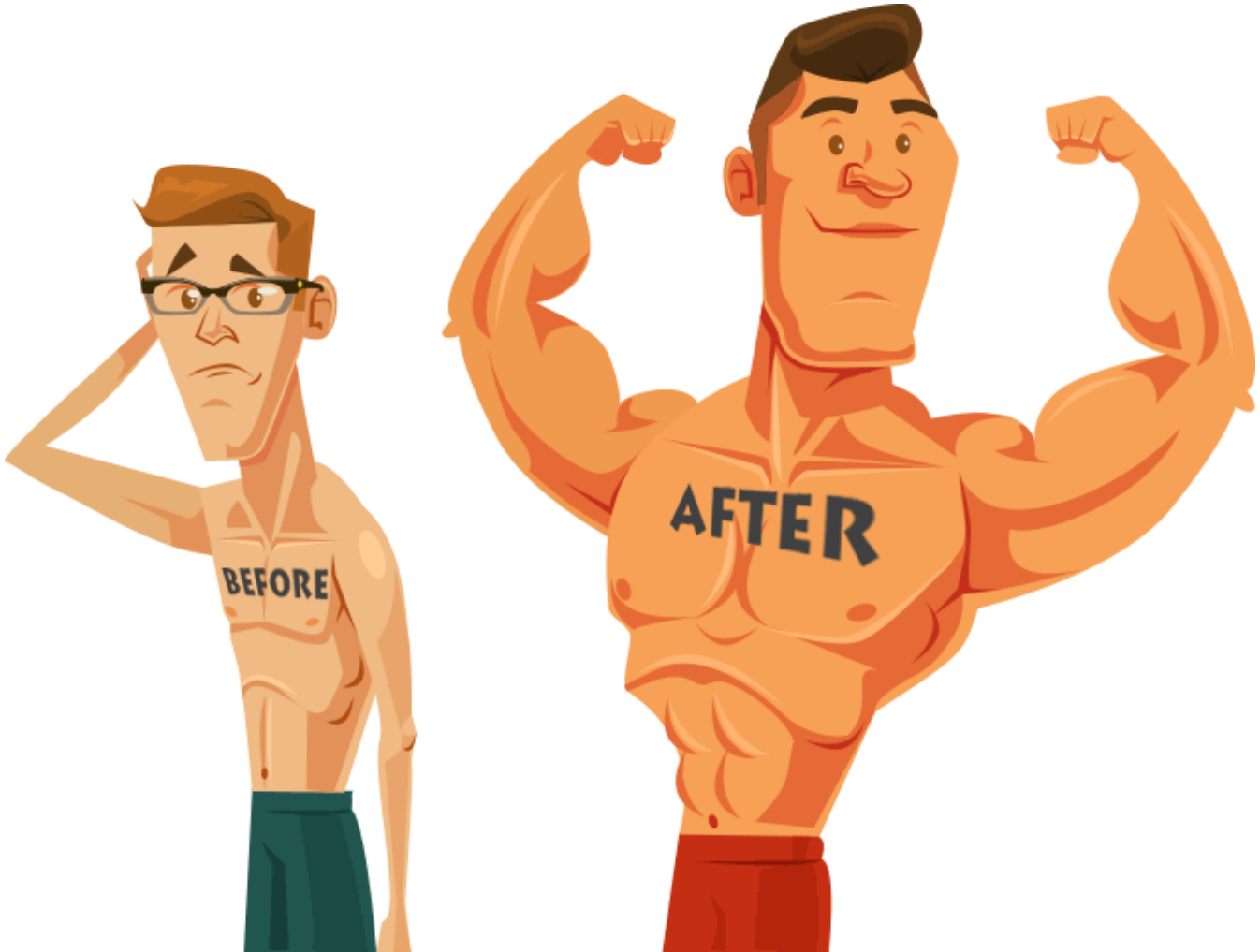
50% of total body protein is in muscles



Frontera WR et al. In: Physical Medicine&Rehabilitation. DeLisa JA (ed). LWW 2005

2010

This year, there was a **major change** in the concept of sarcopenia



Muscle mass

AND

Muscle function

Clinical Nutrition 29 (2010) 154–159

Contents lists available at ScienceDirect

Clinical Nutrition

April 2010

Age and Ageing 2010; **39:** 412–423
doi: 10.1093/ageing/afq034
Published electronically 13 April 2010

April 2010

Published in final edited form as:

May 2011

SPECIAL ARTICLE

Sarcopenia With Limited Mobility: An International Consensus

July 2011

John E. Morley, MB, BCh, Angela Marie Abbatecola, BS, MD, PhD, Josep M. Argiles, PhD, Vickie Baracos, BSc, PhD, Juergen Bauer, MD, PhD, Shalender Bhasin, MD, Tommy Cederholm, MD, PhD, Andrew J. Stewart Coats, DM, DSc, Steven R. Cummings, MD, William J. Evans, PhD, Kenneth Fearon, MD, Luigi Ferrucci, MD, PhD, Roger A. Fielding, PhD, Jack M. Guralnik, MD, PhD, Tamara B. Harris, MD, MS, Akio Inui, MD, PhD, Kamyar Kalantar-Zadeh, MD, PhD, MPH, FAAP, FACP, FAHA, Bridget-Anne Kirwan, FESC, MSc, PhD, Giovanni Mantovani, MD, Maurizio Muscaritoli, MD, Anne B. Newman, MD, MPH, Filippo Rossi-Fanelli, MD, FACN, Giuseppe M. C. Rosano, MD, PhD, FESC, Ronenn Roubenoff, MD, MHS, Morris Schambelan, MD, Gerald H. Sokol, MD, MSc, FCP, Thomas W. Storer, PhD, Bruno Vellas, MD, PhD, Stephan von Haehling, MD, PhD, Shing-Shing Yeh, MD, PhD, and Stefan D. Anker, MD, PhD, THE SOCIETY ON SARCOPENIA, CACHEXIA AND WASTING DISORDERS TRIALIST WORKSHOP

Age and Ageing 2010; **39:** 412–423
doi: 10.1093/ageing/afq034
Published electronically 13 April 2010

REPORT

Sarcopenia: Eu and diagnosis

Report of the Europear
ALFONSO J. CRUZ-JENTOFT[1], JE
TOMMY CEDERHOLM[5], FRANCE
YVES ROLLAND[9], STÉPHANE M
MAURO ZAMBONI[13]

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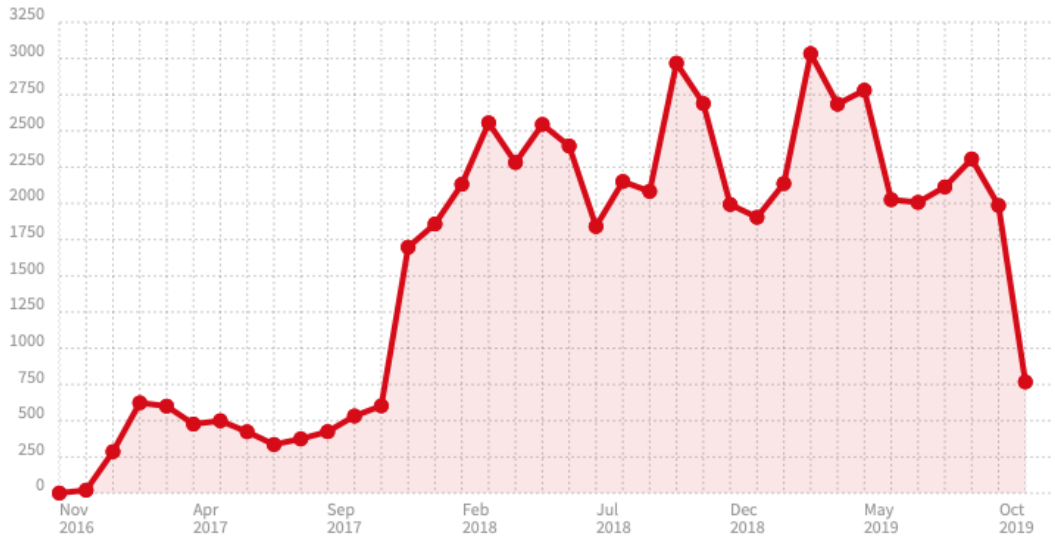

