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Global Aging and Health
Bridging Science, Policy, and Practice



Sarcopenia and Frailty: What's the Issues Related to Gait Speed and Handgrip Strength

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Sarcopenia and Frailty: What's the Issues Related to Gait Speed and Handgrip Strength Cutoff Values?

**Revisiting Criteria Definition and Association with Protein Intake and
Insulin Resistance**



Summary of presentation

- Diagnosis of frailty and sarcopenia
 - No consensus
- Two approaches
 - Fried's scale - frailty
 - EWGSOP – sarcopenia
- Issues
 - Conceptual definition
 - Items
 - Handgrip strenght
 - Gait speed
 - Lean body mass



Summary of presentation

- How about scales?
- How about prevalences?
- How about items scales?
- Conclusions and final comments



Sarcopenia and frailty

- Weakness
- Slowness
- ↓ muscle mass

• Cruz-Jentoft et al., 2010

- Weakness
- Slowness
- Weight loss
- Exhaustion
- Low activity

• Fried et al., 2001



What about the scales used in L&MIC?



Journal of the American Geriatrics Society

Frailty Screening in Low- and Middle-Income Countries: A Systematic Review

William K. Gray, Jenny Richardson,* Jackie McGuire,* Felicity Dewhurst,[§] Vasanthi Elder,*
Julie Weeks,* Richard W. Walker,*[†] and Catherine L. Dotchin*[†]*



- 22 LMICs
- 70 studies
- 85.7% studies
 - Brazil
 - China
 - Mexico
- Frailty criteria
 - Fried: 36
 - FI: 20
 - Edmonton: 8

Frailty Screening in Low- and Middle-Income Countries: A Systematic Review

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What about the prevalences of frailty and sarcopenia?



RESEARCH ARTICLE

Prevalence of Frailty in Latin America and the Caribbean: A Systematic Review and Meta-Analysis

Fabiana Araújo Figueiredo Da Mata^{1☯*}, Priscilla Perez da Silva Pereira^{2‡}, Keitty Regina Cordeiro de Andrade^{1‡}, Ana Claudia Moraes Godoy Figueiredo^{2‡}, Marcus Tolentino Silva^{3☯}, Maurício Gomes Pereira^{1☯}

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Systematic review 2016

- 29 studies
- 43,083 individuals included
- Prevalence of frailty
 - Total: 19.6%
 - Range: 7.7% to 42.6%



RESEARCH ARTICLE

Prevalence of Frailty in Latin America and the Caribbean: A Systematic Review and Meta-Analysis

Fabiana Araújo Figueiredo Da Mata¹*, Priscilla Perez da Silva Pereira²†, Keitty Regina Cordeiro de Andrade¹‡, Ana Claudia Moraes Godoy Figueiredo²‡, Marcus Tolentino Silva³*, Maurício Gomes Pereira¹

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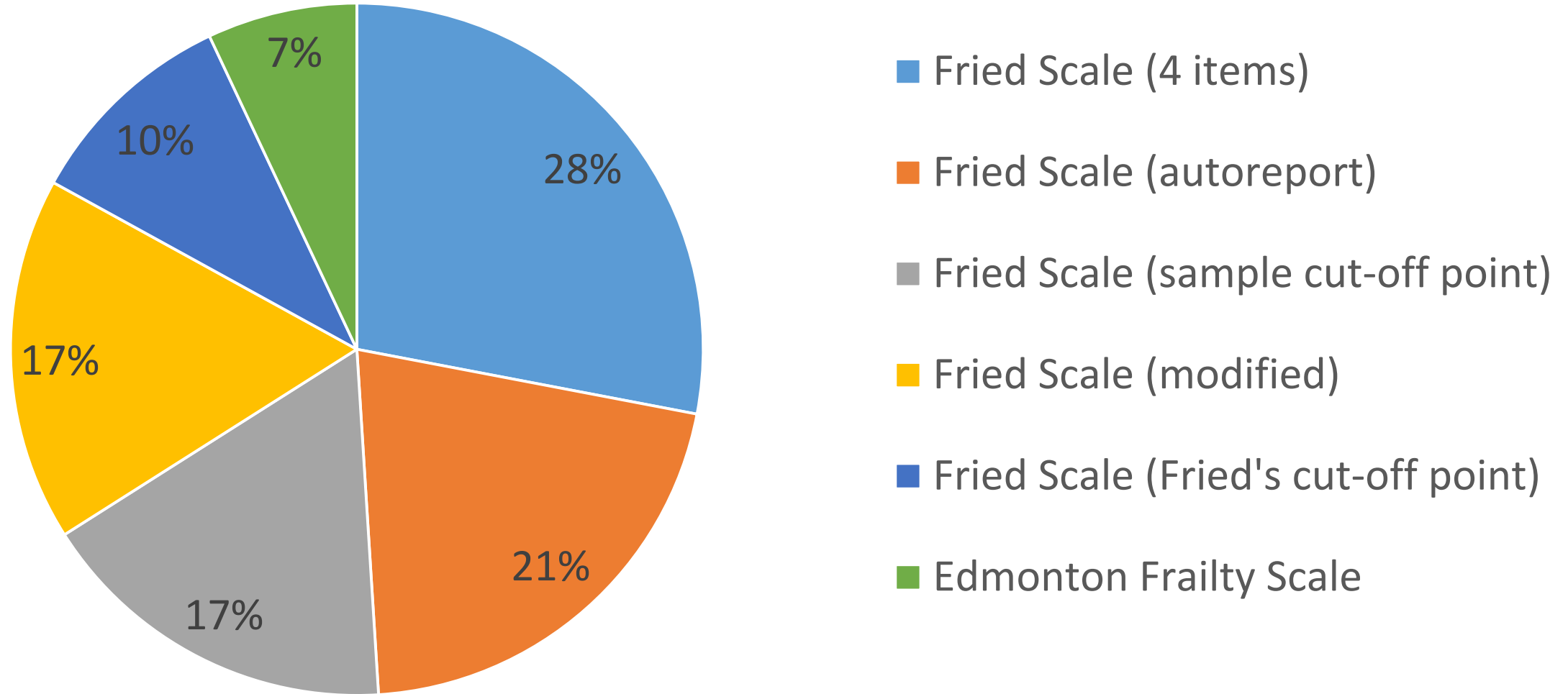
* These authors contributed equally to this work.

