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SOCIEDAD ESPAÑOLA DE FARMACIA HOSPITALARIA
MÁLAGA 15-17 OCT 25

Sapere Aude
Reflexión ante nuevos retos

NUEVOS RETOS EN LA VALORACIÓN DEL ESTADO NUTRICIONAL

Criterios GLIM de desnutrición y test funcionales y de valoración de masa muscular de aplicación en población mayor

PATRICIA BRAVO JOSÉ

Servicio de farmacia sociosanitario de Burriana

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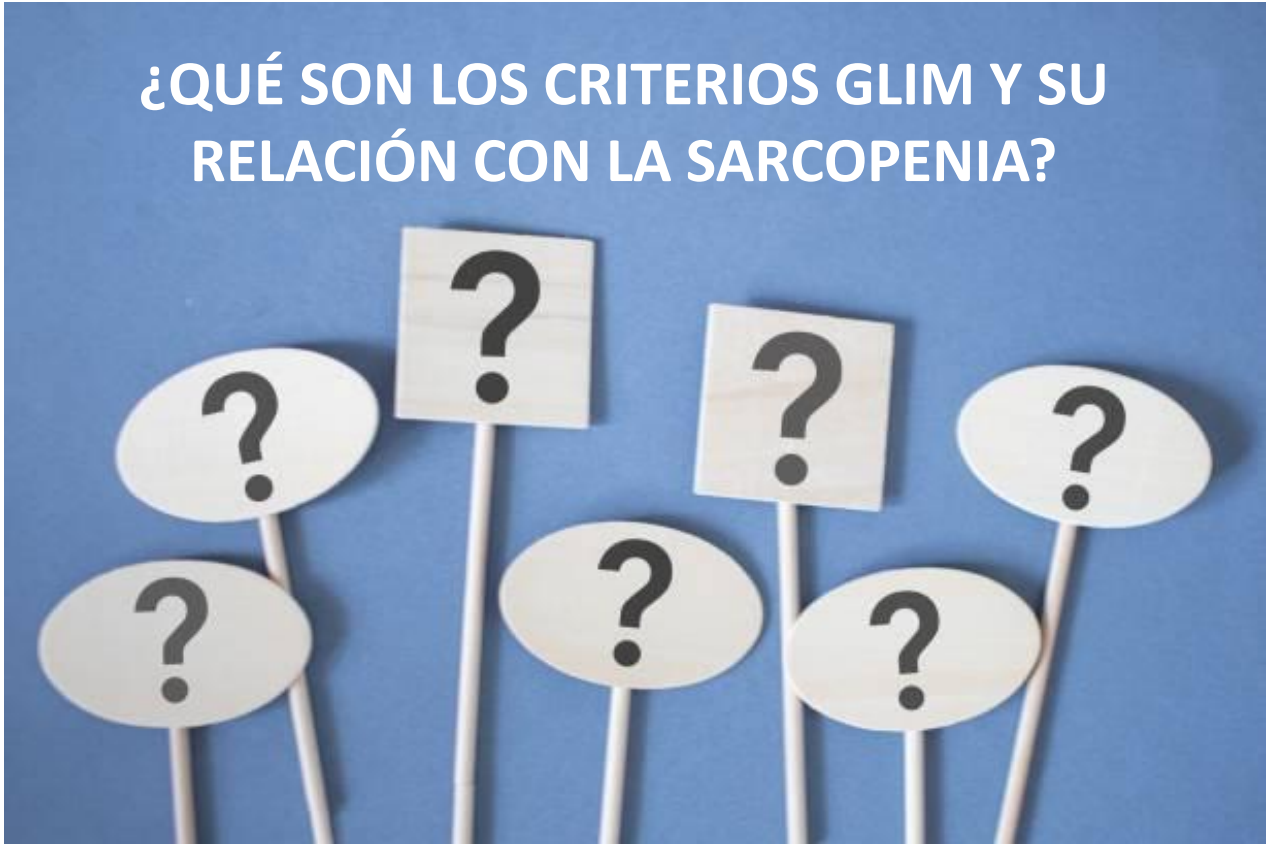
Sociedad Española de Farmacia Hospitalaria

¿QUÉ SON LOS CRITERIOS GLIM Y SU RELACIÓN CON LA SARCOPENIA?



CRITERIOS GLIM DE DESNUTRICIÓN

1 criterio fenotípico + 1 criterio etiológico

Desnutrición

EVALUACIÓN DE LA GRAVEDAD

EVALUAR GRAVEDAD DE DESNUTRICION *basado en criterios fenotípicos*	PERDIDA DE PESO	BAJO IMC	MASA MUSCULAR REDUCIDA
ESTADIO 1 **DESNUTRICION MODERADA** *requiere 1 criterio*	>5-10% en últimos 6 meses o 10-20% si > 6 meses	<20 si <70 años o <22 si ≥70 años	Déficit leve-moderado
ESTADIO 2 **DESNUTRICION GRAVE** *requiere 1 criterio*	>10% en últimos 6 meses o >20% si > 6 meses	<18,5 si <70 años o <20 si ≥70 años	Déficit grave

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ESPEN FACT SHEETS

GUIA PARA LA VALORACIÓN DE INFLAMACIÓN COMO CRITERIO ETIOLÓGICO PARA EL DIAGNÓSTICO GLIM DE DESNUTRICIÓN

The Global Leadership Initiative on Malnutrition (GLIM)

GLIM y valoración de la INFLAMACIÓN

Mira

GLIM FACT SHEET

Los criterios GLIM para el diagnóstico de desnutrición en adultos requieren cumplir al menos un criterio fenotípico y un criterio etiológico

La valoración de la inflamación es uno de los criterios etiológicos GLIM

- Anorexia Con Reducción Ingesta
- Alteración Metabólica Con Aumento De Catabolismo Muscular
- Gasto Energético Basal Elevado
- Menor Respuesta A Intervención Nutricional

¿Cómo valoramos el cumplimento del criterio GLIM etiológico INFLAMACIÓN?

La aparición de una enfermedad aguda o crónica, infección o lesión que se asocie a menudo o habitualmente con actividad inflamatoria puede cumplir este criterio. (i.e. no siempre es necesaria la confirmación mediante marcadores de laboratorio).

CONDICIONES CON INFLAMACIÓN AGUDA GRAVE O MODERADA

Grave: e.g. enfermedad crítica, infección/sepsis grave, síndrome de dificultad respiratoria aguda, quemaduras graves, cirugía abdominal mayor, politraumatismo, traumatismo craneoencefálico cerrado grave, pancreatitis aguda grave.
Moderada: enfermedades crónicas complicadas por exacerbaciones agudas moderadas, o nuevas presentaciones agudas con inflamación moderada asociadas a, e.g., enfermedad de Crohn, enfermedad pulmonar obstructiva crónica (EPOC), pancreatitis, diabetes, infecciones, heridas, cáncer.

CONDICIONES CON INFLAMACIÓN CRÓNICA LEVE A MODERADA

e.g. insuficiencia cardíaca congestiva, fibrosis quística, EPOC, enfermedad de Crohn, enfermedad celíaca, artritis reumatoide, diabetes, obesidad abdominal, síndrome metabólico, neoplasias malignas, infecciones como tuberculosis, VIH/SIDA, úlceras por presión, enfermedad periodontal, enfermedad renal crónica, cirrosis hepática, pancreatitis leve/moderada, insuficiencia/trasplante de órganos

Cuando se disponga de pruebas recomendamos medir marcadores de laboratorio en casos inciertos para ayudar a confirmar el carácter inflamatorio de la enfermedad subyacente subyacente

CONDICIONES SIN INFLAMACIÓN CLARA O PERCEPTIBLE

e.g. diagnósticos psiquiátricos como anorexia nerviosa y depresión; enfermedades malabsortivas, obstructivas o de dismotilidad específicas como estenosis esofágica, síndrome de intestino corto anatómico; pseudoobstrucción intestinal; enfermedades neurológicas como disfagia tras accidente cerebrovascular.

Esta entidad no cumplirá el criterio de inflamación a menos que se confirme mediante análisis de laboratorio.