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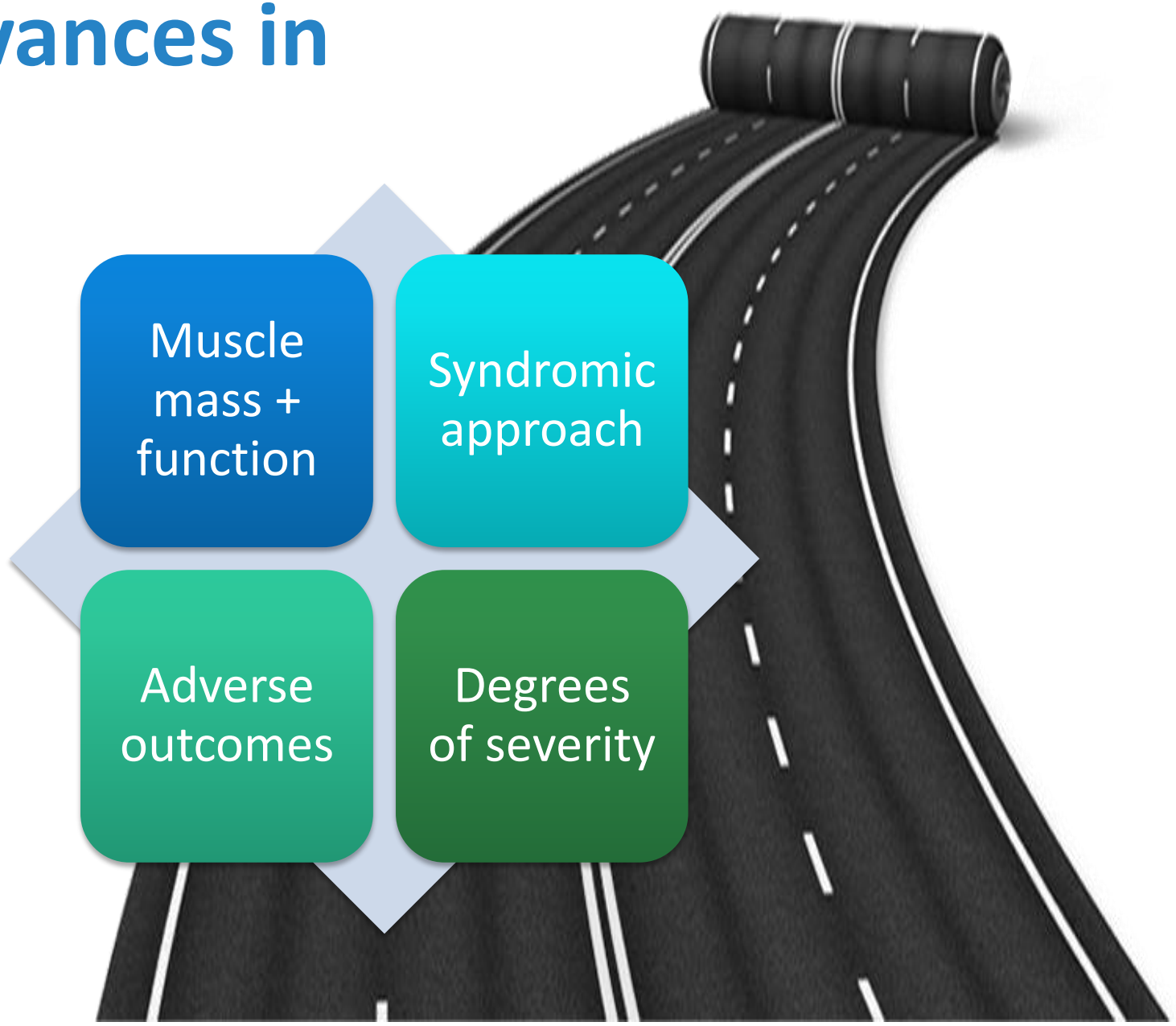
201

a?

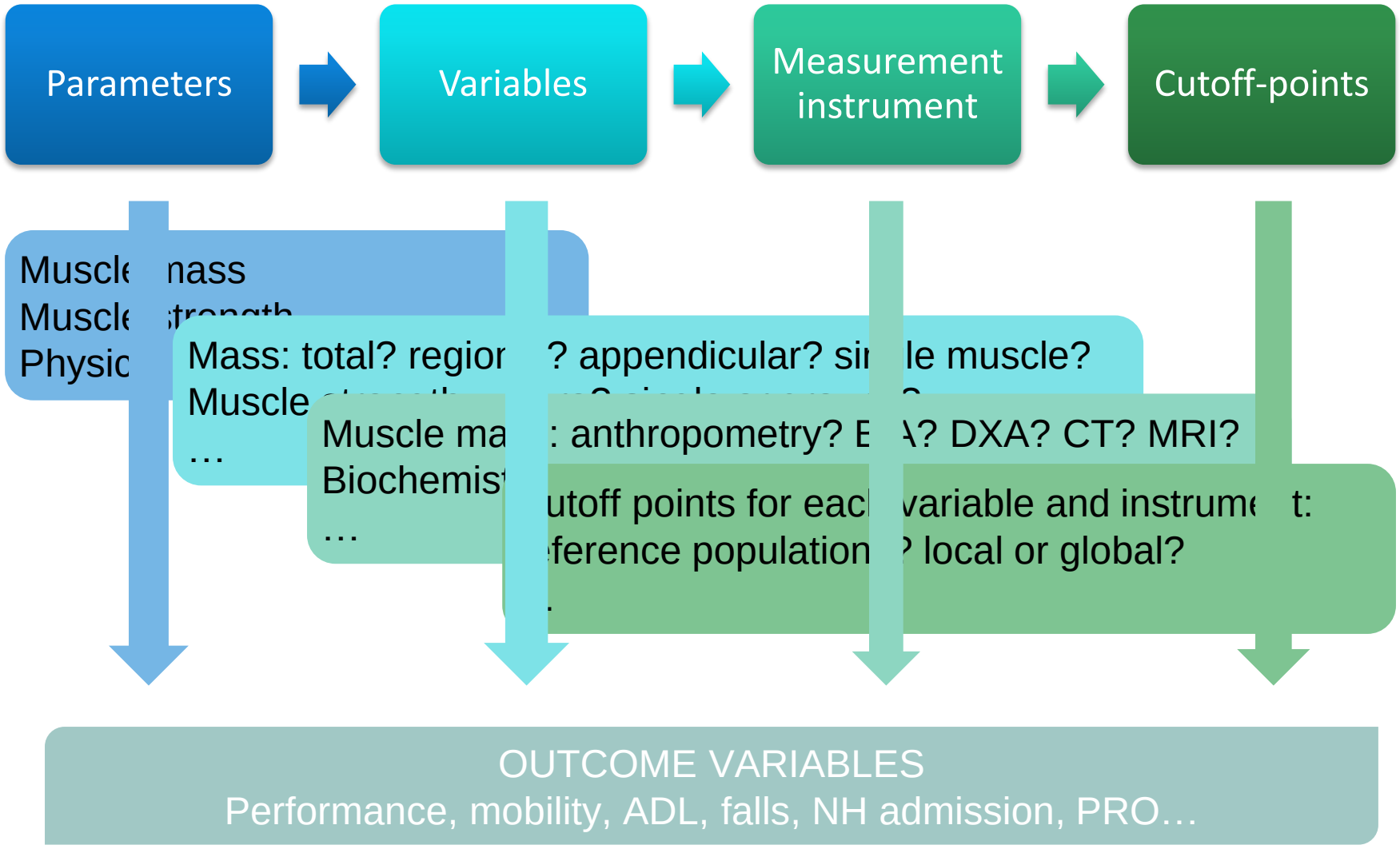
Conceptual advances in sarcopenia



So…
where is the problem?

Problems to be addressed

- Sarcopenia begins **earlier in life** (important for interventions and prevention).
- Conceptualization of sarcopenia as a **muscle disease**.
- Problems in accurately **measuring** and categorizing **muscle mass and muscle quality**.
- **Outcome measures** for interventions not agreed.
- SARCOPENIA HAS NOT REACHED **MAINSTREAM CLINICAL PRACTICE** (is it still too complicated)?


Parameters
Variables
Measurement instrument
Cutoff-points
Muscle mass
Muscle strength
Physic
Mass: total? regior ? appendicular? si le muscle?
Muscle
…
Muscle ma : anthropometry? E A? DXA? CT? MRI?
Biochemist
…
utoff points for eac variable and instrume t:
ference population ? local or global?
OUTCOME VARIABLES
Performance, mobility, ADL, falls, NH admission, PRO…

¡¡¡ BIENVENIDOS !!!

