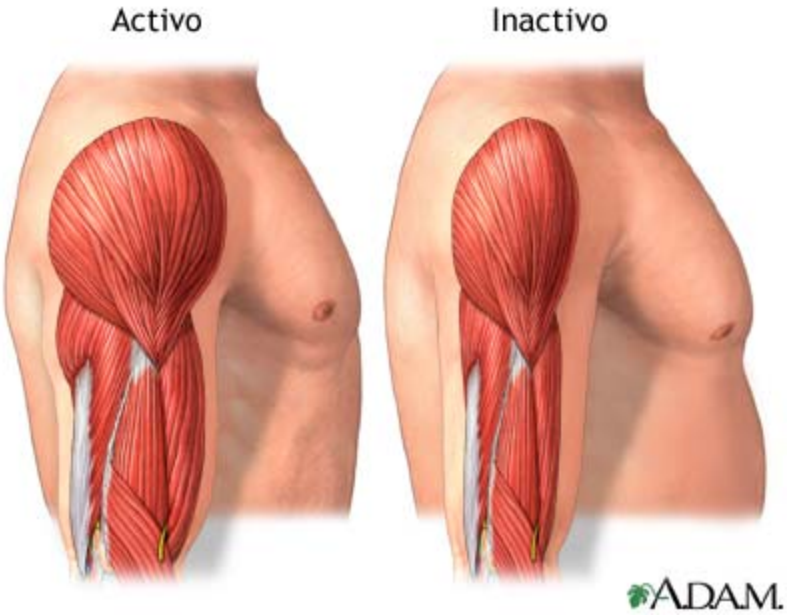
Sarcopenia
Impacto en la funcionalidad



Grupo 3

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Now, let me stop here to make a sort of plea.

¿Es importante la relación?

- La importancia que se le ha dado a la sarcopenia en los últimos años es precisamente por su relación con la pérdida de la funcionalidad.
- La relación funcionalidad y sarcopenia es VITAL

¿La sarcopenia se relaciona con pérdida en la funcionalidad?

- El grado de esta relación dependerá de cómo se defina “sarcopenia”.

Summary comments

Irwin H Rosenberg

Now, let me stop here to make a sort of plea. No decline with age is more dramatic or potentially more functionally significant than the decline in lean body mass.

status, independence, breathing, etc. Why have we not given it more attention? Perhaps it needs a name derived from the Greek. I'll suggest a couple: sarcomalacia or sarcopenia. We might study more about the relationship be-

Am J Clin Nutr 1989;50:1231–3.

Pérdida de la masa muscular y funcionalidad

- Mediciones de masa muscular relacionada población joven (p.e Braumgartner, 1998/ Jessen 2002, Noran 2010):
- Se muestra relación en la pérdida de la masa muscular y deterioro funcional.
- Mediciones trasversales de masa muscular en la misma población (Jessen, 2004)
- Se demuestra también un aumento del deterioro funcional en un determinado corte.

Janssen I, Baumgartner RN, Ross R, Rosenberg IH, Roubenoff R. Skeletal muscle cutpoints associated with elevated physical disability risk in older men and women. Am J Epidemiol 2004;159:413-21.

