New developments in sarcopenia: findings from the second European Working Group on Sarcopenia in Older People

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There is no universally agreed definition of sarcopenia

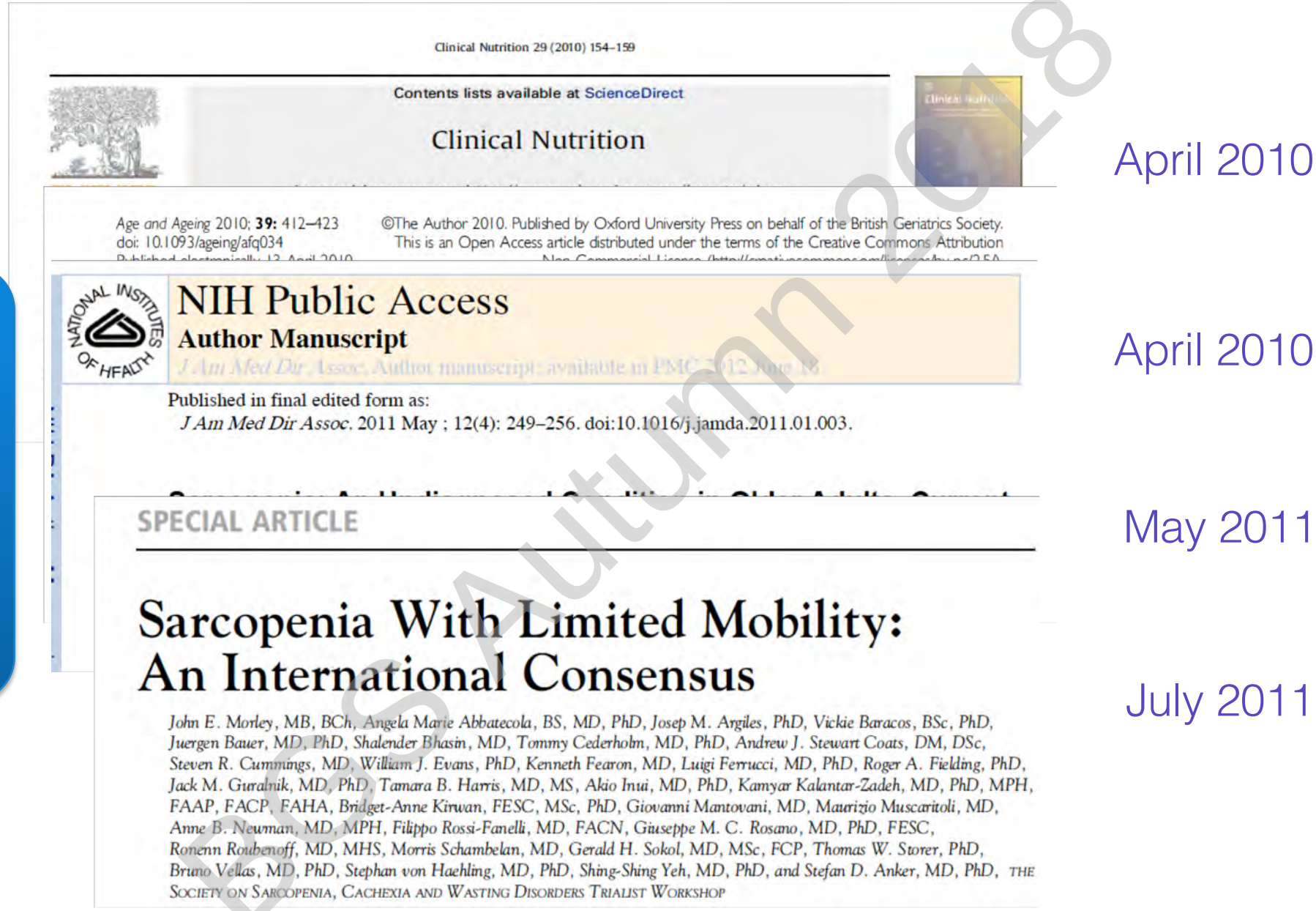
- EWGSOP (2010): 5287 citations
- IWGS (2011): 1488 citations
- AWGS (2014): 935 citations
- FNIH (2014): 535 citations