EuGMS
European Geriatric Medicine Society
Fostering geriatric medicine across Europe

An update of the 2010 definition

EUROPEAN WORKING GROUP ON SARCOPENIA IN OLDER PEOPLE

Alcalá de Henares
University founded 1293

2018 EWGSOP

WRITING GROUP

- Alfonso J. CRUZ-JENTOFT, Spain
- Gülistan BAHAT, Turkey
- Jürgen BAUER, Germany
- Yves BOIRIE, France
- Olivier BRUYÉRE, Belgium
- Tommy CEDERHOLM, Sweden
- Cyrus COOPER, UK
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- Yves ROLAND, France
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- Cornel SIEBER, Germany
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- Maurits VANDEWOUDE, Belgium
- Marjolein VISSER, Netherlands
- Mauro ZAMBONI, Italy

- Cecilia HOFFMAN, Medical Writer

- Ricardo RUEDA + Carole GLENCORSE, Abbott Nutrition International (Observers)

2018 EWGSOP

EXTENDED GROUP

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- Finbarr MARTIN, UK
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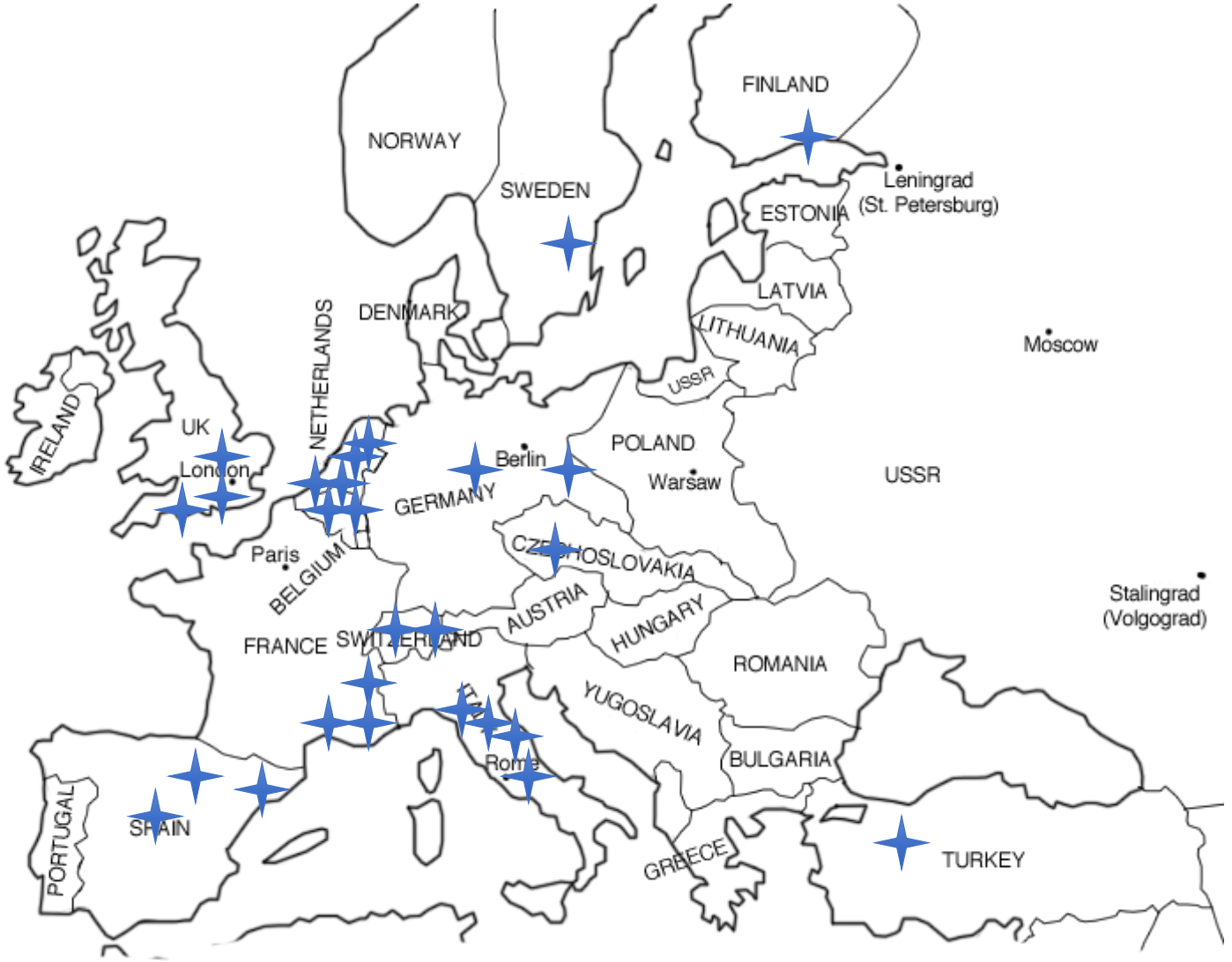
- Kaisu PITKALA, Finland
- Jean-Yves REGINSTER, Belgium
- René RIZZOLI, Switzerland
- Mª Dolores SÁNCHEZ, Spain
- Jos SCHOLS, Netherlands

All are co-authors

2018 EWGSOP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Fostering geriatric medicine across Europe

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European Society for Clinical Nutrition and Metabolism

INTERNATIONAL ASSOCIATION OF GERONTOLOGY AND GERIATRICS
Founded 1950

IOF
International Osteoporosis Foundation

ESCEO

Age and Ageing 2019; **48:** 16–31
doi: 10.1093/ageing/afy169
Published electronically 24 September 2018

GUIDELINES

Sarcopenia: revised European consensus on definition and diagnosis

Alfonso J. Cruz-Jentoft[1], Gülistan Bahat[2], Jürgen Bauer[3], Yves Boirie[4], Olivier Bruyère[5], Tommy Cederholm[6], Cyrus Cooper[7], Francesco Landi[8], Yves Rolland[9], Avan Aihie Sayer[10], Stéphane M. Schneider[11], Cornel C. Sieber[12], Eva Topinkova[13], Maurits Vandewoude[14], Marjolein Visser[15], Mauro Zamboni[16], Writing Group for the European Working Group on Sarcopenia in Older People 2 (EWGSOP2), and the Extended Group for EWGSOP2

EWGSOP2

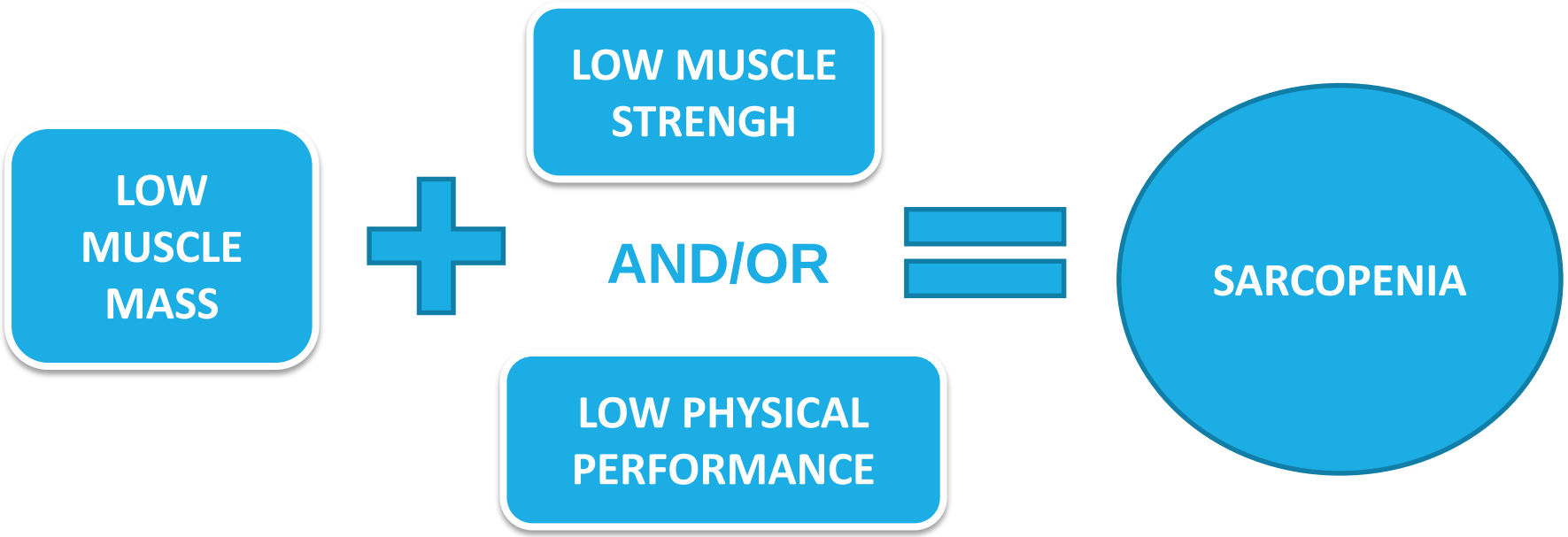
Definition of sarcopenia

Sarcopenia is a progressive and generalized skeletal muscle disorder that is associated with increased likelihood of adverse outcomes including falls, fractures, physical disability, and mortality.