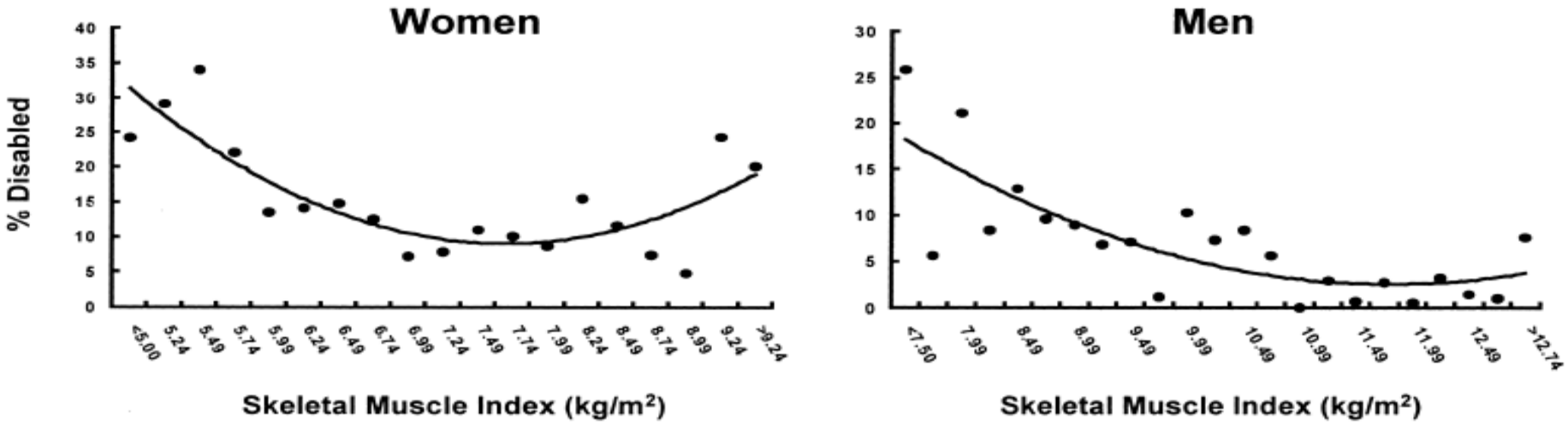

FIGURE 1. Percentage of women and men with physical disability according to skeletal muscle index (muscle mass (kg)/height (m)^2), Third National Health and Nutrition Examination Survey, 1988–1994. The points represent the prevalence of physical disability for the subjects that fit within each 0.25-kg/m^2 range of skeletal muscle index. The regression lines were derived and fit using polynomial regression analyses.

TABLE 4. Summary of results, Third National Health and Nutrition Examination Survey, 1988–1994

Range of values (kg/m^2)†	% of population‡	% disabled§	Odds ratios for disability	95% CI¶	All ages		Aged 60–74 years		Aged ≥75 years	
					Adjusted odds ratios for disability#	95% CI	Adjusted odds ratios for disability#	95% CI	Adjusted odds ratios for disability#	95% CI
					Women					
≤5.75	9.4	25.8	2.98*	1.93, 4.61	3.31*	1.91, 5.73	5.73*	2.46, 13.36	2.61*	1.32, 5.18
5.76–6.75	21.9	14.1	1.37	0.98, 1.90	1.41	0.97, 2.04	1.51	0.82, 2.77	1.23	0.78, 1.94
≥6.76	68.7	10.8	1.00	Referent	1.00	Referent	1.00	Referent	1.00	Referent
					Men					
≤8.50	11.2	14.8	6.96*	3.72, 13.05	4.71*	2.28, 9.74	5.44*	2.05, 14.42	3.25*	1.17, 9.02
8.51–10.75	53.1	8.1	3.49	1.95, 6.25	3.65	1.92, 6.94	5.33	1.94, 14.67	2.73	0.96, 7.78
≥10.76	35.7	2.8	1.00	Referent	1.00	Referent	1.00	Referent	1.00	Referent

* Significant trend ($p < 0.05$) for increasing odds ratios with increased grades of sarcopenia.
† Ranges were determined using likelihood odds ratios for positive and negative test results (tables 2 and 3).
‡ Percentage of total subject pool within skeletal muscle index range.
§ Percentage of subjects within skeletal muscle index range that were disabled.
¶ CI, confidence interval.
# Odds ratios were adjusted for age, race, smoking status, alcohol intake, comorbidity, and body fat.

Janssen I, Baumgartner RN, Ross R, Rosenberg IH, Roubenoff R. Skeletal muscle cutpoints associated with elevated physical disability risk in older men and women. Am J Epidemiol 2004;159:413-21.

- Inicialmente, en estudios transversales se detecta una relación entre la pérdida de la masa muscular y la pérdida de diferentes medidas relacionadas a la funcionalidad.