MARCADORES DE LABORATORIO QUE INDICAN INFLAMACIÓN

Niveles de PCR, indicadores alternativos de inflamación

Aplicación de la determinación de PCR

EN SITUACIONES AGUDAS Niveles de PCR x 10 valor superior de referencia		EN SITUACIONES CRÓNICAS Medidas seriadas de PCR >valor superior de referencia	
PCR 10-50 mg/L =	inflamación moderada	PCR 3.0-9.9 mg/L =	inflamación leve
PCR > 50 mg/L =	inflamación aguda grave	PCR 10-50 mg/L =	inflamación moderada

Cederholm T, Jensen GL, Ballesteros-Pomar MD, et al. Clin Nutr. 2024 May; 43(5):1025-1032. doi: 10.1016/j.clnu.2023.11.026.
Cederholm T, et al. *Clin Nutr*. 2019;38(1):1-9. doi:10.1016/j.clnu.2018.08.002.

ESPEN The European Society for Clinical Nutrition and Metabolism

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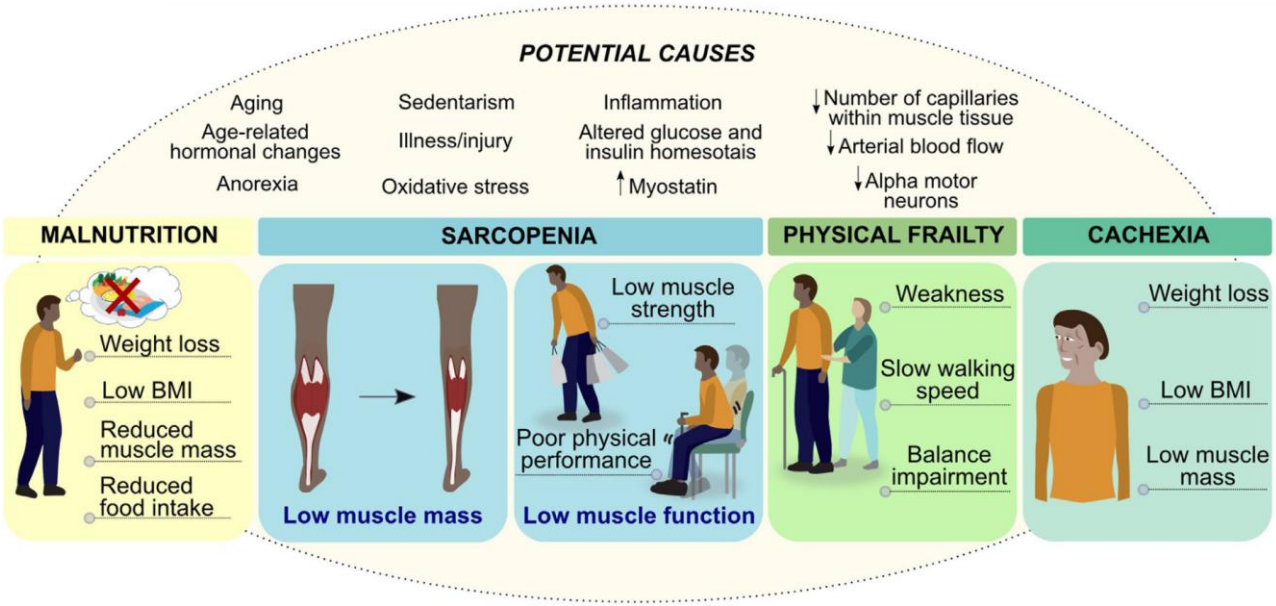

Fig. 3. Interplay among malnutrition, sarcopenia, physical frailty, and cachexia. Malnutrition is one of the factors that can lead to loss of muscle mass and function (i.e., sarcopenia), which may progress to physical frailty, with negative health outcomes such as mobility and disability. In contrast, malnutrition and low muscle mass may progress to cachexia in individuals with chronic diseases, such as cancer. Because excess adiposity may mask underlying malnutrition and/or low muscle mass, in depth assessments are essential for early identification of at-risk patients and targeted interventions.


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Narrative Review

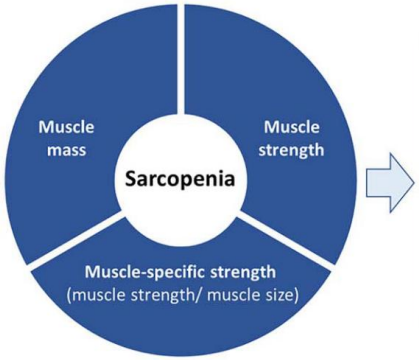
Advances in muscle health and nutrition: A toolkit for healthcare professionals

Carla M. Prado [a,*], Francesco Landi [b], Samuel T.H. Chew [c], Philip J. Atherton [d], Jeroen Molinger [e,f], Tobias Ruck [g], Maria Cristina Gonzalez [h]

The Global Conceptual Definition of Sarcopenia

General Aspects of Sarcopenia

- Disease of skeletal muscle
- Increase with age
- Potentially reversible
- Definition does not depend on age, setting of care, or clinical condition
- Is the same for clinical practice and research



Outcome of Sarcopenia

- Impaired physical performance
- Mobility limitations (walking, transfer chair or bed)
- Falls, fractures, hospitalizations, admissions to nursing homes
- Inability to perform instrumental and basic ADLs
- Poor quality of life
- Mortality

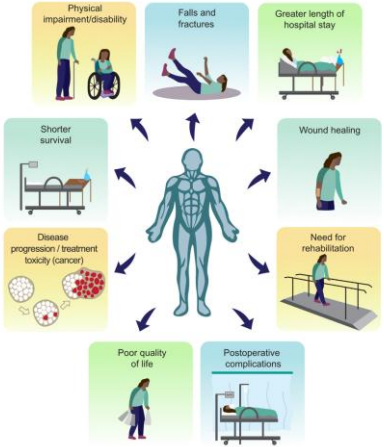


Figure 2. A graphical representation of the conceptual definition of sarcopenia.

Age and Ageing 2024; 53: afae052 https://doi.org/10.1093/ageing/afae052

RESEARCH PAPER

The Conceptual Definition of Sarcopenia: Delphi Consensus from the Global Leadership Initiative in Sarcopenia (GLIS)

Ben Kirk[1,2], Peggy M. Cawthon[3,4], Hidenori Arai[5], José A. Ávila-Funes[6], Rocco Barazzoni[7], Shalender Bhasin[8], Ellen F. Binder[9], Olivier Bruyère[10], Tommy Cederholm[11,12], Liang-Kung Chen[13,14], Cyrus Cooper[15,16], Gustavo Duque[17,18], Roger A. Fielding[19], Jack Guralnik[20], Douglas P. Kiel[21], Francesco Landi[22], Jean-Yves Reginster[23,24], Avan A. Sayer[15], Marjolein Visser[25,26], Stephan von Haehling[27], Jean Woo[28], Alfonso J. Cruz-Jentoft[29], The Global Leadership Initiative in Sarcopenia (GLIS) group[†]

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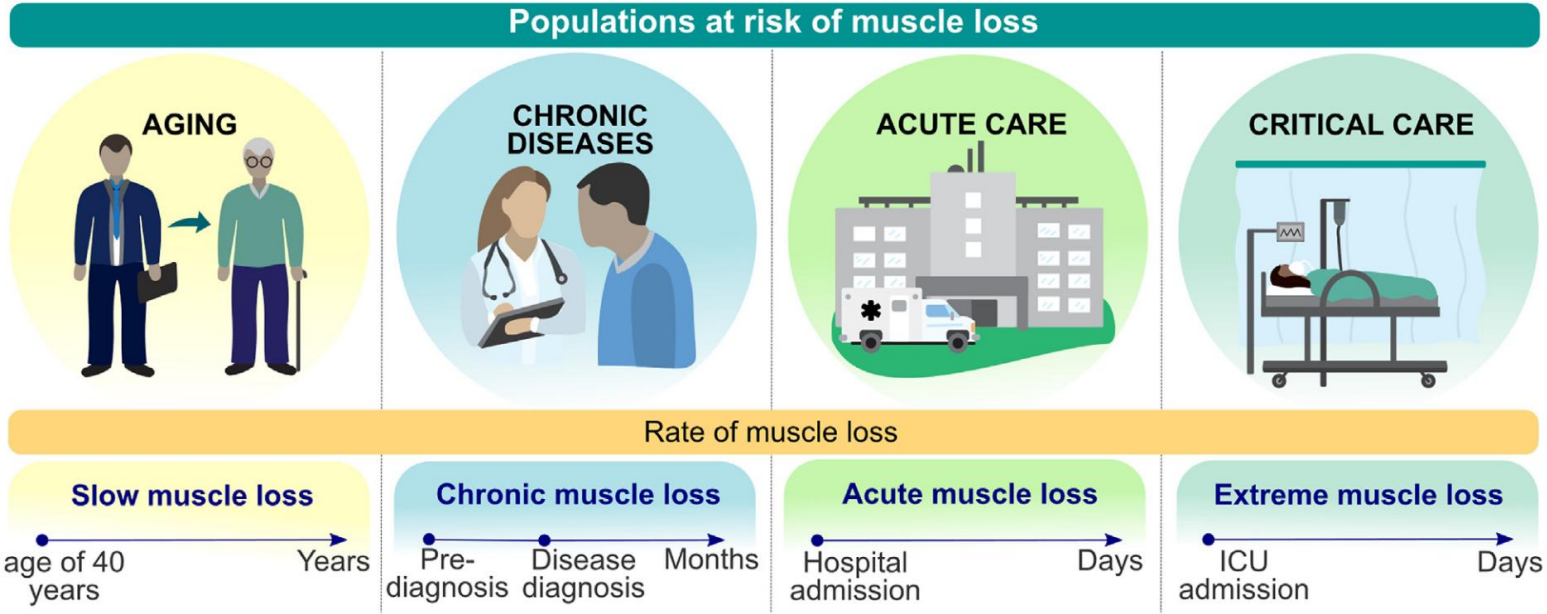