Muscle failure

EWGSOP2

Operational definition of sarcopenia: EWGSOP



New operational definition of sarcopenia: EWGSOP2

Table 1. 2018 operational definition of sarcopenia

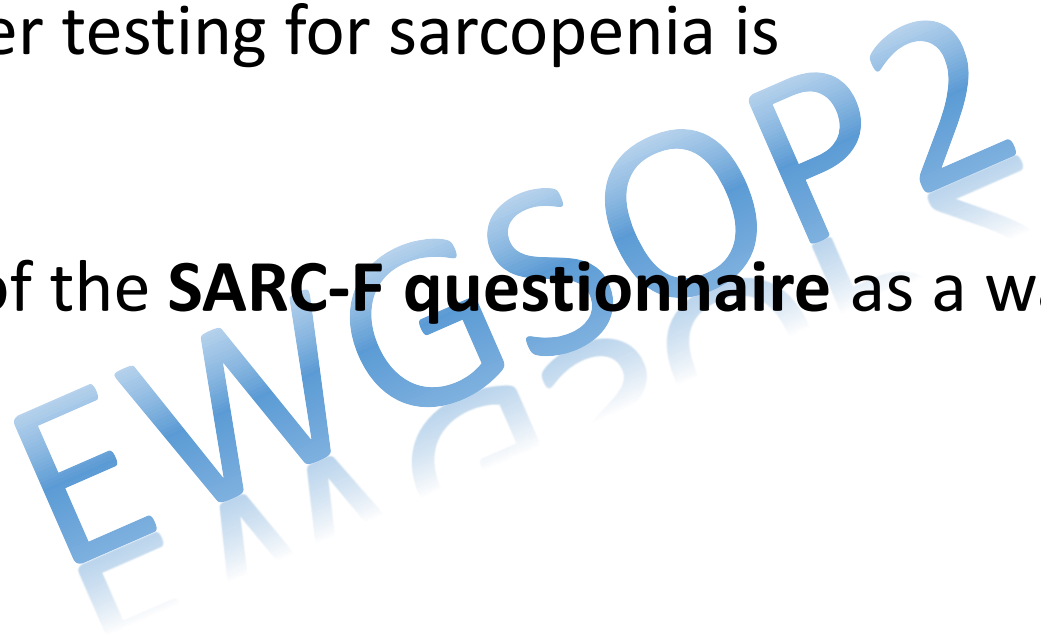
Probable sarcopenia is identified by Criterion 1.
Diagnosis is confirmed by additional documentation of Criterion 2.
If Criteria 1, 2 and 3 are all met, sarcopenia is considered severe.

- Low muscle strength
- Low muscle quantity or quality
- Low physical performance

Case finding

- In clinical practice, case-finding may start when a patient reports **symptoms or signs of sarcopenia** (i.e., falling, feeling weak, slow walking speed, difficulty rising from a chair, or weight loss/muscle wasting). In such cases, further testing for sarcopenia is recommended.

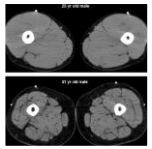
- EWGSOP2 recommends use of the **SARC-F questionnaire** as a way to elicit self-reports.



Measuring sarcopenia parameters

MUSCLE STRENGTH

- Handgrip strength
- Chair stand test



MUSCLE QUANTITY

- DXA
- (BIA)
- CT / MRI

PHYSICAL PERFORMANCE

- Gait speed
- SPPB
- TUG
- 400 m walk

Alternative and new tools

- Lumbar 3rd vertebra imaging by computed tomography
- Mid-thigh muscle measurement
- Psoas muscle measurement with computed tomography
- Muscle quality measurements?
- Creatine dilution test
- Ultrasound assessment of muscle
- Specific biomarkers or panels of biomarkers
- SarQoL questionnaire

Cut-off points!

Test	Cut-off points for men	Cut-off points for women	References
EWGSOP2 sarcopenia cutoff points for low strength by chair stand and grip strength			
Grip strength	<27 kg	<16 kg	Dodds, 2014[26]
Chair stand	>15 sec for 5 rises		Cesari, 2009[67]
EWGSOP sarcopenia cut-off points for low muscle quantity			
ASM	< 20 kg	< 15 kg	Studenski, 2014[3]
ASM/height^2	< 7.0 kg/m^2	< 5.5 kg/m^2	Gould, 2014[125]

Cut-off points!

Test	Cut-off points for men	Cut-off points for women	References
EWGSOP sarcopenia cut-off points for low performance			
Gait speed	≤ 0.8 m/sec		Cruz-Jentoft, 2010[1] Studenski, 2011[84]
SPPB	≤ 8 point score		Pavasini, 2016[90] Guralnik, 1995[126]
TUG	≥ 20 sec		Bischoff, 2003[127]
400m walk test	Non-completion or ≥ 6 min for completion		Newman, 2006[128]