Source: Google Scholar, accessed November 6th, 2018

Muscle mass

AND

Muscle function



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May 2011

SPECIAL ARTICLE

Sarcopenia With Limited Mobility: An International Consensus

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

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REPORT

Sarcopenia: European consensus on definition and diagnosis

Report of the European Working Group on Sarcopenia in Older People

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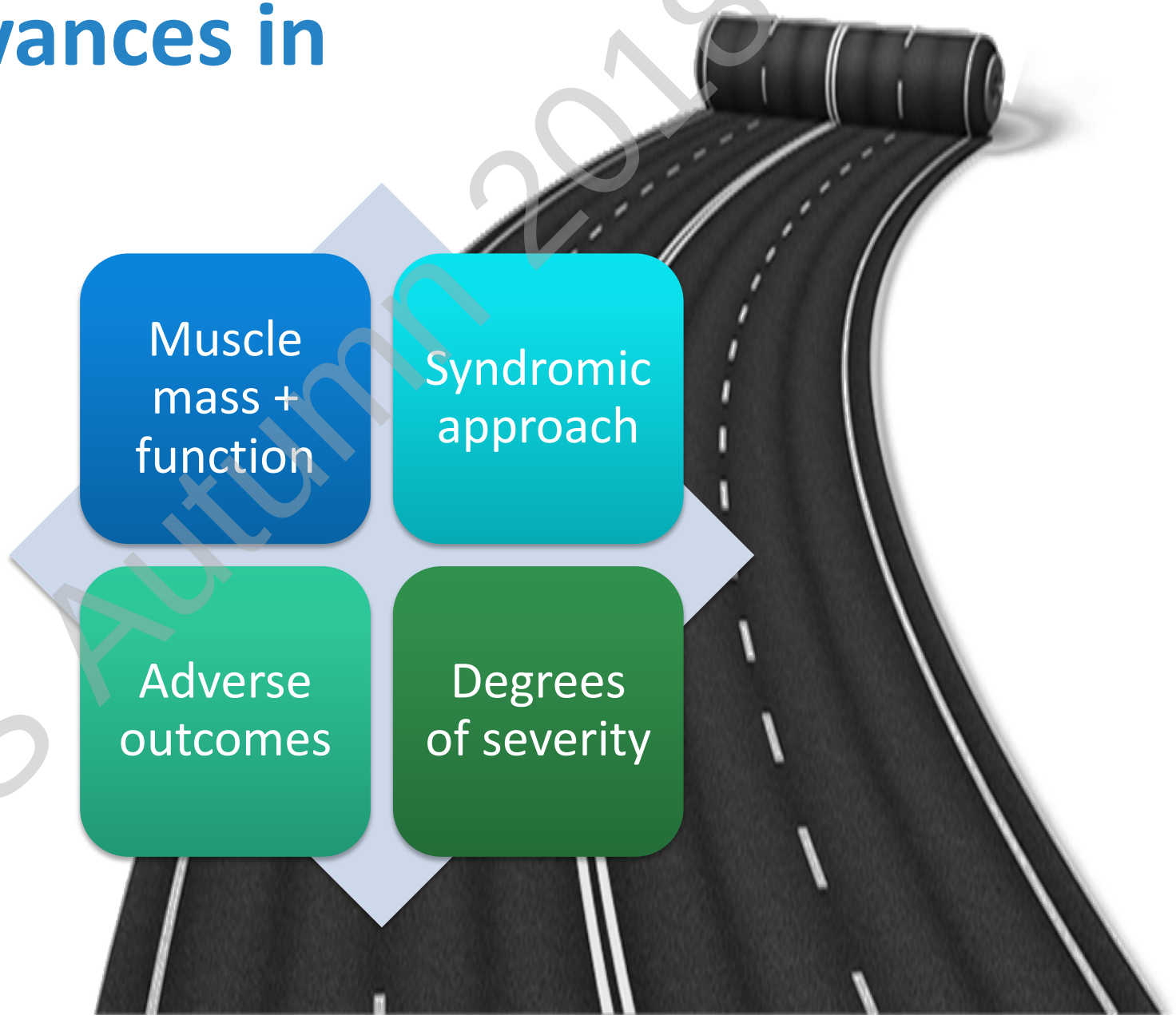
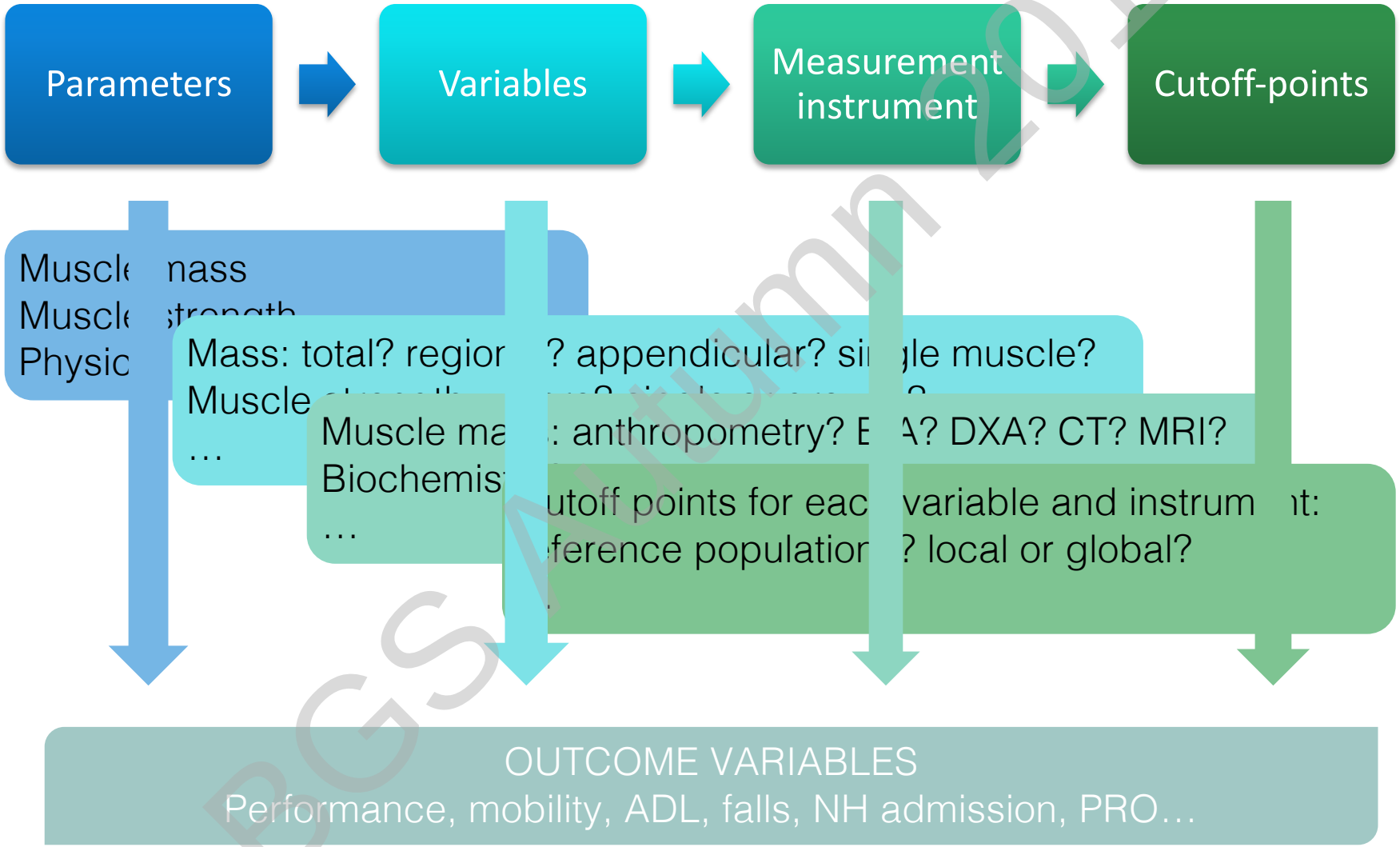
Do we need an update of the 2010 definition of sarcopenia?