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Narrative Review

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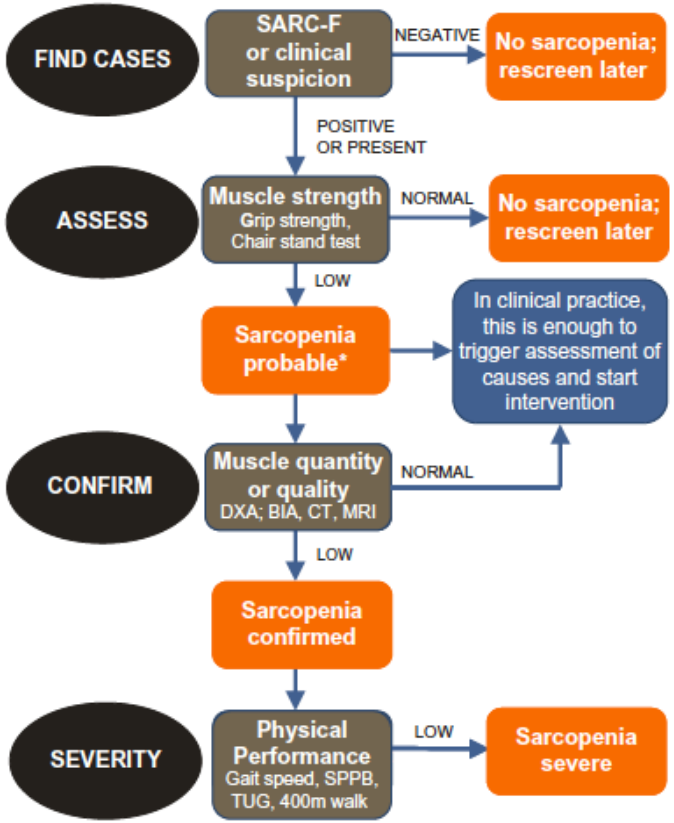
CRITERIOS DIAGNÓSTICOS DE SARCOPENIA



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

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

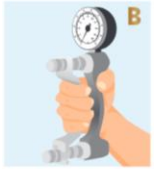
FUERZA MUSCULAR

- **Fuerza de prensión**
  - Dinamómetro

Table 3. EWGSOP2 sarcopenia cut-off points

Test	Cut-off points for men	Cut-off points for women	References
EWGSOP2 sarcopenia cut-off points for low strength by chair stand and grip strength			
Grip strength	**<27 kg**	**<16 kg**	Dodds (2014) [26]

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



RECOMENDACIONES PARA LA EVALUACIÓN DE LA DINAMOMETRÍA[6]

- Sentar al paciente en **silla con reposabrazos**, con la **espalda apoyada** en el respaldo de la silla y los **pies apoyados en el suelo (Fig. A)**
- Con el codo flexionado en 90°, **situar la muñeca en posición neutra** con los pulgares hacia arriba, al final del brazo de la silla
- **Mostrar al paciente cómo funciona el dinamómetro a utilizar:** poner en un lado del dinamómetro el dedo pulgar y los otros 4 dedos en el otro lado **(Fig. B)**
- Al colocar el dinamómetro en la mano del paciente, **sujetaremos la base del mismo con la palma de nuestra mano para sostener el peso del equipo (Fig. C)**
- Comprobar que la **aguja roja del dinamómetro Jamar® esté en 0 (Fig. D)**
- **Iniciar la medición con la mano derecha**-> utilizar un estímulo para favorecer que el paciente apriete el dinamómetro con la mayor fuerza y presión: *"Quiero que aprietes tan fuerte como puedas todo el tiempo que puedas hasta que diga para; aprieta, aprieta, aprieta, para (cuando la aguja se detenga)"*
- Tomar **lectura de la fuerza ejercida en kilogramos** y registrar el resultado
- **Repetir la medición** con la **mano izquierda**
- **Realizar otras dos mediciones adicionales con cada una de las manos**, alternando las medidas, hasta completar 3 mediciones con cada una.
- **Registrar el valor promedio de las medidas obtenidas con la mano dominante del paciente** (diestro, zurdo o ambidiestro)

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- **Test de levantarse de la silla (chair-stand test)—**5 veces

Table 3. EWGSOP2 sarcopenia cut-off points

Test	Cut-off points for men	Cut-off points for women	References
EWGSOP2 sarcopenia cut-off points for low strength by chair stand and grip strength			
Chair stand	**>15 s for five rises**		Cesari (2009) [67]

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LIMITACIONES

- **Fuerza de prensión**

  - ✓ Dificultad de comprensión en personas con deterioro cognitivo.
  - ✓ Personas mayores con artrosis.
  - ✓ ¿Puntos de corte adecuados en determinados grupos poblacionales?

- **Test de levantarse de la silla (chair-stand test)**

  - ✓ Dificultad de comprensión en personas con deterioro cognitivo.

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Table III. Strength of the dominant hand by gender and age, measured with a Jamar dynamometer

Age group (years)	Grip strength (kg)								
	Mean ± SD	Maximum ± SD	P5	P10	P25	P50	P75	P90	P95
Men									
Total n = 364	45.7 ± 9.9	47.8 ± 10.3	30	34	40	48	54	62	64.8
Under 45 years n = 125	47.2 ± 10	49.5 ± 10.4	32.6	37.6	42	48	57.5	64	64.7
From 45 to 60 years n = 164	47.2 ± 9.2	49.5 ± 9.5	34.5	37.5	44	50	55.8	62	66
Over 60 years n = 71	39.5 ± 9.3	40.9 ± 9.6	26.6	29.2	34	40	47	54	58.2
Women									
Total n = 453	24.2 ± 6.2	26 ± 6.3	16	18	22	26	30	34	36
Under 45 years n = 175	24.7 ± 5.4	26.4 ± 5.4	18	20	23	26	30	33.4	36.4
From 45 to 60 years n = 216	24.7 ± 6.6	26.4 ± 6.7	15	18	22	26	30	34	38
Over 60 years n = 58	21.3 ± 6.4	22.5 ± 6.7	12.8	14	18	22	28	31.1	34

SD: standard deviation.

[Nutr Hosp 2018;35(1):98-103]

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Table 2
Normative values (percentiles) for absolute handgrip strength in kilograms by sex and age based on data from 2,405,863 adults aged 20 to 100+ years representing 69 countries and regions.