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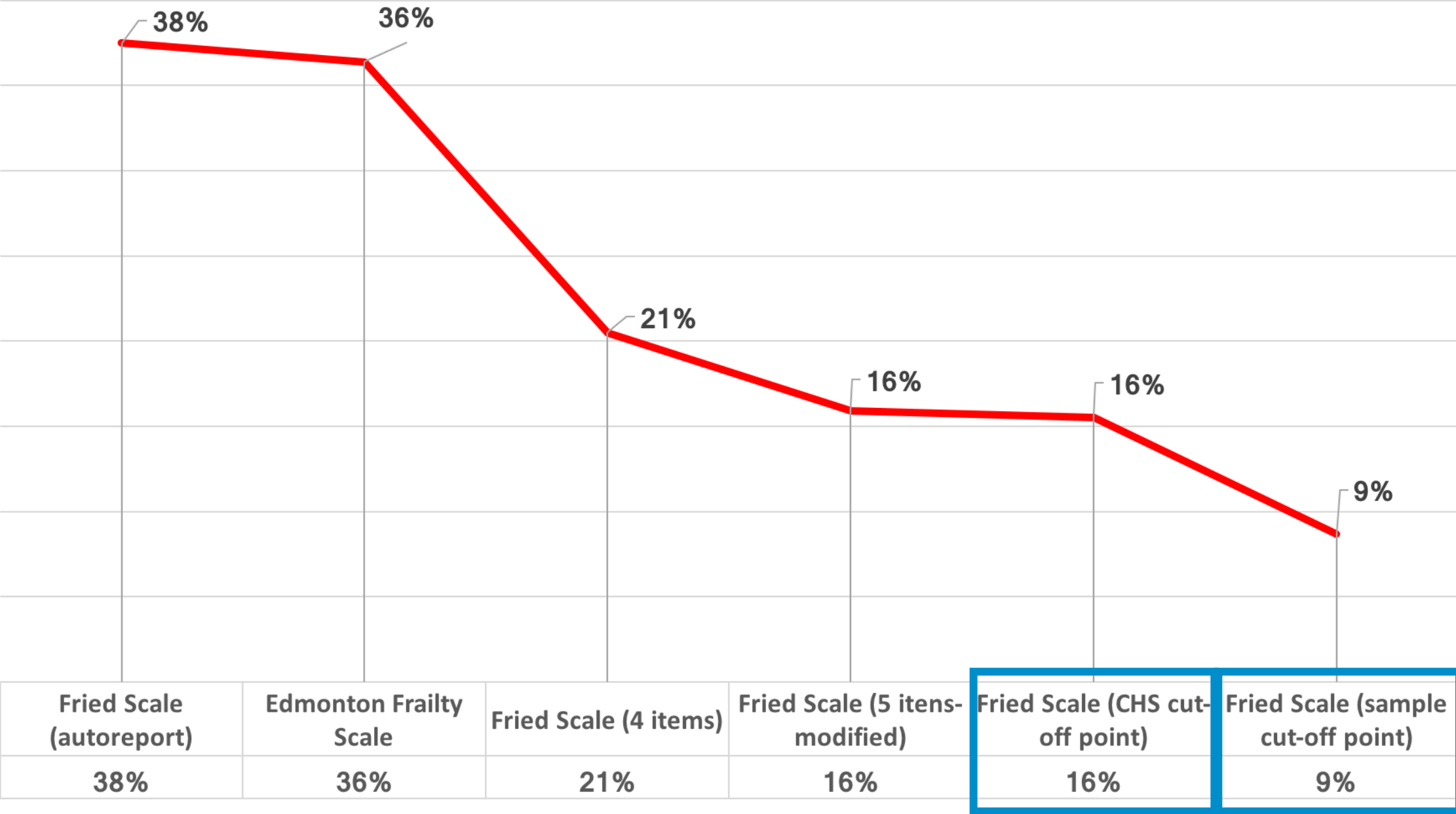
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Prevalence of frailty according scale used