New algorithm

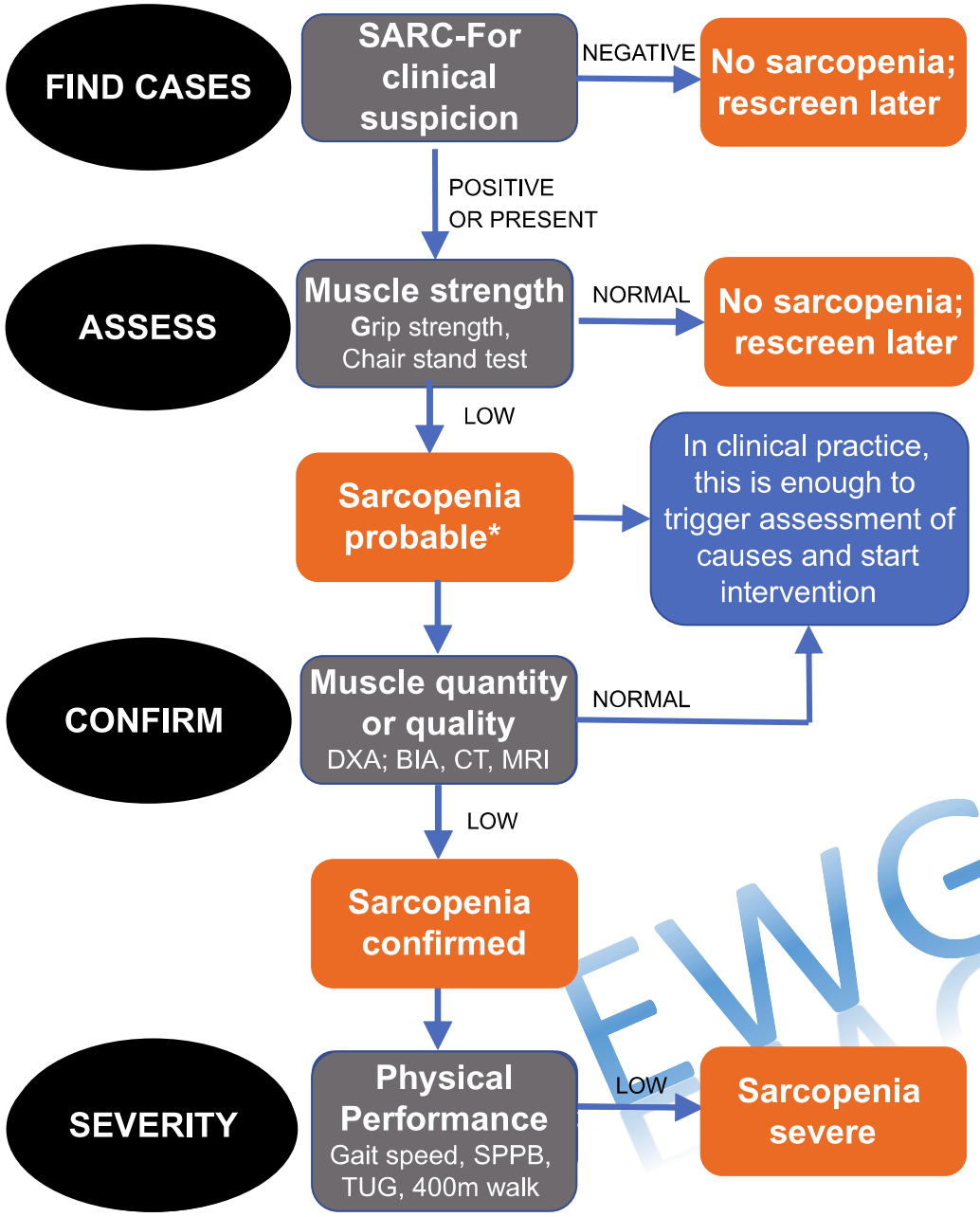
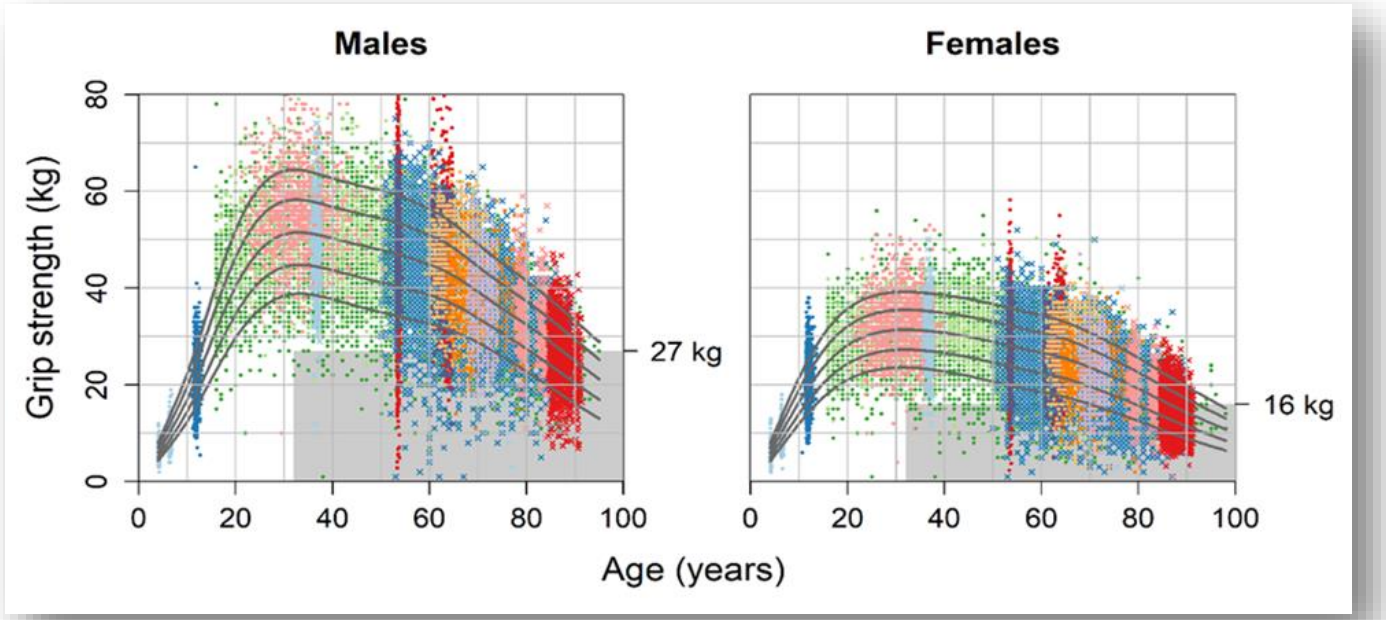
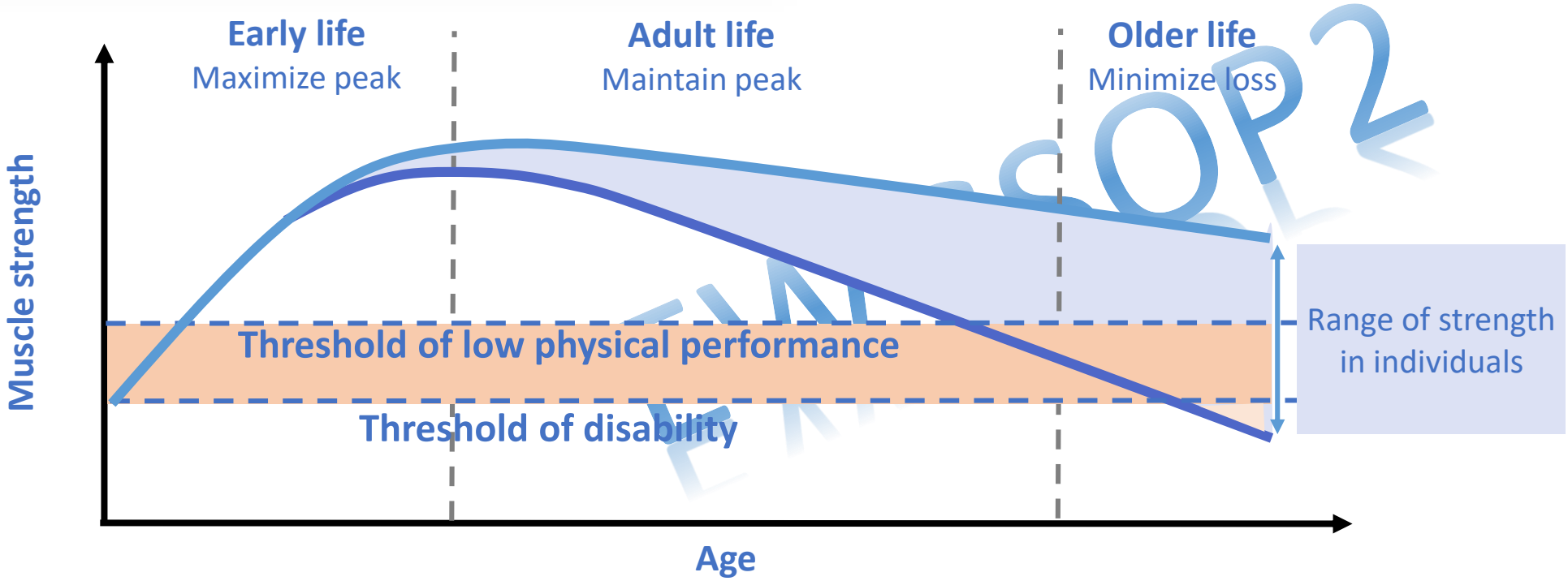