Age (year)	P_5	P_{10}	P_{20}	P_{30}	P_{40}	P_{50}	P_{60}	P_{70}	P_{80}	P_{90}	P_{95}
Male											
20–24	33.9	36.8	40.5	43.2	45.7	48.0	50.4	52.9	56.0	60.1	63.6
25–29	35.5	38.5	42.1	44.8	47.1	49.3	51.5	53.9	56.7	60.7	64.0
30–34	35.0	38.3	42.2	45.0	47.4	49.7	52.0	54.4	57.4	61.5	64.9
35–39	33.8	37.3	41.5	44.5	47.1	49.5	51.9	54.4	57.5	61.8	65.3
40–44	32.3	36.0	40.4	43.6	46.3	48.8	51.2	53.9	57.1	61.5	65.1
45–49	30.6	34.4	39.0	42.3	45.1	47.6	50.2	52.9	56.2	60.7	64.4
50–54	28.9	32.8	37.4	40.7	43.5	46.2	48.8	51.6	54.8	59.4	63.1
55–59	27.2	31.0	35.6	38.9	41.7	44.4	47.0	49.8	53.1	57.7	61.4
60–64	25.5	29.1	33.6	36.9	39.7	42.4	45.0	47.8	51.1	55.6	59.3
65–69	23.7	27.2	31.5	34.7	37.5	40.1	42.8	45.6	48.8	53.2	56.8
70–74	21.9	25.2	29.3	32.4	35.1	37.7	40.3	43.1	46.3	50.6	54.1
75–79	20.0	23.1	27.0	29.9	32.5	35.1	37.6	40.3	43.5	47.7	51.1
80–84	18.0	20.8	24.5	27.3	29.8	32.3	34.8	37.5	40.5	44.7	48.0
85–89	15.9	18.5	21.9	24.6	27.0	29.4	31.8	34.4	37.4	41.5	44.6
90–94	13.7	16.1	19.2	21.7	24.0	26.3	28.7	31.2	34.2	38.1	41.2
95–99	11.3	13.5	16.4	18.8	20.9	23.1	25.4	27.9	30.8	34.6	37.5
100+	8.8	10.8	13.5	15.7	17.8	19.8	22.0	24.5	27.2	30.9	33.8
Female											
20–24	19.7	21.7	24.0	25.7	27.2	28.6	30.0	31.6	33.6	36.6	39.1
25–29	20.0	22.0	24.5	26.3	27.9	29.4	30.9	32.6	34.6	37.4	39.7
30–34	19.6	21.8	24.4	26.4	28.1	29.7	31.3	33.1	35.2	38.0	40.4
35–39	19.0	21.3	24.1	26.2	28.0	29.7	31.4	33.2	35.4	38.4	40.8
40–44	18.3	20.7	23.7	25.8	27.6	29.4	31.1	33.0	35.2	38.3	40.8
45–49	17.6	20.1	23.1	25.2	27.1	28.9	30.6	32.5	34.8	37.9	40.4
50–54	16.9	19.4	22.4	24.5	26.4	28.2	29.9	31.8	34.0	37.1	39.7
55–59	16.1	18.5	21.5	23.7	25.5	27.3	29.0	30.9	33.0	36.1	38.6
60–64	15.2	17.6	20.6	22.7	24.5	26.2	27.9	29.7	31.8	34.9	37.4
65–69	14.3	16.6	19.5	21.6	23.3	25.0	26.6	28.4	30.5	33.4	35.8
70–74	13.2	15.5	18.3	20.3	22.0	23.6	25.2	26.9	28.9	31.8	34.1
75–79	12.0	14.3	17.0	18.9	20.5	22.1	23.6	25.2	27.2	29.9	32.2
80–84	10.7	12.9	15.5	17.4	18.9	20.4	21.9	23.5	25.3	28.0	30.2
85–89	9.3	11.4	13.9	15.7	17.2	18.6	20.0	21.5	23.3	25.9	28.0
90–94	7.8	9.8	12.2	13.9	15.3	16.7	18.0	19.5	21.2	23.6	25.7
95–99	6.1	8.0	10.3	11.9	13.3	14.6	15.9	17.3	18.9	21.2	23.2
100+	4.2	6.1	8.3	9.8	11.2	12.4	13.6	14.9	16.5	18.7	20.6

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Table 2 Reference values for the Five-Times-Sit-to-Stand Test for females (pooled $n = 24{,}562$)

Age (years)	Weighted percentile (seconds)[a]										
	5th	10th	20th	30th	40th	50th	60th	70th	80th	90th	95th
50–54	18	15	12	11	10	10	9	8	7	6	6
55–59	20	16	13	12	11	10	9	9	8	7	6
60–64	20	17	14	12	11	10	10	9	8	7	6
65–69	22	18	15	13	12	11	10	9	9	8	7
70–74	20	18	15	14	13	12	11	10	9	8	7
75–79	23	20	17	15	14	12	12	10	9	8	7
80–84	25	21	18	16	15	13	13	12	11	9	8
85–89	28	24	20	18	17	15	14	13	12	10	9
90+[b]	28	25	21	20	17	15	13	12	12	9	7
50–64	20	16	13	12	11	10	9	8	8	7	6
65+[b]	23	20	16	15	13	12	11	10	9	8	7
50+[b]	21	18	15	13	12	11	10	9	8	7	6

[a]A lower value indicates a better score on the test

[b]The oldest participant was 100 years old

GeroScience
https://doi.org/10.1007/s11357-025-01863-8

ORIGINAL ARTICLE

Reference values for the five-times-sit-to-stand test: a pooled analysis including 45,470 participants from 14 countries

Jozo Grgic · Brad J. Schoenfeld · Andrea B. Maier · Zeljko Pedisic

FUERZA MUSCULAR

Table 3 Reference values for the Five-Times-Sit-to-Stand Test for males ($n = 20{,}908$)

Age (years)	Weighted percentile (seconds)[a]										
	5th	10th	20th	30th	40th	50th	60th	70th	80th	90th	95th
50–54	19	15	12	11	10	9	9	8	7	6	5
55–59	18	15	12	11	10	9	9	8	7	6	5
60–64	18	15	13	12	11	10	9	8	8	6	6
65–69	20	16	14	12	11	10	9	9	8	7	6
70–74	20	17	15	13	12	11	10	9	8	7	6
75–79	22	18	15	14	12	12	10	10	9	8	7
80–84	23	20	17	15	14	13	12	11	10	8	8
85–89	25	23	18	15	14	13	12	10	10	8	7
90+[b]	26	20	18	17	16	15	14	13	11	10	9
50–64	18	15	12	11	10	9	9	8	7	6	5
65+[b]	21	18	15	13	12	11	10	9	8	7	6
50+[b]	20	16	14	12	11	10	9	8	8	7	6

[a]A lower value indicates a better score on the test

[b]The oldest participant was 98 years old

GeroScience
https://doi.org/10.1007/s11357-025-01863-8

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Reference values for the five-times-sit-to-stand test: a pooled analysis including 45,470 participants from 14 countries

Jozo Grgic · Brad J. Schoenfeld · Andrea B. Maier · Zeljko Pedisic

RENDIMIENTO FÍSICO

- **Velocidad de la marcha**
- **SPPB**
- **Test get up & go**

Table 3. EWGSOP2 sarcopenia cut-off points

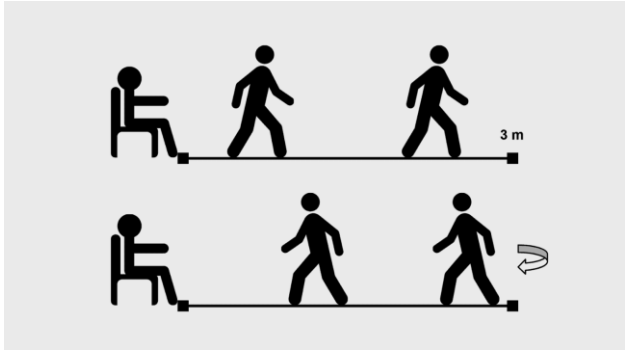
Test	Cut-off points for men	Cut-off points for women	References
EWGSOP2 sarcopenia cut-off points for low performance			
Gait speed	**≤0.8 m/s**		Cruz-Jentoft (2010) [1] Studenski (2011) [84]
SPPB	**≤8 point score**		Pavasini (2016) [90] Guralnik (1995) [126]
TUG	**≥20 s**		Bischoff (2003) [127]
400 m walk test	**Non-completion or ≥6 min for completion**		Newman (2006) [128]

RENDIMIENTO FÍSICO

VELOCIDAD DE LA MARCHA (VM)

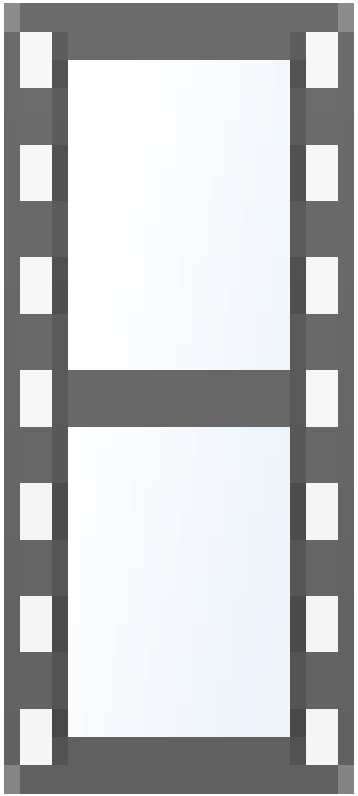
Si **VM** es **<0.8 metros/segundo** → **FRAGILIDAD**