Prevalence of frailty according to the scales used to classify



Prevalence



Geriatr Gerontol Int 2016

REVIEW ARTICLE

Prevalence of sarcopenia in older Brazilians: A systematic review and meta-analysis

Juliano Bergamaschine Mata Diz,¹ Amanda Aparecida Oliveira Leopoldino,^{1,2} Bruno de Souza Moreira,¹ Nicholas Henschke,³ Rosangela Correa Dias,¹ Leani Souza Máximo Pereira¹ and Vinicius Cunha Oliveira¹

¹Postgraduate Program in Rehabilitation Sciences, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil; ²The George Institute for Global Health, Sydney Medical School, University of Sydney, Sydney, New South Wales, Australia; and ³Institute of Public Health, University of Heidelberg, Heidelberg, Germany



- 31 studies included
- 9416 participants
- Prevalence of sarcopenia
 - Total: 17.0%
 - Range: 3.7% to 72.7%
 - 11 studies
 - EWGSOP cut-off
 - Based on:
 - ✓ Low muscle mass and function: 16.0%
 - ✓ Only low muscle mass: 17.0%

Prevalence of sarcopenia in older Brazilians: A systematic review and meta-analysis

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What about the items scales?



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SYSTEMATIC REVIEW

Global variation in grip strength: a systematic review and meta-analysis of normative data

RICHARD M. DODDS^{1,2}, HOLLY E. SYDDALL¹, RACHEL COOPER³, DIANA KUH³, CYRUS COOPER^{1,4,5},
AVAN AIHIE SAYER^{1,2,4,6,7}



- Aim
 - Investigate differences in GS using British data as a standard
- 60 papers/63 different samples
- Developed regions
 - 44 samples
- Normative data
 - Developed regions: similar HGS
 - Developing regions: lower HGS
- Conclusion
 - Developed regions reference values must not be used in developing regions

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- Abordar velocidade de marcha



R. A. Lourenço et al.

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Performance of the European Working Group on Sarcopenia in Older People algorithm in screening older adults for muscle mass assessment

ROBERTO ALVES LOURENÇO¹, MARIO PÉREZ-ZEPEDA², LUIS GUTIÉRREZ-ROBLEDÓ³, FRANCISCO J. GARCÍA-GARCÍA⁴,
LEOCADIO RODRÍGUEZ MAÑAS⁵

Performance of the European Working Group on Sarcopenia in Older People algorithm in screening older adults for muscle mass assessment