Conceptual advances in sarcopenia



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)?



2018 EWGSOP

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2018 EWGSOP

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All are co-authors

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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

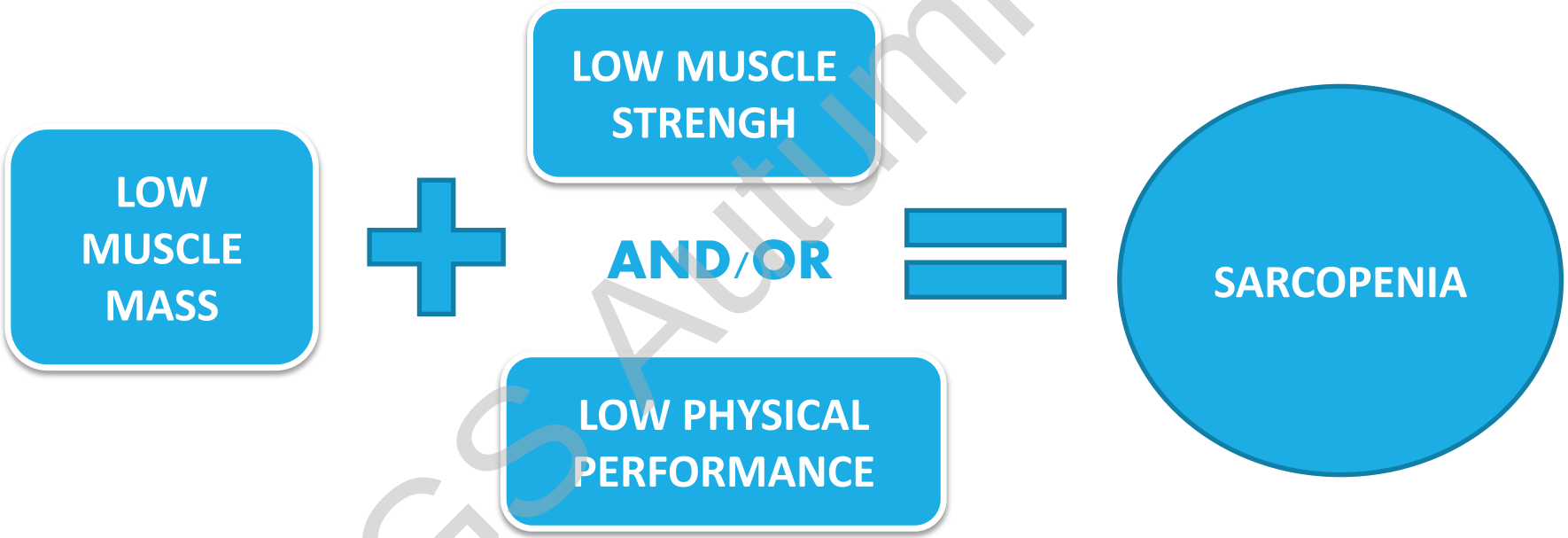
EWGSOP2

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

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

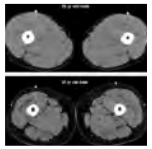
- In clinical practice, case-finding may start when a patient reports **symptoms or signs of sarcopenia** (i.e., falling, feeling weak, slow walking speed, difficulty rising from a chair, or weight loss/muscle wasting). In such cases, further testing for sarcopenia is recommended.

- 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	< 6.0 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