TUG: Test Get up & go

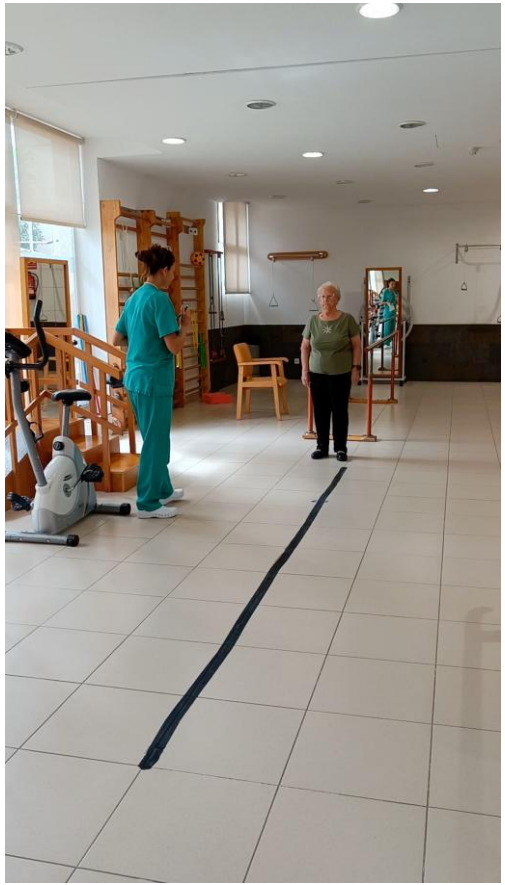


≥ 20 segundos

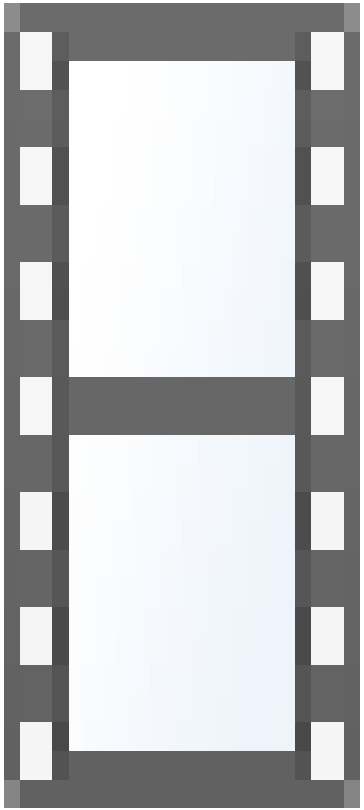
RENDIMIENTO FÍSICO



RENDIMIENTO FÍSICO



RENDIMIENTO FÍSICO



LA FUNCIÓN MUSCULAR Y EL RENDIMIENTO FÍSICO DEFICIENTES SON IMPORTANTES FACTORES DE RIESGO EN PERSONAS MAYORES[1]

Valora la funcionalidad de tus pacientes con la batería reducida para la valoración del rendimiento físico (SPPB)[1]

10min

4 metros de suelo, marcas para el suelo, cronómetro, silla con respaldo

1. TEST DE EQUILIBRIO[2]

Pedir que coloque los pies en cada una de las distintas posiciones durante 10 segundos

PIES JUNTOS

Pies juntos

1 pt = 10 segundos
0 pt = menos de 10 segundos

Si puntúa cero, vaya directamente al test de velocidad de la marcha

SEMI-TÁNDEM

Talón del pie a la altura del dedo gordo del otro pie durante

1 pt = 10 segundos
0 pt = menos de 10 segundos

Si puntúa cero, vaya directamente al test de velocidad de la marcha

TÁNDEM

Un pie delante de otro, tocando el talón de uno la punta del otro

2 pt = 10 segundos
1 pt = entre 3-9,99 segundos
0 pt = menos de 3 segundos

Vaya al test de velocidad de la marcha

2. TEST DE VELOCIDAD DE LA MARCHA[2]

Medir el tiempo empleado en caminar 4 metros a velocidad normal

PUNTUACIÓN	
<4,82 s	4 pt
4,82 - 6,20 s	3 pt
6,21 - 8,70 s	2 pt
8,70 s	1 pt
No puede realizarlo	0 pt

3. TEST DE LEVANTARSE DE LA SILLA[2]

Pedir que cruce los brazos sobre el pecho e intente levantarse de la silla (pre-test)

No puede realizarlo = **0 pt**

Si puede realizar el pre-test

5 REPETICIONES

Medir el tiempo que tarda en levantarse 5 veces de la silla lo más rápido posible y sin pararse

PUNTUACIÓN	
<11,19 s	4 pt
11,20 - 13,69 s	3 pt
13,70 - 16,69 s	2 pt
16,70 - 59,99 s	1 pt
> 60 s o no puede	0 pt

INTERPRETACIÓN DE RESULTADOS

0	1	2	3	4	5	6	7	8	9	10	11	12
DISCAPACITADO Limitación grave[1]				FRÁGIL Limitación moderada[1]			PREFRÁGIL Limitación leve[1]			AUTÓNOMO Limitación mínima o sin limitación[1]		
Asociada con un mayor riesgo de muerte[1]							Asociada a discapacidades relacionadas con la movilidad[1]		Factor predictor de pérdida de la capacidad de caminar[1]			

1. Beaudart C et al. Assessment of Muscle Function and Physical Performance in Daily Clinical Practice. Calcified Tissue International 2019;105:1-7. 2. Riskowski JL et al. Functional foot symmetry and its relation to lower extremity physical performance in older adults: the Framingham Foot Study. Biomech 2012;45:10. 3. Izquierdo M. Prescripción de ejercicio físico. El programa Vivifrail como modelo. Nutr Hosp 2019;36(N.º Extra 2):55

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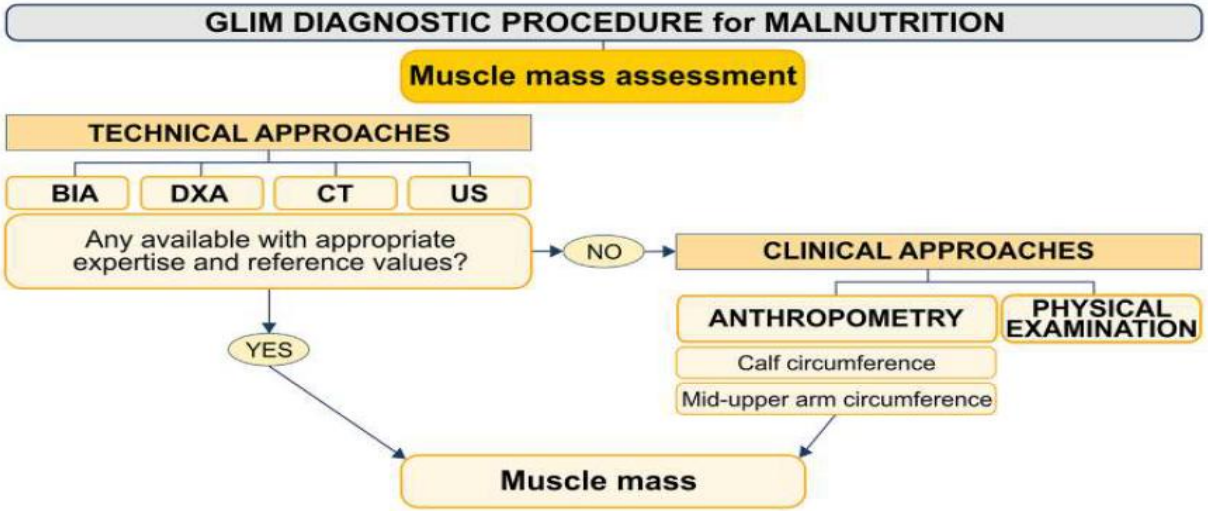
MÁLAGA 15-17 OCT 25

¿CÓMO VALORAMOS LA MASA MUSCULAR?

¿CÓMO VALORAMOS LA MASA MUSCULAR?