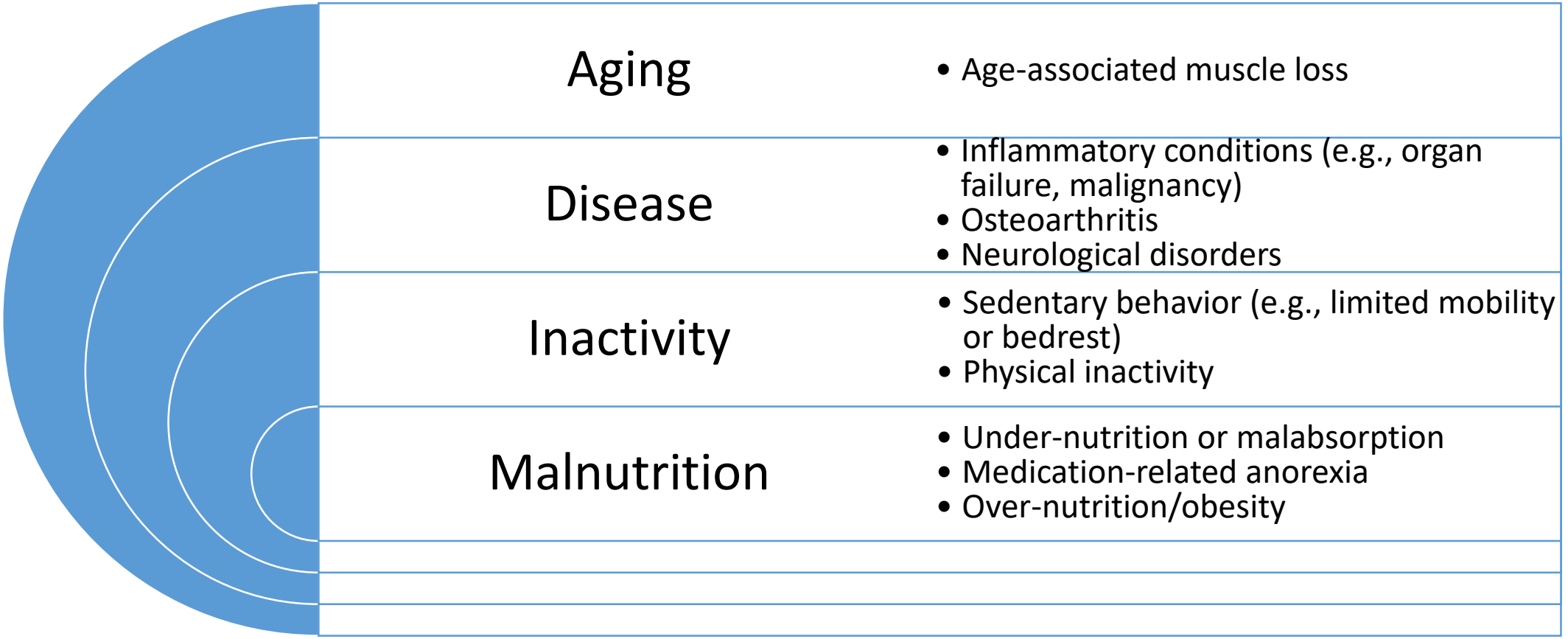
Figure 1. Sarcopenia: EWGSOP2 algorithm for case-finding, making a diagnosis and quantifying severity in practice. The steps of the pathway are represented as Find-Assess-Confirm-Severity or F-A-C-S. *Consider other reasons for low muscle strength (e.g. depression, sroke, balance disorders, peripheral vascular disorders).

Time course


Males
Females
Grip strength (kg)
0
20
40
60
80
0
20
40
60
80
100
27 kg
16 kg
Age (years)


Early life
Maximize peak
Adult life
Maintain peak
Older life
Minimize loss
Muscle strength
Threshold of low physical performance
Threshold of disability
Range of strength in individuals
Age

Sarcopenia categories



Acute and chronic sarcopenia

- **Acute sarcopenia**: less than 6 months.
  - *Usually related to an acute illness or injury.*
- **Chronic sarcopenia**: sarcopenia lasting ≥ 6 months.
  - *Comes with chronic and progressive conditions.*
- Underscored the need to conduct periodic sarcopenia assessments in individuals at risk.
- May facilitate early intervention.

Some gaps in research

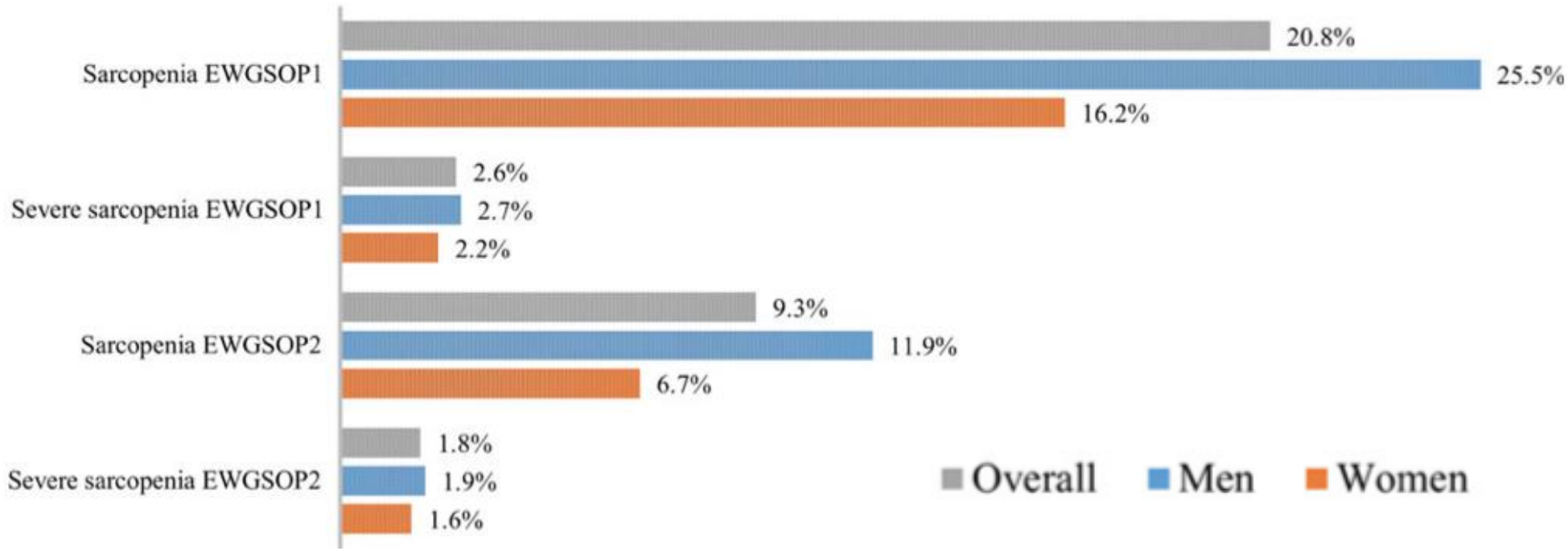
- How can we identify older persons at high risk of sarcopenia?
- Need of normative data to define validated cut-off points
- Management of stature-, gender- and region-dependent measures.
- What muscle quality indicators best predict outcomes?
- What are the kinetics of muscle loss?
- What outcomes are best used as sensitive measures of response to sarcopenia treatments?

Age and Ageing 2019; **48:** 910–916
doi: 10.1093/ageing/afz091
Published electronically 22 July 2019

SHORT REPORT

Prevalence of sarcopenia in community-dwelling older adults using the definition of the European Working Group on Sarcopenia in Older People 2: findings from the Korean Frailty and Aging Cohort Study

Miji Kim[1], Chang Won Won[2]



ISSN (electrónico): 1699-5198 - ISSN (papel): 0212-1611 - CODEN NUHOEQ S.V.R. 318

ARÁN

Nutrición Hospitalaria

Trabajo Original

Nutrición en el anciano

Diagnóstico y prevalencia de sarcopenia en residencias de mayores: EWGSOP2 frente al EWGSOP1

Diagnosis and prevalence of sarcopenia in long-term care homes: EWGSOP2 versus *EWGSOP1*

Ana Isabel Rodríguez-Rejón[1], María Dolores Ruiz-López[1,2] y Reyes Artacho[1]

Tabla III. Prevalencia encontrada en el Granada Sarcopenia Study de los distintos estadios conceptuales de la sarcopenia según el EWGSOP1 y el EWGSOP2

Categorías	Requisitos	Prevalencia según el algoritmo del EWGSOP1	Prevalencia según el algoritmo del EWGSOP2
Presarcopenia	Masa muscular baja (IMME)*	63,6%	-
Sarcopenia probable	Fuerza muscular baja†	-	91,2%
Sarcopenia	Masa muscular baja (IMME) + (Fuerza muscular baja o rendimiento físico bajo)‡	63%	-
	Fuerza muscular baja + Masa muscular baja (IMMEA)§	-	60,1%¶
Sarcopenia grave	Fuerza muscular baja + Masa muscular baja (IMME) + Rendimiento físico bajo‡	61,2%	-
	Fuerza muscular baja + Masa muscular baja (IMMEA) + Rendimiento físico bajo‖	-	58,1%**