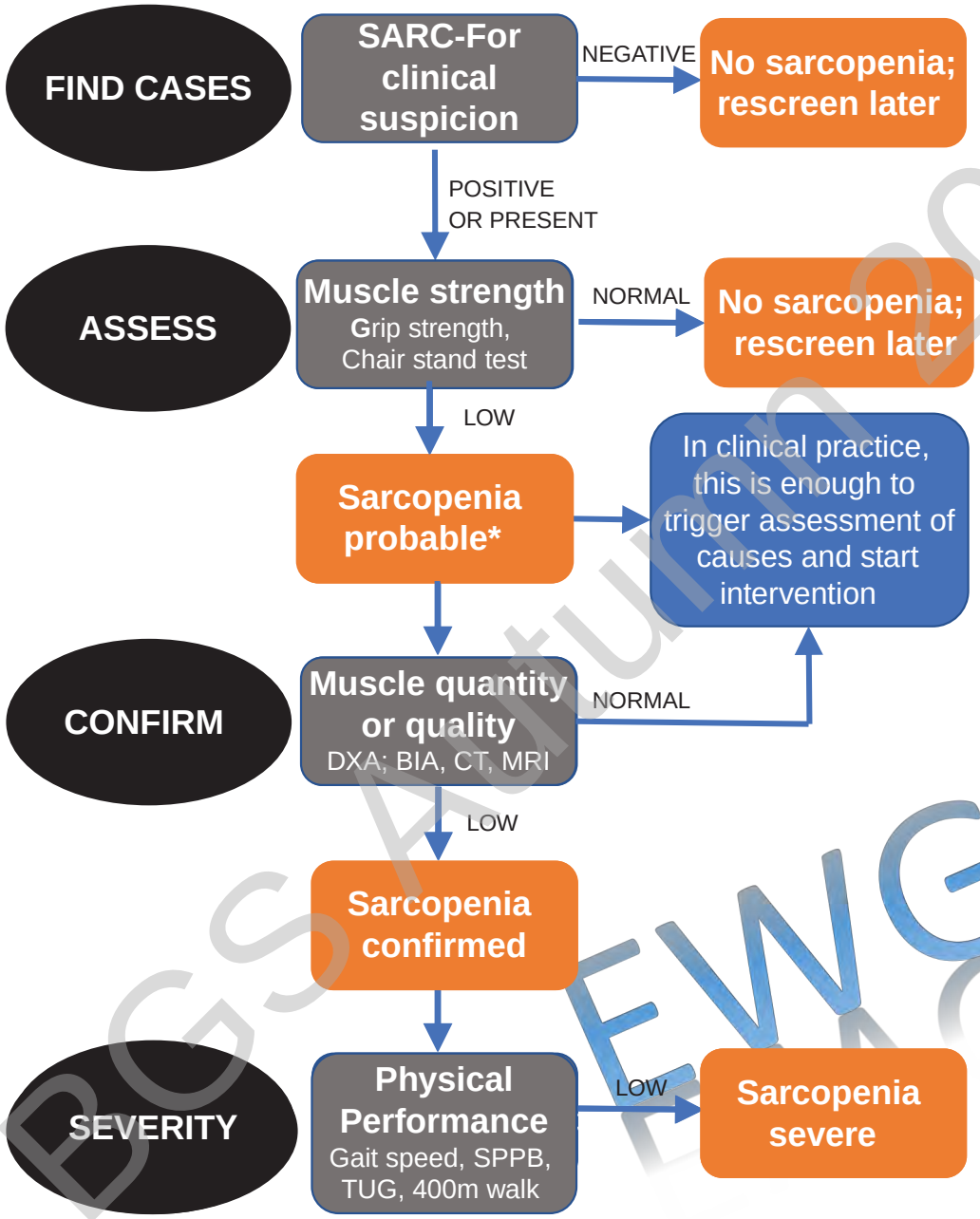
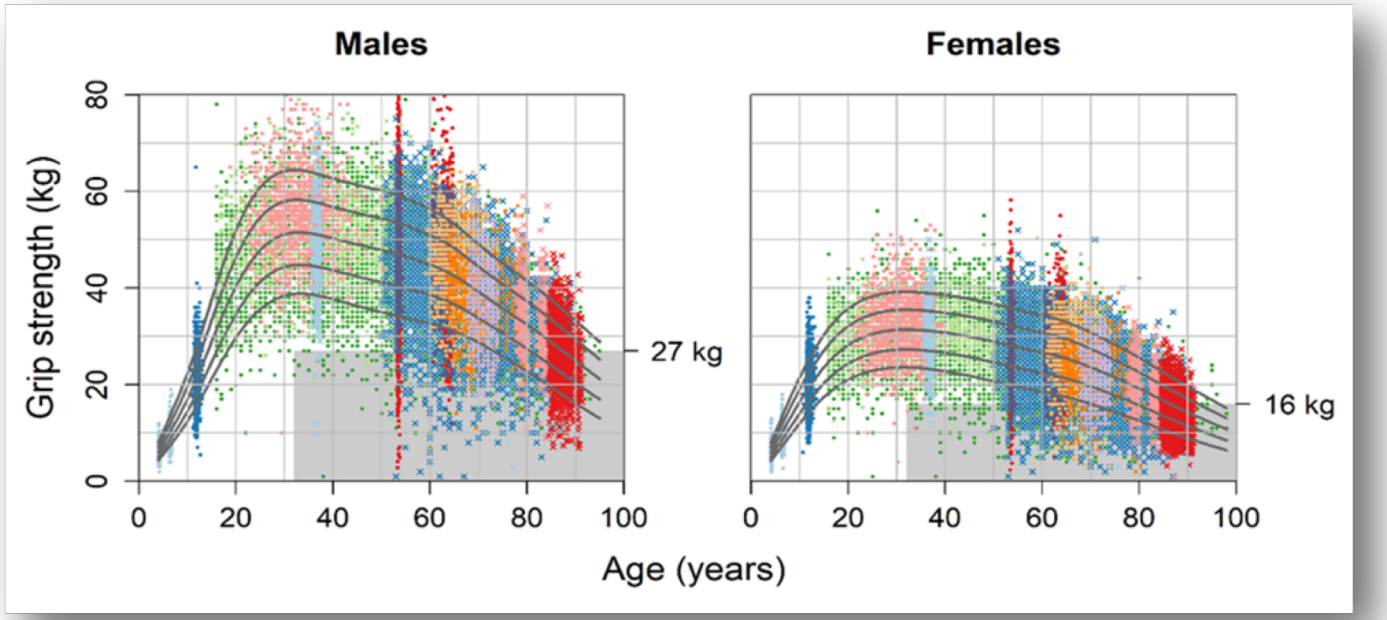