Clinical Nutrition 41 (2022) 1425–1433

Contents lists available at ScienceDirect

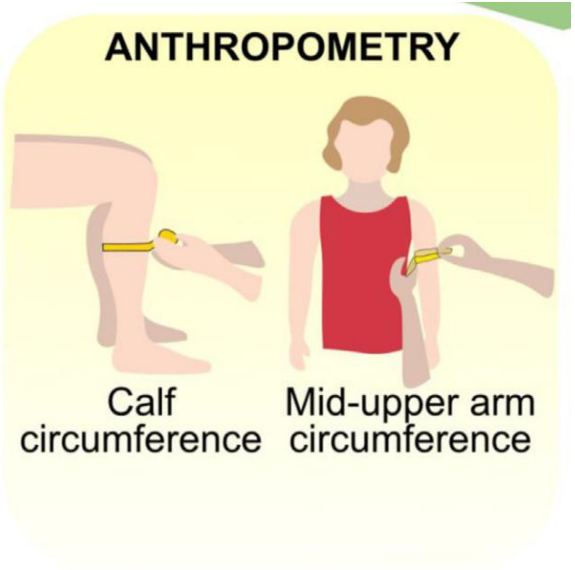
Clinical Nutrition

journal homepage: http://www.elsevier.com/locate/clnu

ESPEN Endorsed Recommendation

Guidance for assessment of the muscle mass phenotypic criterion for the Global Leadership Initiative on Malnutrition (GLIM) diagnosis of malnutrition*

¿CÓMO MEDIMOS?



PUNTOS DE CORTE DE MASA MUSCULAR

Table 3. EWGSOP2 sarcopenia cut-off points

EWGSOP2 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]

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 Topinková[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

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

Calf circumference has been shown to predict performance and survival in older people (cut-off point <31 cm) [79]. As such, calf circumference measures may be used as a diagnostic proxy for older adults in settings where no other muscle mass diagnostic methods are available.

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Table 2
Unadjusted means (standard errors) of frailty index, physical performance and physical function measures (dependent variables) according to calf circumference.

	Unadjusted mean (standard error) calf circumference		
	<31 cm (n = 108)	≥31 cm (n = 158)	p
Frailty measure			
Frailty index score	2.46 (0.14)	1.48 (0.09)	<0.001
Physical performance measures			
Short Physical Performance Battery	5.23 (0.40)	7.88 (0.26)	<0.001
4-m walking speed (m/s)	0.39 (0.03)	0.56 (0.02)	<0.001
Muscle strength measure			
Hand grip strength (kg)	24.44 (1.42)	35.17 (1.14)	<0.001
Functional status measures			
ADL scale score	2.42 (0.27)	0.86 (0.15)	<0.001
IADL scale score	3.90 (0.26)	2.37 (0.18)	<0.001

Frailty index score ranges from 0 (low grade) to 5 (high grade).
The Short Physical Performance Battery score (composed by usual gait speed, balance, and chair stand tests) ranges from 0 (worse performance) to 12 (best performance). ADL: Activities of Daily Living (range 0–7, a higher number indicates higher impairment). IADL: Instrumental Activities of Daily Living (range 0–7, a higher number indicates higher impairment).

Clinical Nutrition 33 (2014) 539–544

Contents lists available at ScienceDirect

Clinical Nutrition

journal homepage: http://www.elsevier.com/locate/clnu

Original article

Calf circumference, frailty and physical performance among older adults living in the community

Francesco Landi [a,*], Graziano Onder [a], Andrea Russo [a], Rosa Liperoti [a], Matteo Tosato [a], Anna Maria Martone [a], Ettore Capoluongo [b], Roberto Bernabei [a]

[a] Department of Gerontology and Geriatrics, Catholic University of Sacred Heart, Roma, Italy
[b] Institute of Biochemistry and Clinical Biochemistry, Catholic University of Sacred Heart, Roma, Italy

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Table 1
Examples of recommended thresholds for reduced muscle mass or its surrogate markers.

Thresholds	Males	Females
Calf circumference, cm[c,d,] [62]	<33	<32

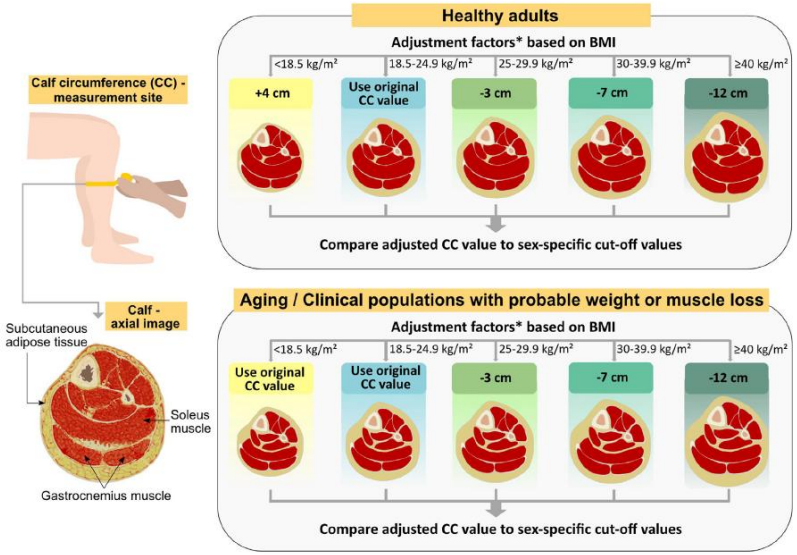
[d] In adults with obesity, decrease the measured value by 3 cm (BMI, 25–30) or 7 cm (BMI, 30–40) [62].

ESPEN Endorsed Recommendation

Guidance for assessment of the muscle mass phenotypic criterion for the Global Leadership Initiative on Malnutrition (GLIM) diagnosis of malnutrition☆

Rocco Barazzoni [a,*], Gordon L. Jensen [b], Maria Isabel T.D. Correia [c], Maria Cristina Gonzalez [d], Takashi Higashiguchi [e], Han Ping Shi [f], Stephan C. Bischoff [g], Yves Boirie [h], Fernando Carrasco [i], Alfonso Cruz-Jentoft [j], Vanessa Fuchs-Tarlovsky [k], Ryoji Fukushima [l], Steve Heymsfield [m], Marina Mourtzakis [n], Maurizio Muscaritoli [o], Kristina Norman [p,q], Ibolya Nyulasi [r,s,t], Veeradej Pisprasert [u], Carla Prado [v], Marian de van der Schuren [w,x], Sadao Yoshida [y], Yanchun Yu [z], Tommy Cederholm [aa,ab], Charlene Compher [ac]

Clinical Nutrition 41 (2022) 1425–1433



Clinical Nutrition 41 (2022) 2244–2263
Contents lists available at ScienceDirect
Clinical Nutrition
journal homepage: http://www.elsevier.com/locate/clnu

Narrative Review

Advances in muscle health and nutrition: A toolkit for healthcare professionals

Carla M. Prado [a,*], Francesco Landi [b], Samuel T.H. Chew [c], Philip J. Atherton [d], Jeroen Molinger [e,f], Tobias Ruck [g], Maria Cristina Gonzalez [h]

Calf circumference: cutoff values from the NHANES 1999–2006

Maria Cristina Gonzalez,[1,2] Ali Mehrnezhad,[3] Nariman Razaviarab,[3] Thiago G Barbosa-Silva,[4] and Steven B Heymsfield[5]

Am J Clin Nutr 2021;113:1679–1687. Printed in USA.

PUNTOS DE CORTE-LIMITACIONES

- ✓ Factores de confusión:
  - ✓ Edad
  - ✓ IMC
  - ✓ Etnia
  - ✓ Edema
  - ✓ Obesidad
- ✓ Propuesta e puntos de corte y ⬆ o ⬇ según IMC realizada para población sana y personas mayores incluidas sanas (2%).
- ✓ Propuesta de adaptación en pacientes mayores no validada y no tiene en cuenta valores corte de IMC adaptados a esta población ni inmovilidad de la persona.

PUNTOS DE CORTE-LIMITACIONES

3.2.1.1. Comments on the choice of cutoff values to use. We recommend a general inclusive approach to use consensus-based cutoffs at this time (Table 1). It is acknowledged that some devices and techniques do not currently rely on universally accepted cutoff values for normality and disease [35,75]. Age-, sex-, ethnicity-specific cutoffs may not be universally available and accepted for all methods. Research is encouraged to extend cutoff validation testing where needed. Identification of cutoffs may be based on standard approaches such as 1–2 SD below mean values of young (*T*-scores) or age-matched (*z* scores) individuals, respectively, or below 5th–10th percentile in reference to a general healthy although less training may be needed for calf circumference. They are suitable and applicable to many clinical settings, including bedside hospital rounds, skilled nursing and rehabilitation facilities, outpatient clinics, and community settings. Ethnic-specific cutoffs must also be considered, and cutoffs may be unavailable for oldest age groups (>80 years). Anthropometry is focused on the selected muscle groups which have been found to be reduced in individuals with malnutrition. Note that anthropometry is generally less sensitive than appropriately implemented imaging or bioelectrical impedance methods.