JAMDA

journal homepage: www.jamda.com

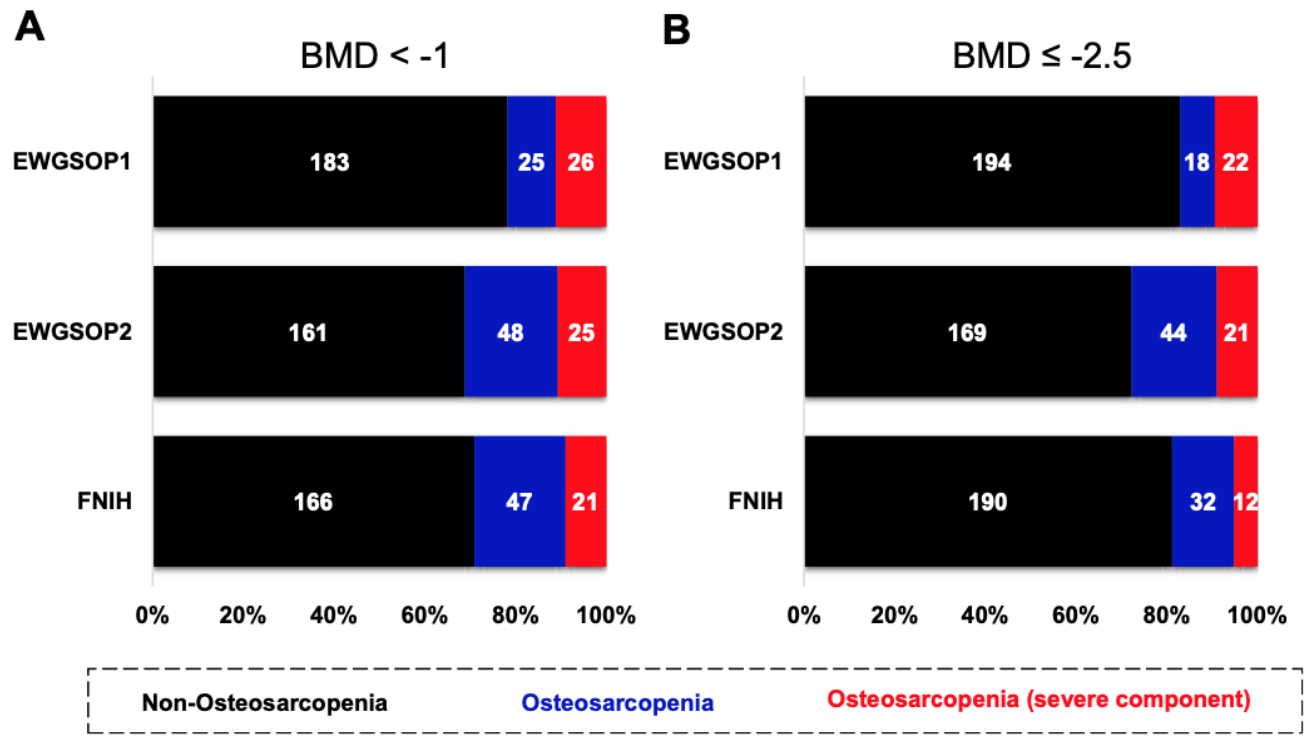
Original Study

The Joint Occurrence of Osteoporosis and Sarcopenia (Osteosarcopenia): Definitions and Characteristics

Walter Sepúlveda-Loyola MSc [a,b,c], Steven Phu MSc [a,b], Ebrahim Bani Hassan PhD [a,b], Sharon L. Brennan-Olsen PhD [a,b], Jesse Zanker MBBS, MPHTM [a,b], Sara Vogrin MBiostat [a,b], Romy Conzade MSc [a,b,d], Ben Kirk PhD [a,b], Ahmed Al Saedi PhD [a,b], Vanessa Probst PhD [c], Gustavo Duque MD, PhD [a,b,*]

Compared with the nonosteosarcopenic group, those with osteosarcopenia had greater impairment of physical performance and balance.

The EWGSOP2 and FNIH criteria resulted in the strongest associations with physical performance and self-reported falls and fractures.



Age and Ageing 2019; **00:** 1–5
doi: 10.1093/ageing/afz126
Published electronically 00 Month 0000

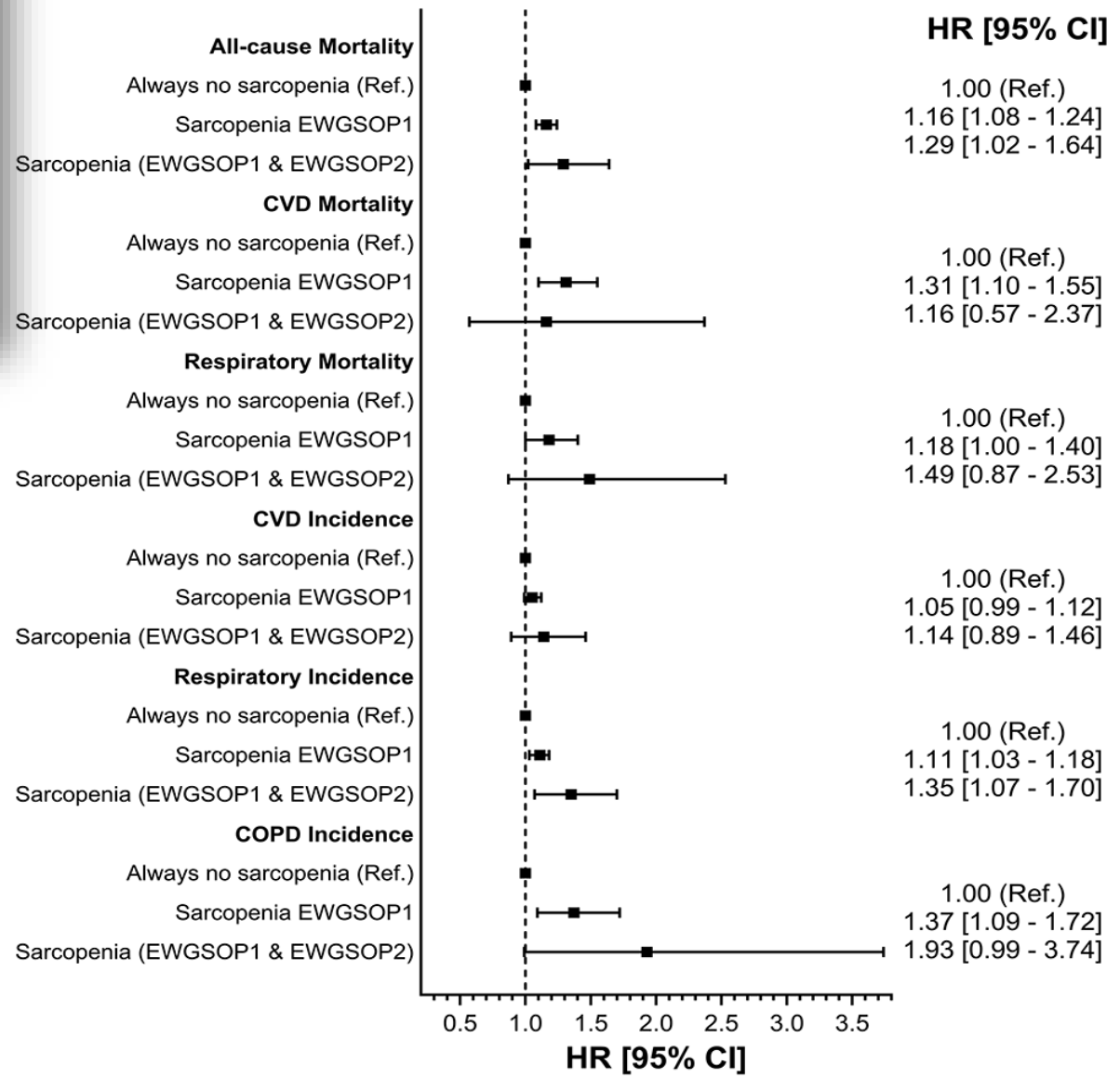
SHORT REPORT

New versus old guidelines for sarcopenia classification: What is the impact on prevalence and health outcomes?