Pérdida de la masa muscular y funcionalidad

- Estos resultados cambian en estudios longitudinales.

TOWARDS A DEFINITION OF SARCOPENIA – RESULTS FROM EPIDEMIOLOGIC STUDIES

M. VISSER

The Journal of Nutrition, Health & Aging©
Volume 13, Number 8, 2009

- Se documenta una sobre estimación del efecto de la pérdida de la masa muscular sobre la funcionalidad.

Evolution of sarcopenia research

Ian Janssen Appl. Physiol. Nutr. Metab. Vol. 35, 2010

Influence of Sarcopenia on the Development of Physical Disability: The Cardiovascular Health Study

Ian Janssen, PhD

DESIGN: Cardiovascular Health Study, a longitudinal study of cardiovascular disease and its risk factors in older people.

CONCLUSION: Severe sarcopenia was a modest independent risk factor for the development of physical disability. The effect of sarcopenia on disability was considerably smaller in the longitudinal analysis than in the cross-sectional analysis. J Am Geriatr Soc 54:56–62, 2006.

Janssen. Influence of Sarcopenia on the Development of Physical Disability: The Cardiovascular Health Study. Journal of the American Geriatrics Society (2006) vol. 54 (1) pp. 56-62

All subjects (n = 5,036)	
Men (n = 2,194)*	
Women (n = 2,842)*	
Age†	
65–74 (n = 3,317)	
≥75 (n = 1,719)	
Free of major disease (n = 1,460)‡	
Prevalent cardiovascular disease (n = 1,167)§	

Note: Normal muscle mass was used as the referent group.
Odds ratios were adjusted for sex (except*), age (except†), race, adiposity
arthritis, cancer, coronary heart disease, stroke, congestive heart failure)
‡ Analysis limited to individuals free of diabetes mellitus, arthritis, cance
§ Analysis limited to individuals with coronary heart disease, stroke, or
‖ Significantly higher risk ($P < .05$).

Table 2. Disability According to Muscle Mass Categ

	Group
All subjects (n = 5,036)	
Men (n = 2,194)*	
Women (n = 2,842)*	
Age†	
65–74 (n = 3,317)	
≥75 (n = 1,719)	
Free of major disease (n = 1,460)‡	
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Janssen. Influence of Sarcopenia on the Development of Physical Disability: The Cardiovascular Health Study. Journal of the American Geriatrics Society (2006) vol. 54 (1) pp. 56-62

- Se le presta mayor atención a otros factores relacionados al músculo (no la masa) para explicar estas diferencias:

- La fuerza muscular
- La infiltración grasa
- Los factores neurológicos

Matthew J. Delmonico, Alternative Definitions of Sarcopenia, Lower Extremity Performance, and Functional Impairment with Aging in Older Men and Women Matthew J. Delmonico, J Am Geriatr Soc 55:769–774, 2007.

Ian Janssen Evolution of sarcopenia research Appl. Physiol. Nutr. Metab. Vol. 35, 2010

Elsa S. Strotmeyer,, Sensory and Motor Peripheral Nerve Function and Lower-Extremity Quadriceps Strength: The Health, Aging and Body Composition Study JAGS NOVEMBER 2009–VOL. 57, NO. 11