ESPEN Endorsed Recommendation

Guidance for assessment of the muscle mass phenotypic criterion for the Global Leadership Initiative on Malnutrition (GLIM) diagnosis of malnutrition☆

Rocco Barazzoni [a, *], Gordon L. Jensen [b], Maria Isabel T.D. Correia [c], Maria Cristina Gonzalez [d], Takashi Higashiguchi [e], Han Ping Shi [f], Stephan C. Bischoff [g], Yves Boirie [h], Fernando Carrasco [i], Alfonso Cruz-Jentoft [j], Vanessa Fuchs-Tarlovsky [k], Ryoji Fukushima [l], Steve Heymsfield [m], Marina Mourtzakis [n], Maurizio Muscaritoli [o], Kristina Norman [p, q], Ibolya Nyulasi [r, s, t], Veeradej Pisprasert [u], Carla Prado [v], Marian de van der Schuren [w, x], Sadao Yoshida [y], Yanchun Yu [z], Tommy Cederholm [aa, ab], Charlene Compher [ac]

Clinical Nutrition 41 (2022) 1425–1433

PUNTOS DE CORTE-LIMITACIONES

Conclusions: The findings of this study show limited agreement between CC-corr and AMC on the study population in question, however the agreement was better when using CC without adjusting for BMI. Thus, it is dubious if CC-corr can serve as a proxy measure for MM in IF and INS patients. This study advises for more research on a reference material conducted on a more comparable population (i.e., a Danish standard population adjusted for age, gender, and BMI). Independent of methods, both groups showed a high prevalence of reduced MM.

Clinical Nutrition ESPEN 68 (2025) 660–667

Contents lists available at ScienceDirect

Clinical Nutrition ESPEN

journal homepage: http://www.clinicalnutritionespen.com

Original article

Muscle mass evaluation in patients with intestinal failure or insufficiency: Comparison of methods

Sabina Mikkelsen [a,*], Sara Munk Nielsen [b], Karoline Bastholm Weesgaard [b], Pernille Thy Christensen [b], Sofie Byskov [b], Mette Holst [a,b], Marianne Køhler [a], Jakob Lykke Poulsen [a], Henrik Højgaard Rasmussen [a,b,c]

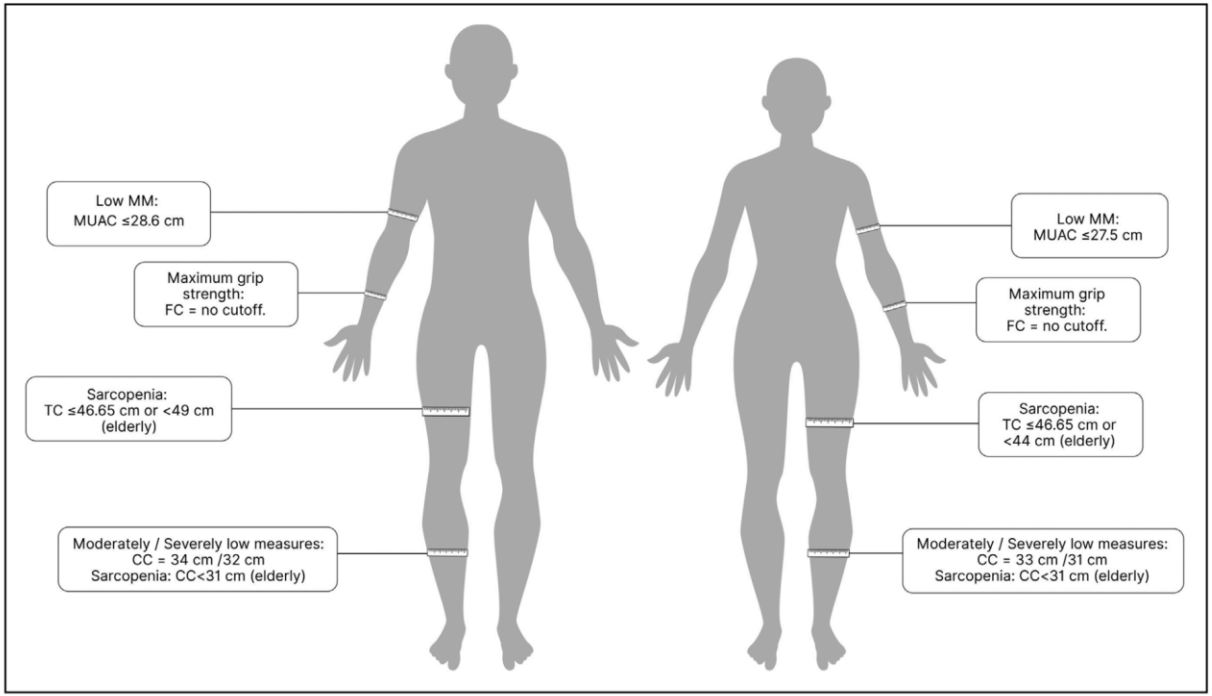


FIGURE 1. Body circumferences and their respectively cut-off values to assess muscle mass. CC, calf circumference; FC, forearm circumference; MM, muscle mass; MUAC, mid-upper arm circumference; TC, thigh circumference.

CURRENT OPINION
What is the value of anthropometry for estimating muscle mass?

Camila Kümmel Duarte[a,b] and Luciana de Abreu Silva[b]

Curr Opin Clin Nutr Metab Care 2025, 28:403–407
DOI:10.1097/MCO.0000000000001143

CIRCUNFERENCIA DEL BRAZO

For CC, we used the cut-offs of CC <34 cm in men and <33 cm in women as per AWGS 2019,[3] whereas the cut-offs of MAC were <26.5 cm in men and <28.4 cm in women, based on a recent study of community-dwelling older persons in China.[15] Low calf and mid upper arm circumference were each scored 10 points if the measured values were lower than the aforementioned cut-off points. As such, the maximum possible score for SARC-CalF+MAC was 30 points, while the highest possible score for SARC-CalF and SARC-F + MAC was 20. A total score of ≥11 for SARC-CalF, SARC-F + MAC and SARC-CalF + MAC was indicative of positive for sarcopenia screening.

Table 3 Subgroup analysis in the obese versus the non-obese group

	Obese group ($n = 135$)			Non-obese group ($n = 95$)		
	Sensitivity (%)	Specificity (%)	AUC	Sensitivity (%)	Specificity (%)	AUC
SARC-F[†]	0.00	100.00	0.59 (0.47–0.71)	0.00	100.00	0.58 (0.46–0.70)
SARC-CalF[‡]	14.29	95.33	0.66 (0.54–0.78)	26.47	96.72	0.72 (0.61–0.83)*,***
SARC-F + MAC[‡]	39.29	86.92	0.75 (0.65–0.85)*	38.24	78.69	0.58 (0.46–0.70)
SARC-CalF + MAC[‡]	57.11	78.69	0.75 (0.66–0.85)*,**	73.53	52.46	0.70 (0.59–0.81)*,***

AUC, area under the curve.

[†]Cut-off: ≥ 4.

[‡]Cut-off: ≥ 11.

*$P < 0.05$, compared with SARC-F.