Fanny Petermann-Rocha[1,2], Minghao Chen[2], Stuart R Gray[2], Frederick K Ho[1], Jill P Pell[1], Carlos Celis-Morales[2]

UK Biobank cohort

Prevalence of sarcopenia EWGSOP1	8.14%
Prevalence of sarcopenia EWGSOP2	0.36%



ACCEPTED MANUSCRIPT

Comparing EWGSOP2 and FNIH Sarcopenia Definitions: Agreement and Three-Year Survival Prognostic Value in Older Hospitalized Adults. The GLISTEN Study

Lara Bianchi, MD ✉, Elisa Maietti, Pasquale Abete, MD, PhD, Giuseppe Bellelli, MD, Mario Bo, MD, PhD, Antonio Cherubini, MD, PhD, Francesco Corica, MD, Mauro Di Bari, MD, PhD, Marcello Maggio, MD, PhD, Anna Maria Martone, MD ... Show more

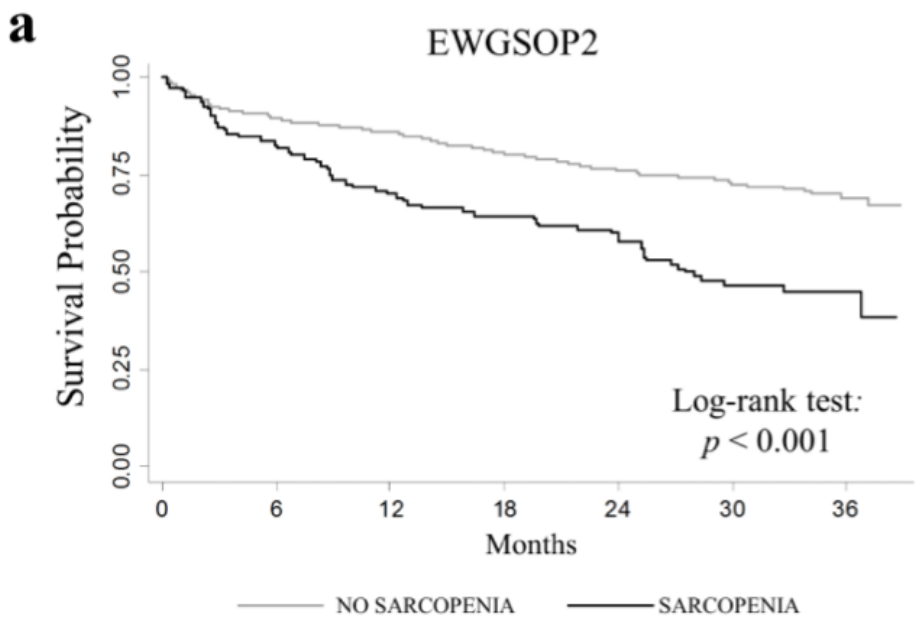
Author Notes

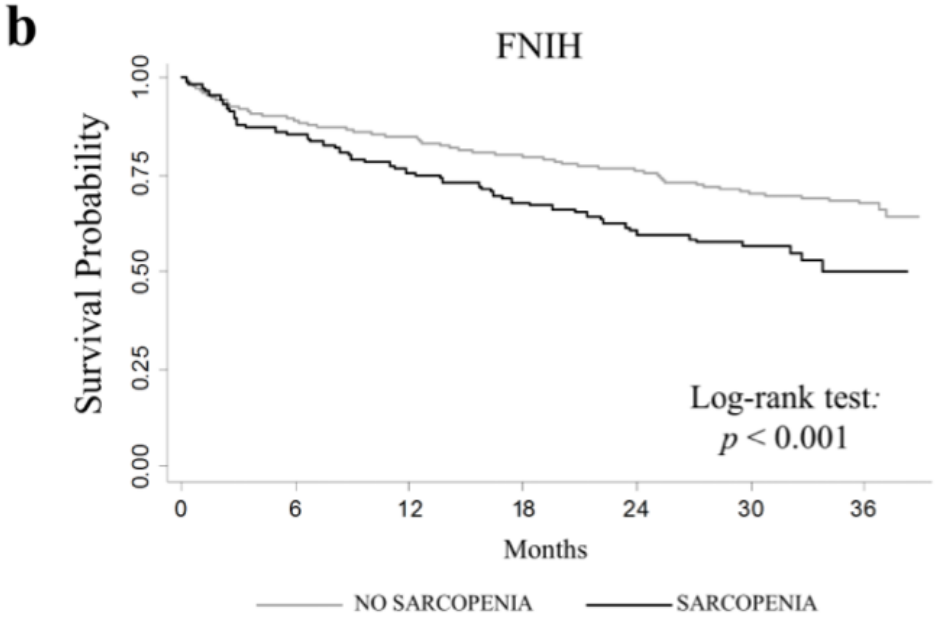
The Journals of Gerontology: Series A, glz249, https://doi.org/10.1093/gerona/glz249

Published: 19 October 2019 **Article history** ▾

Sarcopenia prevalence was 22.8% and 23.9% using EWGSOP2 and FNIH criteria respectively, with a low classification agreement.

Only EWGSOP2 definition predicted 3-years mortality (HR 1.84).





SUMMARY

New operational definition of sarcopenia: EWGSOP2

LOW MUSCLE STRENGH + LOW MUSCLE QUANTITY/ QUALITY + LOW PHYSICAL PERFORMANCE

PROBABLE SARCOPENIA | DEFINITE SARCOPENIA | SEVERE SARCOPENIA

Table 1. 2018 operational definition of sarcopenia

Probable sarcopenia is identified by criterion 1. **Diagnosis is confirmed by additional documentation of criterion 2.** **If criteria 1, 2, and 3 are all met, sarcopenia is considered severe.**
1. Low muscle strength
2. Low muscle quantity or quality
3. Low physical performance

New algorithm

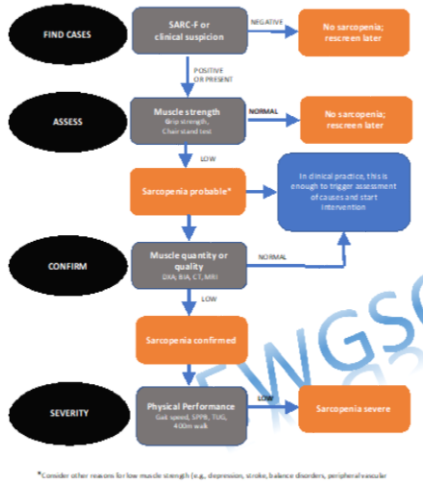


Figure 1. Sarcopenia: EWGSOP2 algorithm for case-finding, making a diagnosis, and quantifying severity in practice. The steps of the pathway are represented as Find-Assess-Confirm-Severity or F-A-C-S.

Cut-off points!

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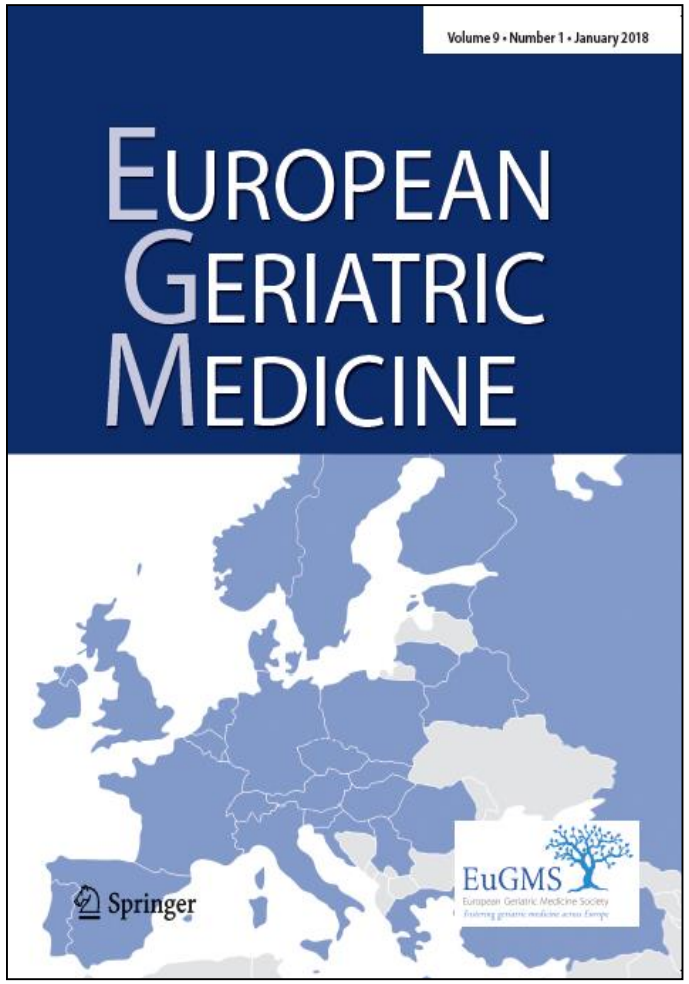

Please sign for the ToC!

EWGSOP2

WRITING GROUP

EXTENDED GROUP

Grazie.. Grazie.. Grazie..