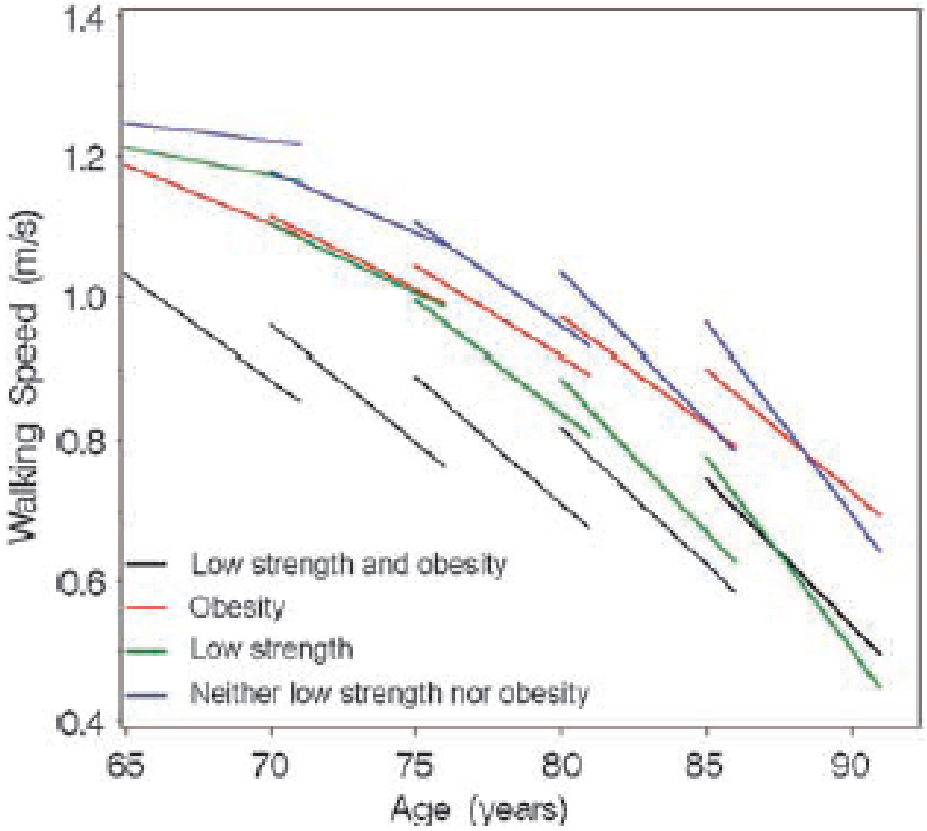
Loss of Muscle Strength, Mass (Sarcopenia), and Quality (Specific Force) and Its Relationship with Functional Limitation and Physical Disability: The Concord Health and Ageing in Men Project

Noran N. Hairi, MPH,[*†‡] *Robert G. Cumming, PhD,*[†§‖] *Vasi Naganathan, PhD,*[§] *David J. Handelsman, PhD,*[‖] *David G. Le Couteur, PhD,*[§‖] *Helen Creasey, MBBS,*[§] *Louise M. Waite, PhD,*[§] *Markus J. Seibel, MD, PhD,*[‖] *and Philip N. Sambrook, PhD*[#]

CONCLUSION: Muscle strength is the single best measure of age-related muscle change and is associated with physical disability in IADLs and functional limitation. J Am Geriatr Soc 58:2055–2062, 2010.

The effect of obesity combined with low muscle strength on decline in mobility in older persons: results from the InCHIANTI Study

S Stenholm[1,2], D Alley[3], S Bandinelli[4], ME Griswold[5], S Koskinen[2], T Rantanen[6], JM Guralnik[7] and L Ferrucci[1]



Longitudinal change in walking speed between ages 65–85 years according to the combination of low muscle strength and obesity. Each line plot represents the change in walking speed over 6 years in different baseline age categories. For example, walking speed for an average 65-year-old participant with obesity and low muscle strength was 1.03ms1 at baseline and 0.85ms1 at 6-year follow-up, and the decline was 0.03ms1 year. International Journal of Obesity (**2009)** 33, 635–644

Pérdida de la funcionalidad y fuerza y pruebas de ejecucción

- Se evidencia que la fuerza y las pruebas de ejecución predicen mejor que la masa muscular el deterioro funcional.
- ¿Se incluyen estos parámetros en la definición de sarcopenia (sarcopenia como pérdida de masa y función)?

- SÍ: Concenso Europeo
- No: Concepto de dinapenia

Conclusiones

- La relación entre masa muscular y funcionalidad ha sido sobreestimada por los estudios trasversales.
- Los estudios longitudinales han demostrado que existen otros factores relacionados a la función global muscular que predicen mejor la pérdida de funcionalidad.
- Existe una relación entre la disminución de la masa y función muscular sobre la funcionalidad.

Grupo 3