**$P < 0.05$, compared with SARC-CalF.

***$P < 0.05$, compared with SARC-F + MAC.

DOI: 10.1111/ggi.14758

ORIGINAL ARTICLE
FRAILTY AND SARCOPENIA

SARC-F and modified versions using arm and calf circumference: Diagnostic performance for sarcopenia screening and the impact of obesity

Shi-Teng Lee,[1] Jun-Pei Lim,[1,2] Cai-Ning Tan,[2] Audrey Yeo,[2] Justin Chew[1,2] and Wee-Shiong Lim[1,2]

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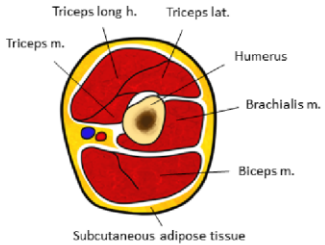
Mid upper arm circumference (MUAC) measurement site



Sex-specific cutoffs:

	Low:	Very low:
Females (F)	< 25 cm	< 23 cm
Males (M)	< 28 cm	< 26 cm

Healthy individuals

< 18.5 kg/m²	18.5-24.9 kg/m²	25-29.9 kg/m²	30-39.9 kg/m²	≥40 kg/m²
				
(F) + 2 cm (M) + 3 cm	Use original MUAC value	(F) - 2 cm (M) - 3 cm	(F) - 6 cm (M) - 7 cm	(F) - 9 cm (M) - 10 cm

Aging/clinical populations

< 18.5 kg/m²	18.5-24.9 kg/m²	25-29.9 kg/m²	30-39.9 kg/m²	≥40 kg/m²
				
Use original MUAC value	Use original MUAC value	(F) - 2 cm (M) - 3 cm	(F) - 6 cm (M) - 7 cm	(F) - 9 cm (M) - 10 cm

Arm circumference as a marker of muscle mass: cutoff values from NHANES 1999-2006

Jarson P. Costa-Pereira, Carla M. Prado, Steven B. Heymsfield, Ana P.T. Fayh, Luiz A.A. Menezes-Júnior, Poliana C. Cabral, Alcides S. Diniz, M.Cristina Gonzalez

PII: S0002-9165(25)00585-4
DOI: https://doi.org/10.1016/j.ajcnut.2025.09.034
Reference: AJCNUT 1066

To appear in: *The American Journal of Clinical Nutrition*

EQUACIONES PARA ESTIMAR ASMI A PARTIR DE CP

$$ASMI = [-10{,}427 + (CP\ x\ 0{,}768) - (edad\ x\ 0{,}029) + (sexo\ x\ 7{,}523\ )]/talla^2$$

CP: circunferencia pantorrilla; edad en años; sexo: hombres: 1, mujeres: 0

https://www.seen.es/calculadoras/calculadora-masa-muscular-esqueletica

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New Prediction Equations to Estimate Appendicular Skeletal Muscle Mass Using Calf Circumference: Results From NHANES 1999–2006

Leonardo Pozza Santos, PhD[1,*]; Maria Cristina Gonzalez, MD, PhD[2,3,*]; Silvana Paiva Orlandi, PhD[4]; Renata Moraes Bielemann, PhD[4,5]; Thiago G. Barbosa-Silva, PhD[5]; Steven B. Heymsfield, MD[3]; and On behalf of the COCONUT Study Group

Journal of Parenteral and Enteral Nutrition
Volume 00 Number 0
May 2019 1–10

DOI: 10.1002/jpen.1605
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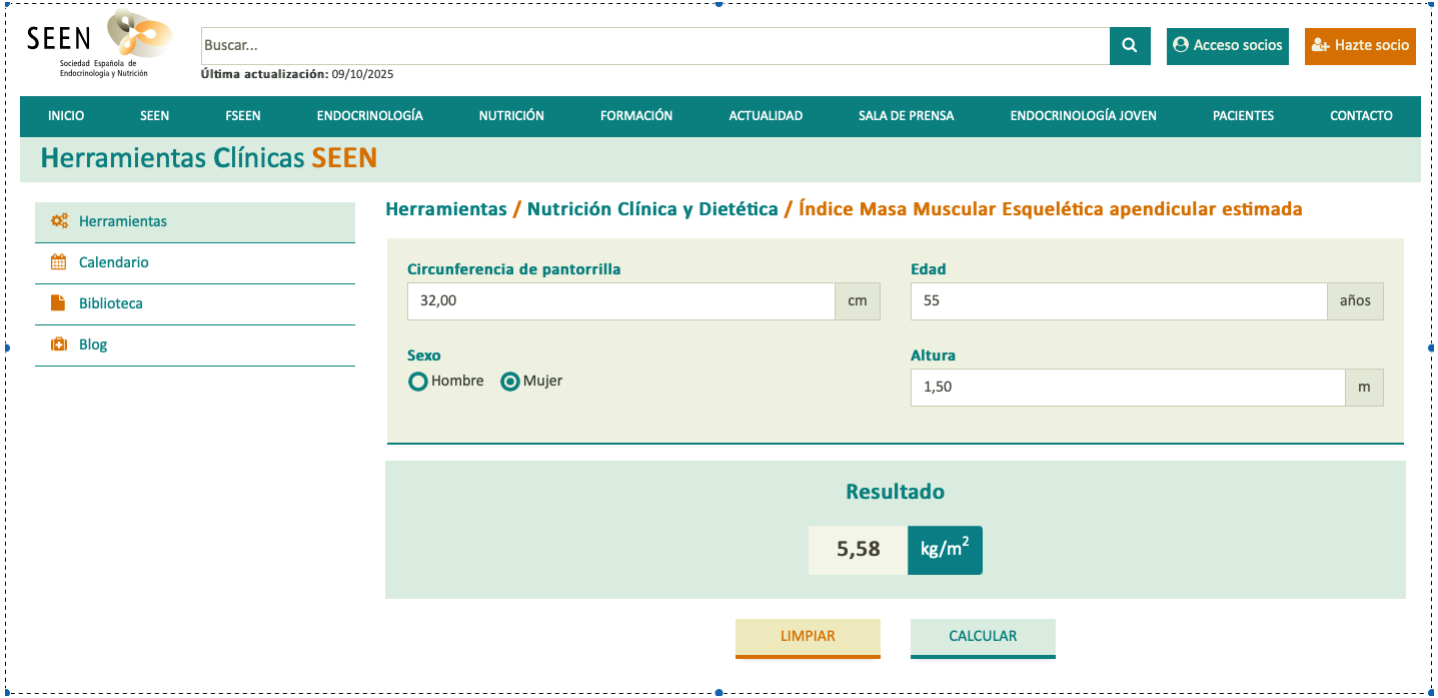

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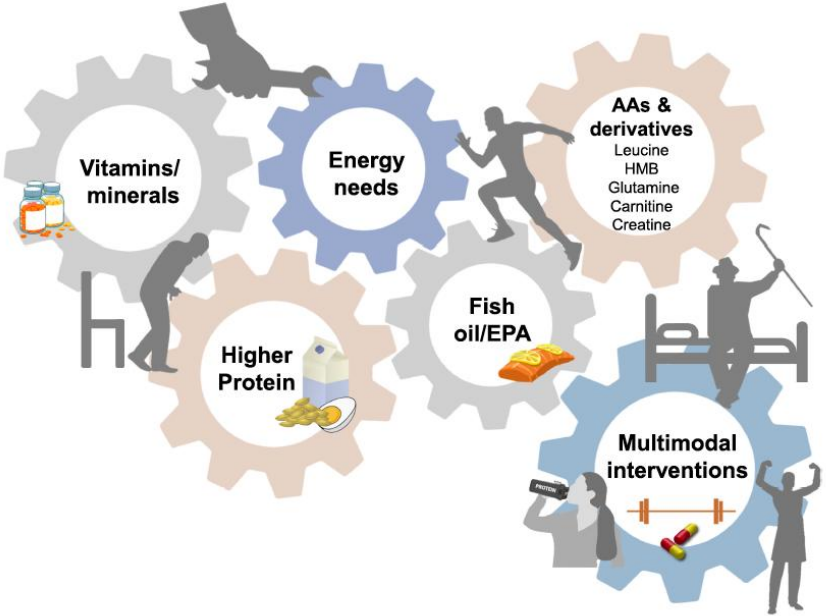
MÁLAGA 15-17 OCT 25

ABORDAJE MULTIDISCIPINAR DE LA SARCOPENIA Y DE LA DESNUTRICIÓN



- ✓ Tratamiento multimodal de la sarcopenia

Figure 1 Selected nutritional approaches under consideration for treating muscle loss. AA, amino acids; HMB, β-hydroxy-β-methylbutyrate; EPA, eicosapentaenoic acid. Adapted from Prado et al.[6] Concepts to be adapted to the clinical needs of patients.

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EDITORIAL
Journal of Cachexia, Sarcopenia and Muscle 2021; 12: 3–8
Published online 31 December 2020 in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/jcsm.12673

Nutrition in the spotlight in cachexia, sarcopenia and muscle: avoiding the wildfire

Carla M. Prado[1*], Stefan D. Anker[2,3,4], Andrew J.S. Coats[5,6], Alessandro Laviano[7] & Stephan von Haehling[8,9]

Sapere Aude Reflexión ante nuevos retos

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Gracias

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