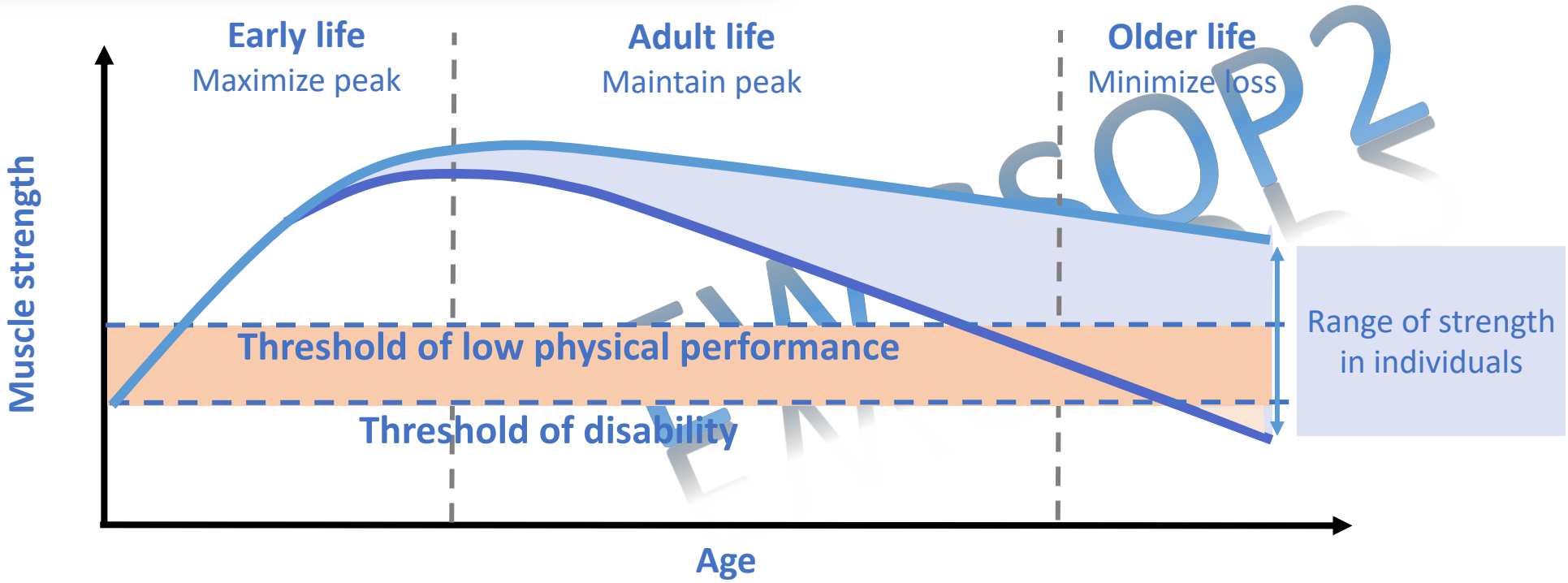