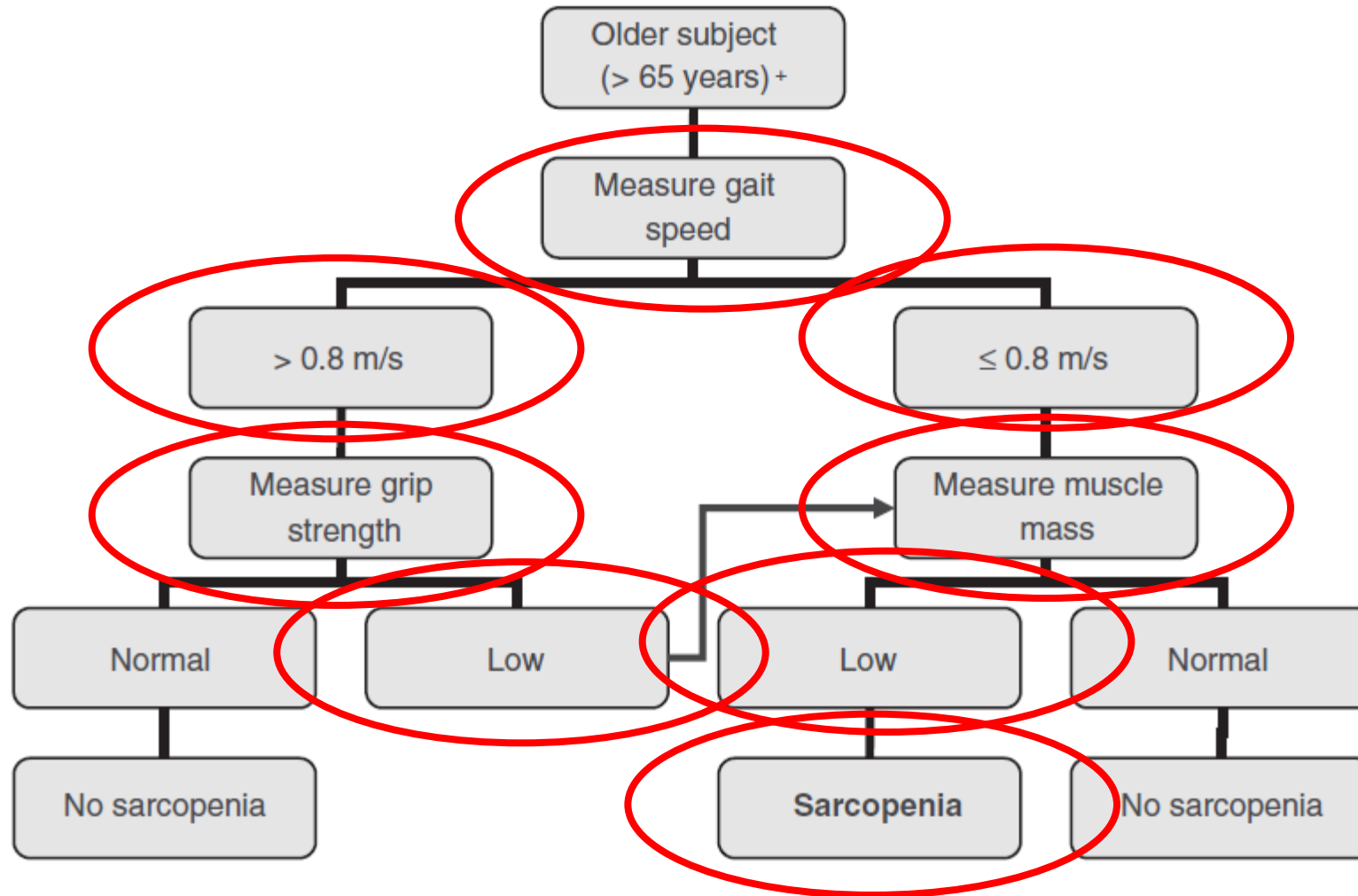


- Aim
 - Assess the performance of the EWGSOP screening algorithm
- Design:
 - cross-sectional study
- Methods
 - GS and HS
 - Original cut-off values
 - Sample tailored cut-off values

- Sample
 - FIBRA-RJ, Brazil
 - Coyoacan, Mexico
 - TSHA, Spain
 - 3260 community-dwelling individuals
 - ≥ 65 years old
- Results
 - Suspect of sarcopenia: 83.4% of

ROBERTO ALVES LOURENÇO¹, MARIO PÉREZ-ZEPEDA², LUIS GUTIÉRREZ-ROBLEDO³, FRANCISCO J. GARCÍA-GARCÍA⁴, LEOCADIO RODRÍGUEZ MAÑAS⁵

EWGSOP-suggested algorithm for sarcopenia case finding in older individuals



Performance of EWGSOP sarcopenia algorithm

Reference	N	Gait Speed < 0.8 m/s	Reduced Grip Strength	Muscle Mass
Mexico Ruiz-Arregui et al. 2012	828	62.9%	18.5%	67.8%
Spain Garcia-Garcia et al. 2011	1453	89.0%	69.2%	94.4%
Brazil Moreira & Lourenço, 2013	655	40.2%	66.2%	75.5%
Total	2936	71.3%	55.6%	83.4%

Lourenco et al., 2015

Quintiles x EWGSOP

Cohort	Expected proportion of subjects sent to muscle mass measurement		
Cut-off	EWGSOP ^a (%)	Quintiles ^b (%)	z-score ^c (%)
.....
FIBRA RJ	75.5	30.7	24.16
CC	67.8	31.2	22.58
TSHA	94.4	39.9	24.16
Total	83.4	34.2	23.71



No, there is no universal reference values for gait speed and handgrip strength. The available evidence is sufficient to clearly conclude that it is necessary to define specific values for Latin American countries, Spain and probably South Europe!



Conclusions and final comments

Conclusions & final comments

- There is no universal reference values for GS & HS
- May be people who shares genotypic and phenotypic characteristics have similar cutoff points
 - North Europe
 - Latin American and South Europe
- Such values must be determined by
 - Normative values description
 - Longitudinal studies of outcomes
 - Functional Impairment
 - Health services use
 - Mortality



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