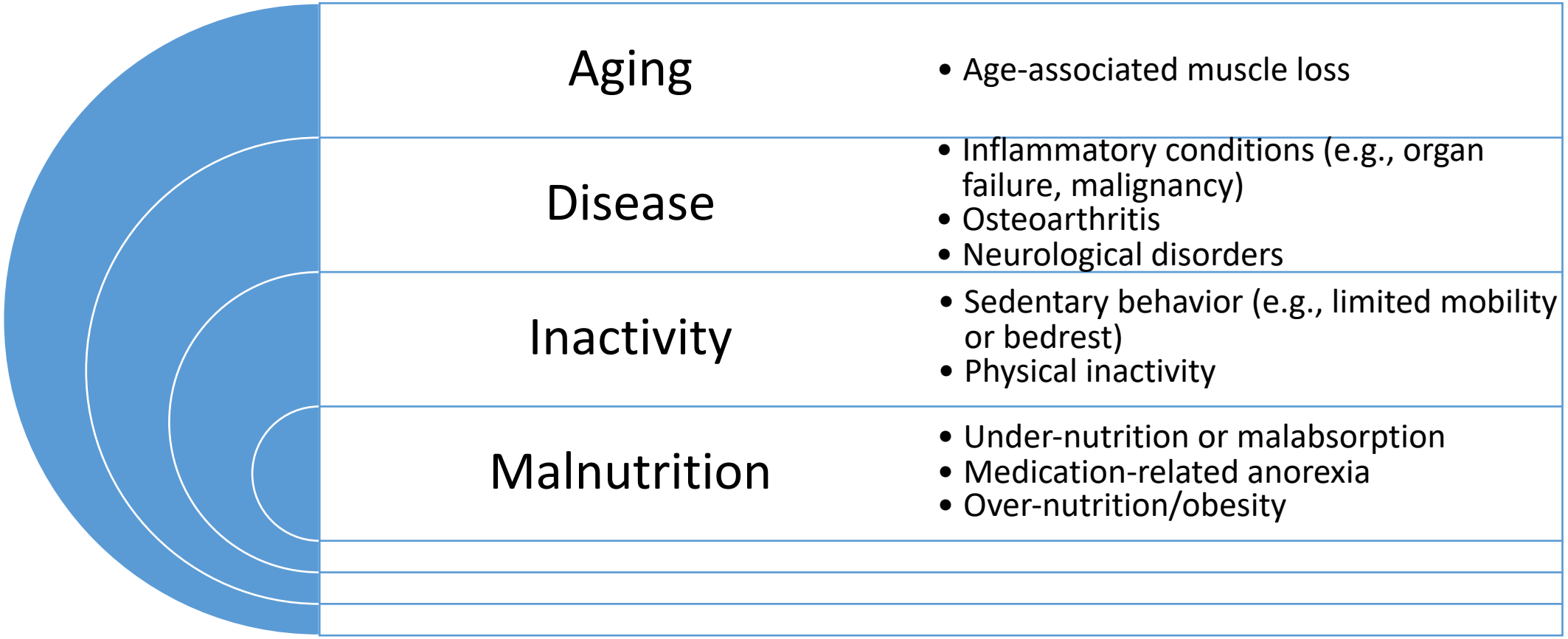
Figure 1. Sarcopenia: EWGSOP2 algorithm for case-finding, making a diagnosis and quantifying severity in practice. The steps of the pathway are represented as Find-Assess-Confirm-Severity or F-A-C-S. *Consider other reasons for low muscle strength (e.g. depression, sroke, balance disorders, peripheral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

New operational definition of sarcopenia: EWGSOP2

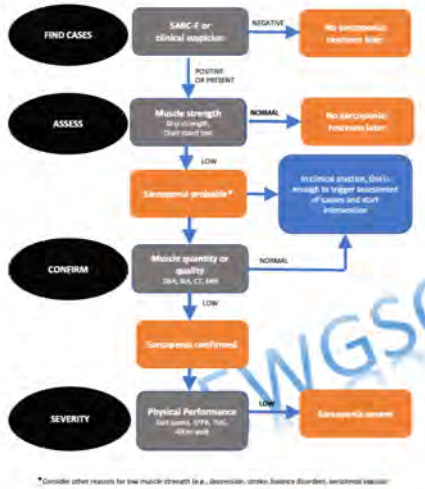
LOW MUSCLE STRENGH + LOW MUSCLE QUANTITY/ QUALITY + LOW PHYSICAL PERFORMANCE

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



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